2010 Virginia Polytechnic Inst. & State University and Virginia State University Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Virginia Cooperative Extension (VCE), a partnership between Virginia Polytechnic Institute and State University (VT) and Virginia State University (VSU), the Virginia Agricultural Experiment Station (VAES) and the Virginia State University Agricultural Research Station (VSUARS), enables people to improve their lives through research and education using scientific knowledge focused on the issues and needs of the citizens of Virginia. Audiences are involved in designing, implementing, and evaluating needs-driven programs. VCE is a dynamic organization which stimulates positive personal and societal change leading to more productive lives, families, farms, and forests, as well as a better environment in urban and rural communities.

The overall education goal is to bring about change in people's knowledge, understanding, abilities, or behavior related to an issue and/or broader changes in economic, environmental, or social conditions. Progress towards these goals is recorded by planned program at the individual and team levels.

The primary research goal overall for Virginia is to develop relevant basic and applied research data to help solve the problems of the agricultural sector and to support the economic, environmental and social health of the commonwealth of Virginia.

VAES, VSUARS, and VCE PROGRAMMATIC GOALS: VCE's goals are to: 1) develop and transfer new knowledge in applied and basic life sciences, 2) perform relevant, objective, and timely research, 3) improve the quality of life for communities and citizens in the Commonwealth, 4) use a systems approach to programming, with task-oriented work teams that respond to the needs of individuals, groups, and organizations, 5) work with at-risk, underserved, and underrepresented audiences who need specialized attention, 6) fully integrate a culturally diverse paid and volunteer staff in planning, implementing, and evaluating programs, and 7) recruit and collaborate with public and private partners to better utilize resources, heighten impact, and reach a more diverse audience.

In particular, VSU's Extension program goals are to: 1) improve local and state economies by helping small and limited resource farmers and citizens garner resources to own, operate, and sustain small businesses, 2) educate and empower socially disadvantaged farmers to produce, distribute, and market organic, locally grown, and ethnic foods to feed Virginia's citizens, 3) ensure safe food supplies by teaching small-scale growers and farm families effective food safety practices, 4) address health issues and nutrition practices that confront limited-resource urban and rural citizens, 5) help youth, families, and seniors manage money to survive during challenging economic times, and 6) enable parents and families to leave their children in high quality and safe child-care environments.

Virginia Agricultural Experiment Station is committed to developing and implementing research that addresses society's needs and expectations. The College is focused on improving human and animal health and nutrition, enhancing the quality of the environment, reducing the effects of major infectious diseases, developing value-added products, building viable communities, and preventing chronic diseases such as obesity, heart disease, and diabetes. Research programs are conducted on the main campus as well as at the Agricultural Research and Extension Centers located across the commonwealth.

The research focus of VSU's Agricultural Research Station includes the following: developing production systems that conserve natural resources; crop diversity and alternative crops; economically competitive and sustainable small-scale agricultural systems; bio-based energy production; improving food safety and quality; and value-added plant and animal products.

PLANNING AND REPORTING: VAES, VSUARS, and VCE address a broad range of problems and issues facing citizens of Virginia through focused research and educational programming. This is

accomplished and reported in VAES through the Current Research Information System (CRIS) and the College of Agricultural and Life Sciences through the electronic Faculty Annual Reporting System (eFARS). This system, used by VT and VSU faculty, includes annual program plans and reports focused on faculty goals, programs, outcomes, outputs, and other data. This system also provides accurate FTEs, contacts, outputs, and outcomes for each planned program. The foundation for Research and Extension programs are built on the identification and prioritization of strategic issues through annual situation analyses, which are accomplished through the examination of trends and emerging issues identified by local advisory groups (including Extension Leadership Councils) and Extension specialists. This analysis becomes the background and rationale for deciding which problems and issues will be addressed and reported on by VAES, VSUARS, and VCE.

Between fiscal years 2008 and 2012, the base state funds for VCE and VAES have been reduced by a total of 14.3%. In response, VCE embarked on a strategic plan in May 2009, which was completed in the summer of 2010. The process systemically examined Extension's core values and mission; defined community issues, trends, opportunities, and challenges; identified partners who are currently charged with addressing each issue; and delineated the role VCE should play in achieving desired goals.

In addition, VCE unveiled a restructuring plan in October, 2010 in response to budget cuts and Virginia General Assembly legislation that included the charge to "restructure and consolidate local offices in a manner that is financially and logistically beneficial while preserving delivery of critical programs in highpriority areas." At the conclusion of 2010, VCE was receiving input from external and internal stakeholders concerning the restructuring plan.

REPORTING REQUIREMENTS: All Extension faculty (agents, specialists, and administrators) and program assistants submit individual program reports. Also, county/city employees supervised by VCE conducting Extension programs submit annual program reports. Summary reports are developed from the individual reports. All research faculty are required to propose peer-reviewed Experiment Station projects submitted to USDA/NIFA, and entered into CRIS. Researchers prepare annual progress and termination reports reviewed by the VAES director before being submitted to CRIS. In addition, all 2010 research and Extension faculty are required to submit an annual report through eFARS. This state developed system documents teaching, research, and Extension accomplishments and impacts for individual, unit, college, and organizational review. Updates to eFARS and contact reporting in 2010 continue to better align planning and reporting with the 16 planned programs presented in this report.

In response to NIFA and external merit reviews of the 2009 report and the 2011-2015 plan of work for Virginia, the number and type of outcomes for some planned program have been modified. These modifications also incorporate the five NIFA focus areas within the structural data framework of the 2010 eFARS reporting system.

PLANNED PROGRAMS: 1) Childhood Obesity, 2) Climate Change Natural Resources and Environment, 3) Family Finance and Community Viability, 4) Families, and Communities, 5) Food, Nutrition, and Health, 6) Food Safety, 7) Global Food Security and Hunger, 8) Sustainable Energy and 9) Youth Development.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	338.3	20.0	209.9	13.5
Actual	259.1	18.8	174.0	11.5

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- ☐ Internal University Panel
- ☐ External University Panel
- ☐ External Non-University Panel
- ☐ Combined External and Internal University Panel
- ☑ Combined External and Internal University External Non-University Panel
- ☑ Expert Peer Review
- ☐ Other

2. Brief Explanation

Review Process for Research
Virginia Agricultural Experiment Station

Rationale and Review Committee Structure - Research under the Hatch, McIntire-Stennis, and Animal Health and Disease Acts is conducted in three colleges that constitute the Virginia Agricultural Experiment Station (VAES): 1. College of Agriculture and Life Sciences, 2. College of Natural Resources, and 3. Virginia-Maryland Regional College of Veterinary Medicine.

For each VAES project proposal submitted, the assistant or associate VAES director in the project leader's college chairs the review (hereafter referred to as the chair). The chair selects the project review committee consisting of three or more members proficient in the subject of the proposed project. They may be chosen from outside the university if recommended by the department/unit head or deemed appropriate by the chair. Faculty from other units within the university may be eligible for VAES support. This research is reviewed by this policy, must fit within the mission of VAES, and is approved by the director. The VAES director or College of Agriculture and Life Sciences assistant director or associate director chairs the project review committee.

Proposal Development - The project leader prepares the proposal as specified in Essentials of a Project Proposal in the Administrative Manual for the Hatch (Experiment Station) Act as Amended, the Administrative Manual for the McIntire- Stennis Cooperative Forestry Program, and the Administrative Manual for the Continuing Animal Health and Disease Research Program (1992), Appendix F. Early in the new project development process, the project leader is strongly encouraged to initiate a subject search using the USDA/CSREES Current Research Information System (CRIS).

The proposed research project should be reviewed by a statistician, if appropriate, to assure the experimental design and statistical analyses are adequate. The project leader may meet with a member of the Statistics Consulting Center or the department/unit head may designate someone with statistical expertise to serve as a departmental reviewer. The project leader then submits the proposal to his/her department/unit head for peer review in accordance with departmental procedures. If the research involves animals, human subjects, or recombinant DNA, the project leader is responsible for submitting the required protocol forms to the appropriate university review committee(s). Proposals are not forwarded to USDA/CSREES without required approvals.

Proposal Submission and Review Procedures - The department/unit head transmits the departmentally approved project proposal to the chair of the project review committee for that college with the following items transmitted to the chair electronically: 1.) the proposal, 2.) the project leader's vita [2-page maximum], 3.) The Project Certification Form, 4.) A Research Project Review Form, 5.) Verification of statistical review, and 6.) List of three or more suggested peer reviewers. The chair selects reviewers and distributes copies of the proposal to the Project Review Committee, which returns the Project Review Forms and comments to the chair by a specified date (after at least three weeks).

Proposal selection criteria include: 1.) proposed research relevance to the goals of the department and college, the needs of the people the research would serve, and relevance to the priorities established by task forces, work groups, or commodity research committees, 2.) objectives and procedures are clearly stated, 3.)the proposed duration is realistic for the proposed research, 4.) the appropriate or desirable individuals are cooperating on this project, 5.) the project lists impacts to Virginia (and elsewhere) or

anticipated economic importance, and 6.) the project leader's vita indicates the level of competence required for the proposed research.

Each reviewer recommends the proposal be: 1.) approved with no changes, 2.) approved with minor changes, 3.) revised and resubmitted, or 4.) rejected.

The chair forwards reviewers' comments to the project leader and department head prior to the review. The chair directs the committee, the project leader, and the department head to review the proposal and comments. The oral review may be omitted for revised/replacement projects, at the discretion of the chair, if a majority of the review forms are checked by the reviewers as "approved with no changes" or "approved with minor changes." If an oral review is not conducted, the chair provides a written summary of the review committee comments to the project leader with a copy to the department/unit head and the review committee. An oral review is required for a project leader's initial VAES Project.

Faculty located at off-campus Agricultural Research and Extension Centers (ARECs) submit proposals to the center director who contacts the appropriate department head on campus regarding departmental policy for securing a peer review before the proposal is sent to VAES for review. The center director forwards the proposal and departmental review, if applicable, to the VAES director or associate director, who serves as chair. The chair forwards the proposal to the review committee and the subject-matter department head, who is invited to participate in the review process.

Final Submission - The project leader complies with the recommendations of the Project Review Committee and submits the revised proposal to the department/unit head, accompanied by a letter delineating the changes made in response to the recommendations of the reviewers and/or a rebuttal for any recommendations, which the Project Leader does not accept. The project leader enters CRIS Forms AD-416 and AD-417 on the CRIS website.

The chair signs Form AD-416 and transmits the above items to the VAES director accompanied by a letter listing names of the reviewers and date of the oral review (if applicable). For McIntire-Stennis proposals, the Administrative- Technical Representative (A-TR) must sign Form AD-416, certifying the proposal complies with the purposes of the McIntire-Stennis Act.

The VAES director or associate director meets with the chair, department head, and project leader if there are any questions or concerns. When the project leader, the department/unit head, the chair of the project review committee, and the director agree the proposed project should be accepted, the director approves it, assigns a project number, enters Form CSREES-2008, and transmits the proposal, CRIS Forms AD-416, AD-417, and CSREES-2008 electronically to CRIS/CSREES/USDA. The CSREES project reviewer may contact the director, assistant/associate director, or project leader with questions or for additional information. If a proposed project is deferred, the CSREES project reviewer notifies the director, who confers with the project leader, department/unit head, and chair of the project review committee to resolve concerns.

After approval by CSREES, the director sends copies of Forms CSREES-166 (Project Review and Comment Sheet), AD-416, AD-417, and CSREES-2008 to the chair of the project review committee, department/unit head, and project leader. These documents, the proposal, and all pertinent correspondence are retained in the official project file in the VAES director's office for three years after termination of the project.

Program Review of VSU Agricultural Research

In March 2007, all programs at the School of Agriculture including those in Agricultural Research were reviewed by external experts. A six-member team selected by USDA-CSREES visited Virginia State University to conduct the review over a four-day period. The team reviewed programs, listened to faculty presentations, visited facilities, and talked to administrators. At the end of their visit, they made an oral presentation of their findings to faculty, staff and administrators. They also submitted a written report on the state of the School of Agriculture programs and made recommendations on the future direction of agricultural research at VSU. Implementation of these recommendations has already started.

Development of Proposals - Any applicant at ARS who desires to submit a proposal for consideration must first complete and submit a Request for Approval to Submit Proposals Form to the Director of Research. The Director of Research reviews the pre-proposal and notifies the applicant about a decision whether the proposal can be developed fully or not. All appropriate University and funding agencies'

policies, procedures and guidelines should be adhered to when developing a proposal. Proposal development and submission deadlines are governed by the following: 1) Review and approval of Request for Approval to Submit Proposal Form takes one working day, and 2) University review and approval takes up to five working days.

Review of Full Evans-Allen Proposal - A full proposal is submitted by applicant(s) to the Director of Research for review by external anonymous experts in the respective fields. The Director of Research's Office facilitates this process. The reviewers could be from Virginia Tech, other Land Grant Universities, or State and Federal agencies. The proposal is reviewed for addressing the needs of the state and people of Virginia and the United States, the degree of relevance of the proposed research to the land-grant mission and priorities of the University, the need for initiation of research in new areas, and other matters related to grantsmanship. The reviewers are asked to pay particular attention to scientific and technical merit, opportunities for cooperation in the proposed research with other individuals and units within the University and the Virginia clientele.

Functions of the reviewers are: 1) to review all proposals for scientific and technical merit, 2) to ensure that all proposals fulfill the land-grant mission and priorities of the University, 3) to ascertain that what is being proposed lies within the full range of expertise and capability of the investigators and the University, not withstanding their official duties, responsibilities, and assignments, and 4) to assist applicants with acceptable proposals in locating outside peers to further review the proposals, if necessary for substance and overall quality. Based on the external reviewers' comments, the Director advises the applicant to address the concerns about the proposal or develop another one that incorporates the relevant suggestions.

Extension Review Process

The review process for Extension covers all programs conducted by VCE. VCE Program Teams (PT) develop Extension programs. The PTs review programs on an annual basis and make decisions to maintain, modify, or create new programs to meet the needs identified through external and internal stakeholder input. An annual situation analysis conducted by local Extension units with volunteer Extension Leadership Councils and other groups and a booklet of emerging trends and issues provided by specialists informs this process. Details on the annual programming cycle are found at:

http://intra.ext.vt.edu/support/process/documents/2010VCEProgCycleTasksandActionSteps.pdf

VCE addresses a broad range of problems and issues facing citizens of the Commonwealth through focused educational programming. This is accomplished and reported through VCE's fourteen PTs and State Program Leaders who serve as partners for each PT. A web-based planning and reporting system organized around the sixteen Planned Programs includes outputs and outcomes operationalized by annual program plans and reports. Plans are built on strategic issues through situation analysis. This process collaboratively determines social, economic, and environmental problems at local, regional, and state levels. This becomes the background and rationale for deciding which problems and issues will be addressed with VCE time, energy, and human and fiscal resources.

Problems and issues identified through situation analysis are communicated throughout VCE and educational program plans are developed by interdisciplinary PTs composed of specialists and agents. These teams are organized around and reflect the breadth and scope of priority problems and issues facing the citizens of the Commonwealth. Program proposals identify programming outputs, outcomes, and an evaluation plan to be conducted by the PTs. The program proposals are reviewed by VCE programming leadership.

Program proposals from PTs are distributed to all agent and specialist faculty on the VCE intranet and electronic planning "buy in" process. Faculty select programs for their situation by providing specific information, including the amount of time they plan to devote to the program. At the end of the year, each local unit and campus faculty member completes an annual accomplishment report documenting program relevance, response, and results through a narrative and impact statements.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- ☑ Use of media to announce public meetings and listening sessions
- ☑ Targeted invitation to traditional stakeholder groups
- ☑ Targeted invitation to non-traditional stakeholder groups
- ☐ Targeted invitation to traditional stakeholder individuals
- ☐ Targeted invitation to non-traditional stakeholder individuals
- ☑ Targeted invitation to selected individuals from general public
- ☑ Survey of traditional stakeholder groups
- ☑ Survey of traditional stakeholder individuals
- ☐ Survey of the general public
- ☐ Survey specifically with non-traditional groups
- ☐ Survey specifically with non-traditional individuals
- ☐ Survey of selected individuals from the general public
- ☑ Other (focus groups, listening sessions, issue forums, key informant interviews)

Brief explanation.

Virginia Cooperative Extension works with stakeholders to receive input though local Extension Leadership Councils and many other citizen groups at local and regional levels. The citizen groups reflect the socio-economic composition of their communities and focus on conducting programs which produce outcomes based on priority needs.

A systematic analysis of educational needs is integral for VCE program planning. Through situation analysis, needs of stakeholders are assessed, analyzed, and then shape program direction and plans. Traditional methodologies include surveys, key informant interviews, issue forums, listening sessions and focus group interviews. To encourage participation, surveys are conducted with paper and web-based response options. Issue forums, listening sessions, and focus group interviews are held in multiple locations throughout service areas in convenient and comfortable environments for non-traditional and traditional stakeholders. Specific efforts are made to assess needs where underrepresented populations reside, and to market input sessions through communication channels used by targeted sectors of the population.

Representation on local Extension Leadership Councils (ELCs) includes all VCE programming areas: 4H/Youth Development (4H), Family and Consumer Sciences (FCS), Agriculture and Natural Resources (ANR), and Community Viability. Currently, all 106 Extension units in Virginia have an organized local ELC and all Agriculture Research and Extension Centers (ARECs) have active advisory councils. At the state level, VCE works with stakeholders through the state Leadership Council (VCELC). The group includes volunteers representing 22 planning districts in Virginia, at-large members appointed by the director of VCE, leaders representing Virginia's diverse population, businesses, agencies, organizations, VCE District Directors, chairs of VCE FCS, and 4H leadership councils, VCE Director from VT, VCE Administrator from Virginia State University, and deans of VSU and VT Colleges of Agriculture including the associate dean for research. State and local ELC meetings are held at times and locations convenient for the membership.

Virginia is a large, diverse state and as such, meeting locations are geographically distributed to ease travel burdens for members. Travel expenses are covered by VCE administration for

meeting attendance. A faculty member works directly with the VCELC to assist with organizational development and logistics. The VSU Extension program works with stakeholders through the VCELC for the systematic analysis of educational needs to plan Extension programs. To ensure that adequate stakeholder input is received from limited-resource and underserved audiences, VSU Extension is also informed by a VSU Agricultural Advisory Committee. Formed in 2008, the 15-member committee consists of members from agricultural commodity groups, the agri-business community, and public education. Other members include Extension professionals and volunteers, farmers, and a local legislator who advocates for the VSU School of Agriculture. All members work closely with or are aware of the needs of VSU's clients.

Advisory Committees informs teaching, research, and Extension programs within VSU's School of Agriculture. VCE advisory committee member guidelines were used as a basis for selecting VSU Agriculture Advisory members. Committee members represent the Extension program areas of 4-H, agriculture and natural resources, and family and consumer sciences and are invited to serve by the Extension Administrators and Dean of the School of Agriculture. VCE and the ARECs have long facilitated grassroots involvement, buy-in, and ownership in local programs. VCE formally connects with the grassroots of the state through partnerships with local volunteer ELCs. For the Virginia Agriculture Experiment Station (VAES), volunteer advisory councils provide stakeholder input. These partnerships represent the diversity of local clientele, communities, and industries across the Commonwealth.

During 2010, Extension concluded a statewide strategic planning process. Virginia Cooperative Extension's strategic plan will guide Extension programs over the next five years. In total, Virginia Cooperative Extension hosted 48 dialogues at varying locations across Virginia that included traditional and nontraditional stakeholders. Virginia Cooperative Extension also hosted five sessions located at varying locations across the State during which the draft strategic plan (preliminary findings from listening sessions) were tested with participants to assure the plan accurately reflected their input. Over 1,200 individuals participated in the process, which resulted in a long-range plan that produces measurable impacts utilizing a program evaluation process that justifies human and financial resource allocations.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- ☑ Use Advisory Committees
- ☐ Use Internal Focus Groups
- ☑ Use External Focus Groups
- ☑ Open Listening Sessions
- ☐ Needs Assessments
- ☑ Use Surveys
- ☑ Other (Extension Leadership Councils)

Brief explanation.

The Virginia Agricultural Experiment Station (VAES) conducts research relevant to the needs and priorities of the citizens of the Commonwealth. Research projects are established based on the input of advisory committees at each of the thirteen Agricultural Research and Extension Centers (ARECs) distributed across the state. The twelve academic departments within the College of Agriculture and Life Sciences each maintain stakeholder groups and the College has its own advisory committee of producers, commodity groups, and agribusiness leaders that provide important feedback to VAES. VAES provides research-based input to the VCE programming

process through faculty research and Extension specialists and administratively through AREC directors and statewide Extension program leaders. VCE formally establishes connectivity with the grass roots of the state through partnerships known as Extension Leadership Councils (ELCs). At the local level, this partnership represents the diversity of each county and city in which VCE exists as a resource.Representation includes VCE programming areas (4-H/Youth Development, Family and Consumer Sciences, Agriculture and Natural Resources and Community Viability), community leaders, and other organized community, agricultural, and youth associations and entities who partner with VCE. Extension staff and Leadership Council members work as equal partners to determine needs, establish program priorities, plan and implement solutions, identify and secure resources, market VCE and its programs, and evaluate and report program results/impacts to program stakeholders. Currently, all 107 Extension units in Virginia report having an organized local ELC. At the state level, local connectivity is achieved through the Virginia Cooperative Extension Leadership Council (VCELC). The partnership includes volunteer leaders representing the 22 planning districts of Virginia, at-large members appointed by the director and administrator, all VCE District Directors, all chairpersons of VCE state program leadership councils for FCS and 4-H, the VCE Director (VT), the VCE Administrator (VSU), the director of governmental relations at VT, and the deans of the 1862 and 1890 land grant colleges. Extension provides a formal mechanism for VSU and VT to receive stakeholder input for Extension and research programs. The situation analysis process in communities examines and determines what issues, problems, and opportunities exist that VCE resources should address http://www.ext.vt.edu/vce/support/process/situation.html).An essential component of the process includes development of a unit profile (http://www.ext.vt.edu/vce/support/unitprofiledata.html). The unit profile developed by local agents is shared with ELCs to determine which key informants should be involved in situation analysis (http://www.ext.vt.edu/vce/support/keyinterviews.doc).

During the reporting period, Virginia Cooperative Extension concluded a strategic planning process involving over 1,200 traditional and nontraditional stakeholder groups. A committee of 25 identified state agencies, nonprofit and corporate citizens that were invited to attend one of three external stakeholder listening sessions. The cumulative list exceeded 350 leaders from organizations.

An additional 45 sessions were conducted across that state with key stakeholder groups such as the state Extension Leadership Council, local ELC chairs and internal groups including agents and campus-based faculty. Open sessions were conducted in every planning district of the State with open invitations posted in newspapers and announced through the utilization of social marketing, newspaper and radio announcements. Posters announcing sessions and extending an invitation to participate were distributed and posted throughout every county/city in the State.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- ☑ Meeting with traditional Stakeholder groups
- ☑ Survey of traditional Stakeholder groups
- ☑ Meeting with traditional Stakeholder individuals
- ☑ Survey of traditional Stakeholder individuals
- ☑ Meeting with the general public (open meeting advertised to all)

- ☑ Survey of the general public
- ☐ Meeting specifically with non-traditional groups
- ☐ Survey specifically with non-traditional groups
- ☐ Meeting specifically with non-traditional individuals
- ☐ Survey specifically with non-traditional individuals
- ☐ Meeting with invited selected individuals from the general public
- ☐ Survey of selected individuals from the general public
- ☑ Other (focus groups, key informant interviews, public issues forums, listening sessions)

Brief explanation.

A systematic analysis of educational needs is integral for VCE program planning. Through situation analysis, needs of stakeholders are assessed, analyzed, and then shape program direction and plans. Traditional methodologies include surveys, key informant interviews, issue forums, listening sessions and focus group interviews. To encourage participation, surveys are conducted with paper and web-based response options. Issue forums, listening sessions, and focus group interviews are held in multiple locations throughout service areas in convenient and comfortable environments for non-traditional and traditional stakeholders. Specific efforts are made to assess needs where underrepresented populations reside, and to market input sessions through communication channels used by targeted sectors of the population.

Virginia Cooperative Extension hosted 48 strategic planning dialogues, including over 1200 traditional and nontraditional stakeholders. Through a structured, facilitated process, input was solicited with results being used to guide Extension programming over the next five years.

3. A statement of how the input will be considered

- ☑ In the Budget Process
- ☑ To Identify Emerging Issues
- ☐ Redirect Extension Programs
- ☐ Redirect Research Programs
- ☐ In the Staff Hiring Process
- ☑ In the Action Plans
- ☑ To Set Priorities
- ☑ Other (staff professional development)

Brief explanation.

Input from stakeholders involved in situation analysis and strategic planning is utilized to shape Extension programming from a state and local perspective. Issues that are identified are researched in a collaborative process involving campus and field based faculty, with curriculum developed to shape educational programming delivered throughout Virginia by agents and volunteers. Identified needs and resulting educational programming frame Extension's budget, action plans, priorities as well as volunteer and staff development needs. Input also shapes the plan of work for VCE, VAES and VARS.

Brief Explanation of what you learned from your Stakeholders

A team of Extension facilitators, site coordinators, and recorders along with researchers led by Dr. Donna Moore recorded the 12,000 comments from the 48 listening sessions. Once the comments were recorded, Dr. Moore worked with each of the session facilitators and site coordinators to review the transcripts and identify any gaps or potential errors in the transcripts. All recorded comments were linked by key words, then printed and published for review by the Steering Committee.

The Steering Committee was charged with reviewing each of the 12,000 comments during a three-day planning session led by Dr. Howard Ladewig in February 2010. Steering committee members were grouped in the four original teams that had developed and managed plans for gathering feedback from 1) internal agents and staff; 2) internal campus and center faculty and staff; 3) external state-level stakeholders; and 4) external local stakeholders.

Common Themes

Each team spent hours reading the comments, identifying common themes, and linking other dialogue statements to each theme. As the teams brought their findings to the full group, it was interesting to watch how different groups reported similar themes identified by the various internal and external stakeholder audiences.

By the end of the planning session, six focus areas had emerged, and writing teams were assigned. Teams expanded participation for their groups to include stakeholders internal and external to Extension. You are encouraged to engage in this effort that is so critical for Extension. The writing teams addressed each of the following focus areas:

* Value-enhanced agriculture
* Sustainable natural resources and environment
* Healthy living for youth (obesity)
* Building capacity for communities. (resiliency)
* Healthy families and communities
* Organizational excellence

These six focus areas align with the college's key initiatives: 1) agricultural and environmental sustainability; 2) food, nutrition, and health; 3) biodesign and bioprocessing; 4) the Green industry; 5) Infectious diseases; and 6) community viability. In addition, the Steering Committee also found the six Extension focus areas to support USDA-NIFA priorities 1) global food security and hunger; 2) climate change; 3) sustainable energy; 4) childhood obesity; and 5) food safety.Additional coordination is required with the central themes of the College of Natural Resources at Virginia Tech, the Virginia-Maryland Regional College of Veterinary Medicine, and the goals of the School of Agriculture at Virginia State University.

Contained within each focus area are multiple overarching issues (e.g., obesity) identified during the internal and external sessions that required collaboration between the writing teams to develop cross-disciplinary goals and objectives. In addition, the organizational excellence team developed plans for community impact reporting and the accountability process when working in cross-disciplinary programming.

Each team created program goals and objectives that are unique to Extension and responsive to Virginia's identified issues.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
7152676	2368924	4683210	2660840

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	8045842	2368924	3775414	2660840
Actual Matching	9127058	2106165	12726960	2660840
Actual All Other	22384837	1081199	46388831	384772
Total Actual Expended	39557737	5556288	62891205	5706452

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	0	0	102433

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Agricultural and Food Biosecurity
2	Childhood Obesity
3	Climate Change and Natural Resources
4	Families and Communities
5	Family Finance and Community Viability
6	Food, Nutrition, and Health
7	Food Safety
8	Global Food Security and Hunger - Agricultural Systems
9	Global Food Security and Hunger - Animals and Animal Products
10	Global Food Security and Hunger - Biotechnology and Genomics
11	Global Food Security and Hunger - Agricultural Management, Marketing and Policy
12	Global Food Security and Hunger - Family Nutrition Program
13	Global Food Security and Hunger - Local Food Systems
14	Global Food Security and Hunger - Pest Management
15	Global Food Security and Hunger - Plants and Plant Products
16	Sustainable Energy
17	Youth Development

Add previously unplanned program

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Agricultural and Food Biosecurity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
136	Conservation of Biological Diversity	15%	0%	0%	0%
307	Animal Management Systems	15%	0%	0%	0%
311	Animal Diseases	10%	0%	0%	0%
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	10%	0%	0%	0%
315	Animal Welfare/Well-Being and Protection	10%	0%	0%	0%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%	0%	0%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	15%	0%	0%	0%
903	Communication, Education, and Information Delivery	15%	0%	0%	0%
	Total	100%	0%	0%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	4.5	1.0	4.9	0.0
Actual	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
0	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The work previously planned in this Planned Program is being reported in other Planned Programs.

2. Brief description of the target audience

The work previously planned in this Planned Program is being reported in other Planned Programs.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	1000	1500	50	100
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	2	7	
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational meetings, workshops, conferences, and training sessions

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	12	0

Output #2

Output Measure

- Number of commercial poultry operations audited for adherence to the Virginia Poultry Federation Biosecurity Guidelines

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	5	0

Output #3

Output Measure

- Number of newsletters, fact sheets, publications and other print resources

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	30	0

Output #4

Output Measure

- Number of websites

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	2	0

Output #5

Output Measure

- Number of research studies conducted

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	3	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of animal premises registered in conjunction with the National Animal Identification System
2	Number of commercial poultry growers adopting biosecurity practices to lower the risk of disease transmission
3	Number of food companies who register with FDA and prepare a food biosecurity plan
4	Number of Virginia soybean growers aware of Asian soybean rust risk to their crop.
5	Number of Virginia soybean growers who apply fungicide based on Asian soybean rust detection activities.

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Number of animal premises registered in conjunction with the National Animal Identification System

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☐ 136 - Conservation of Biological Diversity
- ☑ 307 - Animal Management Systems
- ☑ 311 - Animal Diseases
- ☑ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☑ 315 - Animal Welfare/Well-Being and Protection
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and
- ☐ 903 - Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Number of commercial poultry growers adopting biosecurity practices to lower the risk of disease transmission

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	200	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☐ 136 - Conservation of Biological Diversity
- ☐ 307 - Animal Management Systems
- ☑ 311 - Animal Diseases
- ☑ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☑ 315 - Animal Welfare/Well-Being and Protection
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and
- ☐ 903 - Communication, Education, and Information Delivery

Outcome #3

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Number of food companies who register with FDA and prepare a food biosecurity plan

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	70	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☐ 136 - Conservation of Biological Diversity
- ☐ 307 - Animal Management Systems
- ☐ 311 - Animal Diseases
- ☑ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☐ 315 - Animal Welfare/Well-Being and Protection
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and
- ☐ 903 - Communication, Education, and Information Delivery

Outcome #4

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Number of Virginia soybean growers aware of Asian soybean rust risk to their crop.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	200	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☑ 136 - Conservation of Biological Diversity
- ☐ 307 - Animal Management Systems
- ☐ 311 - Animal Diseases
- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☐ 315 - Animal Welfare/Well-Being and Protection
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and
- ☑ 903 - Communication, Education, and Information Delivery

Outcome #5

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Number of Virginia soybean growers who apply fungicide based on Asian soybean rust detection activities.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	150	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☑ 136 - Conservation of Biological Diversity
- ☐ 307 - Animal Management Systems
- ☐ 311 - Animal Diseases
- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☐ 315 - Animal Welfare/Well-Being and Protection
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and
- ☐ 903 - Communication, Education, and Information Delivery

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☑ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

The work previously planned in the Planned Program is being reported in other Planned Programs.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☐ During (during program)
- ☑ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

The work previously planned in the Planned Program is being reported in other Planned Programs.

Key Items of Evaluation

The work previously planned in the Planned Program is being reported in other Planned Programs.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Childhood Obesity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	20%	0%	35%	0%
703	Nutrition Education and Behavior	40%	70%	35%	0%
724	Healthy Lifestyle	40%	30%	30%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	5.5	0.5	5.9	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
171228	88810	119824	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
194237	78042	403927	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
476383	0	1472282	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct educational classes, workshops, short courses, meetings, seminars, and trainings for children, parents, teachers, school nutrition staff, and health and other professional groups; develop curriculum, newsletters, and other educational resources; establish and implement train-the-trainer models to promote educational opportunities; facilitate local and statewide coalitions and/or task forces; conduct assessments and community surveys; partner with community agencies and institutions to facilitate programs and community development; contribute to the creation/revision of social systems and public policies; conduct research studies and disseminate program and research results to both the professional community and lay public through journal articles, papers, reports, and public media; develop and implement marketing strategies using various outlets to promote program participation, with special attention to underserved and disadvantaged audiences; disseminate research-based information to lay audiences and address emerging needs using a variety of media and innovative technology resources; cooperate with media and other community agencies to seek effective means of targeting new and non-traditional audiences; and respond to consumer inquiries.

2. Brief description of the target audience

Young children (ages 2 - 5 years); school-age children; adolescents; parents; grandparents; caregivers (foster parents, in-home and for-profit day care providers); teachers and other school faculty for young children, youth, and adolescents; school nutrition directors and staff; school wellness committees; school health advisory boards; school nurses and other health care providers; and Extension educators.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	1527	1449	14610	19367

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	12	4	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of pre-school age youth participating in Extension nutrition education, physical activity, or other obesity-prevention programs at childcare centers or schools.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	320

Output #2

Output Measure

- Number of elementary, middle, and high school-age youth participating in Extension nutrition education, physical activity, or other obesity-prevention programs in school, after-school, or recreational settings.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	2656

Output #3

Output Measure

- Number of Head Start and preschool teachers, day care providers, elementary and secondary school teachers, school nurses, school nutrition directors, and school health and wellness committee members participating in Extension training for implementing nutrition education, physical activity, and other obesity-prevention programs reaching children and their parents.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	100

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of pre-school age youth who try more new foods, consume more fruits and vegetables, eat a wider variety of foods, or increase their physical activity after participation in an Extension nutrition education, physical activity, or other obesity-prevention program at a Head Start or child care center or school.
2	Number of select elementary, middle, or high school age youth who gain knowledge and awareness of nutrition, physical activity, or positive body image or improve at least one health- related behavior after participation in an Extension nutrition education, physical activity, or other obesity-prevention program in a school, after-school, or recreational setting.
3	Number of Head Start and preschool teachers, day care providers, elementary and secondary school teachers, school nurses, school nutrition directors, and school health and wellness committee members participating in Extension training who implement a nutrition education, physical activity, or other obesity-prevention activity in their preschool, elementary or secondary school, or after-school or recreational setting.
4	Cultivating Change Youth Garden
5	Eat Smart, Move More, VA Tech Hokies Do! Social Marketing Campaign.
6	Nutrition Education in the Classroom: Collaborator Volunteer Teachers extend the reach of the Family Nutrition Program and Combat Childhood Obesity.

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of pre-school age youth who try more new foods, consume more fruits and vegetables, eat a wider variety of foods, or increase their physical activity after participation in an Extension nutrition education, physical activity, or other obesity-prevention program at a Head Start or child care center or school.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	288

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
An estimated 13.9% of preschool-aged children in the United States are overweight. Good nutrition and physical activity is important to the growth, development, and emotional well-being of young children and to prevent childhood overweight.

What has been done
VCE Educators conduct a wide variety of age-appropriate programs for pre-school aged youth, including the Food Friends and Mighty Moves program. Food Friends and Mighty Moves, a 12-week multi-faceted awareness and education program, promotes healthful habits, literacy, and skill building among preschool-aged children by encouraging children to try new foods and new physical activities.

Results
Teachers reported improvements in the following areas: children trying more new foods; children eating more fruits and vegetables; children eating a wider variety of foods, and children acquiring important fine and gross motor skills. Overall, the program was found to be successful in improving children's dietary and physical activity practices.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of select elementary, middle, or high school age youth who gain knowledge and awareness of nutrition, physical activity, or positive body image or improve at least one health-related behavior after participation in an Extension nutrition education, physical activity, or other obesity-prevention program in a school, after-school, or recreational setting.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	2390

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Recent data indicate 17% of children and adolescents are obese. Obese children are more likely to have high blood pressure, high cholesterol, and type 2 diabetes, and a tendency to be overweight and obese as adults. Childhood obesity also has social, psychological, and economic consequences. Large children report lower self-esteem, sadness, marginalization, and lower quality of life than healthy weight children and cost approximately $72 more per year in health-related costs.

What has been done
In 2010, VCE-Family and Consumer Sciences programs reached 3076 Virginia youth and families through educational programs focused on food, nutrition, and health. Extension Educators partnered with local and state agencies, including schools, to provide numerous education programs across the commonwealth annually, including: an innovative inter-generational program between preschoolers and seniors as 'buddies' titled Healthy You; Suppers Made Simple, simple, nutritious cooking for families and children; and Healthy Weights for Healthy Kids, a program

aimed at youth between 7 and 14 years old to prevent childhood overweight.

Results

Healthy You resulted in teachers reporting that children were more willing to sample fruits and vegetables at the end of the program. Families who completed the six-series Suppers Made Simple program reported: including at least one fruit and one vegetable as a part of the evening meal, increasing from 2.8 to 5.5 times per week; including at least one whole grain food with the evening meal, increasing from 1.7 to 3.5 times per week; children participating in food preparation, increasing from 2.2 to 5.3 times per week; and decreases in the number of times they purchased foods from restaurants from 5 to 1 time per week. Finally, Healthy Weights for Healthy Kids has consistently found that children: increase fruits and vegetables eaten (by 85%); limit sweet snacks (82%); read food labels (83%); consumer more milk (94%). Finally, in one training program for teachers and health professionals working with youth, participants demonstrated that 91% of the participates, on a scale of 1-5 (one being poor and 5 begin excellent) increased their knowledge about making positive changes in their diet as well as the importance of understanding the prevention of childhood diabetes as a result of attending a training.

4. Associated Knowledge Areas

- ☑ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of Head Start and preschool teachers, day care providers, elementary and secondary school teachers, school nurses, school nutrition directors, and school health and wellness committee members participating in Extension training who implement a nutrition education, physical activity, or other obesity-prevention activity in their preschool, elementary or secondary school, or after-school or recreational setting.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Recent data show that 17% of children 6 to 19 years old, and 27% of adults are obese. Obese children are more likely to become obese as adults, at a rate as high as 50%. Combined with other risk behaviors, such as low educational attainment, crime, asthma, and drug abuse, weight status and fitness level prevent nearly 75 percent of Americans 17 to 24 years old from joining the military. This has a clear impact on Virginia. Virginia has 22 military facilities, including army, navy, marine, air force, and coast guard, employing over 120,000 people. Other professions in public safety like police, fire, and rescue also require fit and able individuals too. Childhood obesity also has a huge economic impact on Virginia and the nation. It is estimated to cost $14.1 billion in outpatient costs and $237.6 million in inpatient costs every year.

What has been done
Extension Educators partnered with childcare centers, schools, and other local and state agencies and non-profit groups to provide numerous education programs for youth on nutrition and physical activity to address childhood obesity.

Results
As part of the Food Friends and Mighty Moves pre-school program, teachers reported personally eating more fruits and vegetables and a wider variety of foods, as well as being more active during the day as a result of staff training and implementation of the program. In one training program for teachers and health professionals working with youth in schools, 91% of participants increased their knowledge about making positive changes in their diet, as well as the importance of understanding the prevention of childhood diabetes, a consequence of childhood obesity, as a result of attending the training.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Cultivating Change Youth Garden

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity is the #1 nutritional problem in America, and the second leading cause of preventable deaths in the United States, behind tobacco use. According to the Virginia Foundation for Healthy Youth, 1 in 5 young people between the ages of 10 and 17 in the state is obese or overweight. Research indicates that minority youth and boys are more likely to be overweight for their ages compared to white, non-Hispanic children and girls. Only 4% of young people meet the USDA recommendations of 5 servings of fruits and vegetables per day.

What has been done
In conjunction with the academic and research components of the VSU School of Agriculture, a community and youth gardening initiative was created entitled, "Cultivating Change". "Cultivating Change" is a garden-based/learning community and youth development project whose goal is to promote healthy eating and healthy lifestyles. Located on VSU's Randolph Farm, the ¼ acre garden was developed and designed by 24 youth and 12 adults in partnership with the Department of Parks and Recreation and served as an ideal environment for growing food, exercise, fresh air, and developing new life skills. The garden focused on teaching academic and life skills, teaching youth and adults to grow and increase vegetable consumption, and connecting youth and adults to their communities to work together to solve issues. Specific activities within the initiative included designing the garden layout, planting and harvesting vegetables and flowers, preserving food, preparing, cooking and serving food, studying the nutritional content of recipes, and developing artwork using harvested products.

Results
Upon completion of the Cultivating Change Gardening project during summer 2010, the 24 youth who participated demonstrated increased knowledge and skills in environmental awareness, growing, maintaining, harvesting and preparing fresh fruits and vegetables, time management, and improved social skills. Additionally, they self reported an increased level of physical activity and nutritional awareness, made healthier food choices that promote good nutrition, increased knowledge of food safety, quality and food preservation and developed an awareness of the importance of supporting local farmers and farmers markets.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Eat Smart, Move More, VA Tech Hokies Do! Social Marketing Campaign.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The National Health and Nutrition Examination Survey (NHANES) of 2007-2008, concluded that 17% of children and adolescents, ages 2 ? 19 years, are obese. The prevalence and severity of childhood overweight has increased dramatically in the past three decades and is recognized as a serious public health concern that requires urgent action (Retrieved on December 14, 2010 from http://www.cdc.gov/obesity/childhood/index.html).

Seventy ? five percent of potential soldiers are declined acceptance into the United States military, and weight status is the number one reason why they are unable to join (Mission: Readiness, 2010). An overweight or obese child accrues approximately 72 dollars more in medical costs each year than a healthy weight child (Estabrooks, Shetterly, 2007, p. 225). Energy intake, physical activity, sedentary behavior, and environmental factors all contribute to childhood obesity, thus should be the focus of any childhood obesity intervention aimed at modifying risky behaviors (Retrieved on December 14, 2010 from http://www.cdc.gov/obesity/childhood/index.html).

What has been done
A social marketing campaign promoting ?Eat Smart, Move More, VA Tech Hokies Do? message related to food choices and physical activity was conducted in Virginia. Children frequently have athletes who are their role models. The campaign consisted of billboards throughout Virginia where there is a high level of poverty, posters on buses traveling through high poverty areas, and posters distributed throughout Virginia in schools where there is a high level of poverty, and a web presence.

Results
Three thousand seven hundred twenty three children were surveyed to assess their perceptions of the campaign which resulted in qualitative and quantitative data. Through qualitative data, it is clear that children perceived the athletes to be positive role models who ate healthy and were physically active. Through the quantitative data we learned that 79% of the children were likely to follow the athletes? suggestions for eating smart and moving more.
Seventy four percent of the children were likely to discus with their parents ideas about eating healthy foods, and 89% of the children were confident that they could be an athlete by eating smart and moving more.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Nutrition Education in the Classroom: Collaborator Volunteer Teachers extend the reach of the Family Nutrition Program and Combat Childhood Obesity.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity and overweight continue to be health concerns for children, youth and adults in Virginia. In May 2010, statewide survey results from the Virginia Department of Health revealed that 1 in 5 Virginia children were obese or overweight. It further stated that minority youth (26%) are more likely to be overweight or obese for their age compared to white, non-Hispanic youth (19%). Residents? annual state and federal tax burden from obesityrelated government spending is estimated at $222 per household. Reaching adults in families of low socioeconomic background with nutrition information continues to be challenging. These individuals struggle to provide the necessities of life, often working at multiple low-wage jobs. Children influence the purchasing choices of parents; therefore, providing nutrition education directly to children may positively influence family food choices.

What has been done

Engaging teacher volunteers to reach families by including nutrition education in the classroom is the most recent strategy employed by the Virginia Supplemental Nutrition Education Program (SNAP-Ed) Program. Teacher volunteer/ collaborators are recruited and trained in youth nutrition curriculum, provided with teaching resources and encouraged to share newsletters, fact sheets and recipes with parents from this diverse population. These volunteers include classroom teachers, school librarians, music teachers, physical education teachers and school nutrition departments. Classrooms include elementary schools, Head Start classrooms, after school programs and early education centers.

Results

During the 2010 pilot program in northwest Virginia, 184 classroom teachers were recruited and trained to teach Healthy Weights for Healthy Kids and Literacy, Eating and Activity for Preschoolers. These teacher/volunteers reached approximately 1500 children. Post program volunteer observations indicate children who participated in LEAP were more likely to try new foods and more often chose fruits and vegetables at lunch. Teacher volunteers are being trained across Virginia in 2011 and hopefully the classroom education will eventually result in healthier children and decreased citizen tax burden.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☐ Appropriations changes
- ☑ Public Policy changes
- ☐ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

The economy (i.e. employment opportunities, etc.) can directly influence food purchases and food security of families and caregivers of children and furthermore weight status.

Public policy changes, particularly those directed at children, can also effect dietary and physical activity status of children. For example, the Child Nutrition & WIC Reauthorization Act of 2010 has recommended dramatic changes to foods offered at schools participating in the USDA school breakfast and lunch programs. Further, Virginia is currently considering legislation that would mandate physical education everyday in Virginia schools, thereby increasing the quantity of physical activity of all Virginia children attending schools. While these changes did not influence impacts or outcomes from 2010, they demonstrate the potential for external policy factors influencing children's behaviors.

Several populations, particularly Hispanic and African American individuals, have higher rates of obesity. With population shifts within Virginia, it is possible to see changes in childhood obesity prevalence rates.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☐ Before-After (before and after program)
- ☐ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study

- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

All major programs relating to children and youth are evaluated to determine program effectiveness, although outcomes may not be available from all locations statewide. Research funding has enabled us to expand our reach in various program areas and in that situation, data are gathered at every location.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Climate Change and Natural Resources

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	10%	10%	10%	0%
102	Soil, Plant, Water, Nutrient Relationships	10%	10%	10%	0%
104	Protect Soil from Harmful Effects of Natural Elements	10%	10%	10%	0%
111	Conservation and Efficient Use of Water	5%	5%	5%	0%
112	Watershed Protection and Management	10%	10%	10%	0%
123	Management and Sustainability of Forest Resources	15%	15%	15%	0%
124	Urban Forestry	5%	10%	5%	0%
131	Alternative Uses of Land	10%	10%	10%	0%
133	Pollution Prevention and Mitigation	10%	10%	10%	0%
135	Aquatic and Terrestrial Wildlife	10%	10%	10%	0%
403	Waste Disposal, Recycling, and Reuse	5%	0%	5%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	25.0	1.3	36.4	1.0
Actual	17.9	0.8	18.9	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
552247	101110	386458	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
626459	125717	1302754	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1536442	0	4748442	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Primary activity in this program include the following: developing and delivering educational programs such as short courses, workshops, field days and tours, seminars, conducting applied research and link with extension, develop and maintain demonstration areas, developing collaborative partnerships with government officials, state agencies, non-governmental organizations, developing and disseminating educational materials such as extension bulletins, journal articles, conference proceedings, trade journal articles, DVD's, and developing and maintaining web-based educational materials such as short courses, webinars, web sites, discussion boards.

2. Brief description of the target audience

Farmers, forest owners, loggers, Christmas tree growers, youth, homeowners, mill owners and workers, private consultants and companies, local governmental officials, waste water treatment operators, state and federal agencies, nongovernmental organizations, professional associations and societies, and community groups.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	60000	191800	30000	55300
Actual	70464	108614	49149	2041

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	7	15	
Actual	8	54	62

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs offered

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	900	621

Output #2

Output Measure

- Number of educational materials and curriculas developed

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	40	78

Output #3

Output Measure

- Number of applied research projects

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	70	104

Output #4

Output Measure

- Acres of land exposed to educational programming efforts.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	150000	235000

Output #5

Output Measure

- Identifiable impacts reported by agents/specialists

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	40	131

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased number of people adopting at least one new or improved land management practices.
2	Improved natural resource industries that contribute to community viability.
3	Increase in the number of forest or disturbed land acres with improved management practices.
4	Number of participants elarning about the quality of their private water supply and about private water system maintenance by participating in a county-based Virginia Household Drinking Water Program water testing clinic.
5	Increase in the number of individuals who gain knowledge as certified nutrient management planners.
6	Increase in the number of acres covered by nutrient management plans due to participation in Extension educational programs.
7	Increase in the tons of compost produced from organic wastes typically land-applied (manure, biosolids) or land-filled (yardwaste, biosolids, industrial sludge) as a result of increased knowledge and skills.
8	Increase in the number of acres with enhanced management systems as a result of certified land applicator training.
9	Increase in the number of people directly impacted by new or improved land management practices
10	Increased public awareness of biodiversity and ecosystem services.
11	Increased number of stakeholders involved in community natural resource management and decision-making.
12	Increase program participants understanding of raw material conversion and modern business management practices.
13	The general public, landowners, and loggers use the forest in alternative and traditional ways to increase value and profit.
14	Increase in the number of acres directly impacted by new or improved land management practices.

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increased number of people adopting at least one new or improved land management practices.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	250	325

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The lack of a reliable and highly efficient method for measuring soil phytase activity (PA) impedes efforts to elucidate the impact of this important phosphomonoesterase on phytic acid degradation. In soil, phytate-degrading phosphomonoesterases, including phytase, presumably play a unique role in converting phytic acid to nutrient P.

What has been done
Develop, verify and subsequently test a micro assay method for measuring PA in soil. The micro PA assay was developed using the novel chromophoric substrate analog of phytic acid, 5-O-[6-(benzoylamino)hexyl]-D-myo-inositol-1,2,3,4,6-pentakisphosphate (tethered (T)InsP5), which permits direct measurement of the phytase-catalyzed dephosphorylation reaction using reversed-phase high-performance liquid chromatography (RP-HPLC) with UV and/or mass spectrometry (MS) detection. TInsP5 can serve as an external standard for quantification of phosphorylated probe intermediate species on a molar basis, as UV-detection relies on the same benzamido chromophore (λmax 226 nm), which is unaffected by the number of phosphate groups present on the inositol moiety.

Results
The new micro PA assay method was successfully used to measure PA in several agricultural and forested soils. 'Chromatographic profiles' of soil-generated intermediates were established and a streamlined micro-assay approach for measuring PA was successfully used to examine the

influence of assay pH on soil PA. The identity of the soil-generated phosphorylated probe intermediate species was confirmed with RP-HPLC/UV/MS, which required use of a mobile phase that was compatible with ESI-MS. My results firmly establish that the RP-HPLC system is fully capable of distinguishing between phosphorylated probe intermediate species at the regioisomeric level. This specific type of analysis affords researchers the opportunity to determine the type(s) of phytase being produced by the soil inhabitants. This novel approach for measuring PA will provide soil/environmental scientists with the unique ability to evaluate phytate-P bioavailability, which will ultimately prove useful as a powerful tool in soil quality determinations.

4. Associated Knowledge Areas

- ☑ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☐ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Improved natural resource industries that contribute to community viability.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The overall goal of this program was to work to maintain and improve the health of the state's forest products industry. The majority of this year's efforts focused on the improvement of lumber drying operations through with several short courses and on-site instructional and evaluation sessions.

What has been done

Workshops, short courses, on-site visits, trades publications, phone and email correspondence.

Results

Companies have been able to reduce value losses through the drying operations by 15-20% and reduced drying times by 20% with an associated reduction in drying costs. These improvements have assisted the financial performance of these small businesses in Virginia.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☐ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☐ 131 - Alternative Uses of Land
- ☐ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of forest or disturbed land acres with improved management practices.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50000	48500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Invasive exotic plants plague agricultural producers, land managers, and homeowners alike. An estimated $26 to 35 billion annual in herbicide use and crop expenditures impact these groups. Many landowners are not aware of the presence of invasive plants on their own properties or the management implications. Natural resource professionals and citizen scientists have a basic awareness but lack knowledge and experience to effectively address and convey invasive species issues.

What has been done
Since 2007, Northern District Natural Resources Extension Agents, in collaboration with various public and private organizations, have delivered 34 educational events and 10 publications to raise awareness, increase knowledge, and initiate action against invasive exotic plants. These efforts target landowners, land care practitioners, and volunteers. A capstone event this year, the Good Green, Bad Green Conference, attracted participants from the Mid-Atlantic region for 2 days in the classroom and field. Additionally, scholarships have helped reach underserved audiences.

Results
Over 1,400 individuals have been engaged. On average, 68% plan to use practices they learned. Outreach marketing efforts have resulted in a significant increase in awareness of invasive species issues, evidenced by the creation of an annual statewide Invasive Species Removal Day as well as volunteer initiated outreach programs reaching over 1400 people a year. Additionally, following the recent capstone event, participants are considering establishing "cooperative weed management areas" throughout Virginia.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements

- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☑ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of participants elarning about the quality of their private water supply and about private water system maintenance by participating in a county-based Virginia Household Drinking Water Program water testing clinic.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	800	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The majority of households in 60 of Virginia's 95 counties rely on private water supply systems, such as wells, springs and cisterns. In 52 counties, the number of households using private wells is increasing faster than the number connecting to public water systems. Lack of knowledge about private water supply management and water quality issues may lead to system neglect and a lack of regular water testing, which can have real implications for water quality, longevity of the water system, and ultimately, the health of the families who rely on these systems.

What has been done

The Virginia Household Water Quality Program provides assistance to private water system users through county-based drinking water clinics. Working with local VCE agents, faculty in the Biological Systems Engineering (BSE) department coordinate clinics in 6-10 counties each year. Information is provided about groundwater, as well as protection and maintenance of wells, springs, and cisterns used for private water supply. At a kickoff meeting, clinic participants receive water sampling kits and instructions about how to collect a sample. Analysis, performed in the BSE Water Quality Lab, includes testing for 10 chemical contaminants and for the presence of potentially harmful bacteria. Test reports, an explanation of the results, and possible treatment options are presented to clinic participants at an interpretation meeting.

Results

The drinking water clinic held in Loudoun County reached 96 people with private water supply systems and provided analysis and follow-up interpretation of results for their household water. 1 participant was considered members of an underserved population.

A survey of 28 participants at the clinic in Loudoun County found:

32% will seek additional water testing or information from a laboratory

25% will determine the potential source of a problem with their water

29% will pump out their septic system

14% will grade area around their well or perform maintenance on well

4% will reduce herbicide or fertilizer use around well or spring

25% will shock-chlorinate water system

0% will obtain a new water source

14% will purchase or rent water treatment equipment

14% will improve functioning of existing water treatment equipment

14% will begin to use bottled water for drinking and/or cooking

86% will plan to share the information they learned about their water system with friends and neighbors.

A six month follow up survey of a sample of participants will gauge actual adoption of these behaviors.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management

- ☐ 123 - Management and Sustainability of Forest Resources
- ☐ 124 - Urban Forestry
- ☐ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☐ 403 - Waste Disposal, Recycling, and Reuse

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of individuals who gain knowledge as certified nutrient management planners.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	25	47

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

All large animal feeding operations in Virginia, biosolids applicators and many farms that receive cost share money, are required to have nutrient management plans. Nutrient management plans are designed to assist landowners and operators in the management of land application of fertilizers, biosolids, animal manures, and other nutrient sources for agronomic benefits, and for the protection of the Commonwealth's ground and surface waters. By state law, all of these nutrient management plans must be written by certified nutrient management planners. Individuals who might become certified to write nutrient management plans include representatives of private (e.g. fertilizer dealers, agricultural consultants, biosolids applicators) and public (e.g., Virginia Department of Conservation and Recreation, Natural Resource and Conservation Service) sector organizations and agencies.

What has been done

Twice a year we conduct a two day science-based training on soils and crop production that the planners undergo before taking the nutrient management exam. We also do the Phosphorus Index component of the three day session organized by the Department of Conservation and Recreation.

Results

This year we trained a total of 47 new nutrient management planners. These planners and those certified in previous years wrote over 200,000 acres of nutrient management plans for permitted farms this year.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☐ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☐ 123 - Management and Sustainability of Forest Resources
- ☐ 124 - Urban Forestry
- ☐ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☐ 403 - Waste Disposal, Recycling, and Reuse

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of acres covered by nutrient management plans due to participation in Extension educational programs.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	10000	200000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Soil testing forms the basis for accurate nutrient and lime applications to agricultural and urban soils. This helps farmers, homeowners and custom fertilizer application companies meet crop or plant nutrient requirements without over applying nutrients. The over application of nutrients is financially wasteful and can damage water quality through nutrient movement into rivers, streams and the Chesapeake Bay. In 2006-2007, Virginia consumed 848,397 tons of fertilizer worth several hundred million dollars. With such a large volume of fertilizer use in the state, accurate utilization is imperative financially and environmentally.

What has been done

In the past year the soil testing laboratory has analyzed soil samples from every county in Virginia, totaling over 50,000 samples from about 12,000 clients. All users of the lab were surveyed and 118 responded. Of these, 90% closely followed fertilizer and lime recommendations made by the Soil Testing Laboratory (STL). This indicates a high level of trust in our sample analysis and recommendation procedures.

Results

We found that the STL is well integrated with other extension resources, with 53% of our clients also having contact with agents, 16% with specialists and 33% using our online resources. We were the only contact with Virginia Cooperative Extension for 36% of our clients. Overall we had a 90% satisfaction rating.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☐ 112 - Watershed Protection and Management
- ☐ 123 - Management and Sustainability of Forest Resources
- ☐ 124 - Urban Forestry
- ☐ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☐ 403 - Waste Disposal, Recycling, and Reuse

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the tons of compost produced from organic wastes typically land-applied (manure, biosolids) or land-filled (yardwaste, biosolids, industrial sludge) as a result of increased knowledge and skills.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	100	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Municipal, agricultural, and industrial organic wastes can be sources of excess nutrients, anthropogenic toxic compounds, and animal and plant pathogens, whose direct application to land may impair soil health and water quality. Composting is a process that biologically converts raw organic wastes into stabilized organic matter with the potential to eliminate pathogens and breakdown organic toxicants to less harmful compounds, while generating a value-added soil amendment.

What has been done
We conducted educational programs to train compost professionals and potential composters in sound composting practices, how to assess compost quality, and how to use the finished compost product in the mid Atlantic region in an attempt to better achieve the CALS Initiative "Agricultural profitability and environmental sustainability." The instruction was science-based, much of which was derived from our own research on compost use for improving properties of degraded or impoverished soils, assessing essential plant nutrient availability and increasing soil carbon sequestration.

Results
Due to our work, there has been an increased amount of waste composted and finished product being used to amend soils in the mid Atlantic region.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☐ 111 - Conservation and Efficient Use of Water
- ☐ 112 - Watershed Protection and Management
- ☐ 123 - Management and Sustainability of Forest Resources
- ☐ 124 - Urban Forestry
- ☐ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of acres with enhanced management systems as a result of certified land applicator training.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	5000	8500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fertilizer prices reached unprecedented levels during late 2008 and early 2009. After falling considerably in 2010, fertilizer prices are on the increase again. Consequently, farmers continue to use organic nitrogen fertilizers for crop production. Bio-solids and pelleted bio-solids are both being used in the area. Producers need assistance in managing these products so that crop

production is economically maximized, and water quality is maintained. The pre-sidedress nitrate test (PSNT)in corn and tissue sampling in small grains are tools that can help producers better manage organic nitrogen sources in corn production. Tissue sampling can also be used to monitor crop nutrition and help producers detect and correct nutrient deficiencies. In addition, some federal cost-share programs, such as the Conservation Stewardship Program administered by NRCS, require tissue samples and pre-sidedress nitrate tests.

What has been done
22 pre-sidedress nitrate tests were run in the Essex Extension Office for any producer utilizing organic nitrogen fertilizer in corn production, and grant funds were used to support tissue testing through an area lab on over 50 tissue samples.

Results
Using the tissue sample results, producers were able to correct sulfur, manganese, and magnesium deficiencies in small grains and apply research-based nitrogen rates to small grains. Use of these tools and other practices, such as applying nitrogen only starter fertilizers to corn on fields testing high or very high in phosphorous, is allowing farmers to become more efficient in managing fertilizer in row crop production.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☐ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☐ 123 - Management and Sustainability of Forest Resources
- ☐ 124 - Urban Forestry
- ☐ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☐ 403 - Waste Disposal, Recycling, and Reuse

Outcome #9

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of people directly impacted by new or improved land management practices

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	500	1375

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Currently less than 15 percent of the 15.8 million acres of forest land in Virginia is being actively managed. This means only about 15 percent of private landowners in Virginia - who own three-quarters of Virginia's forests - are using scientifically-based information to make informed decisions about their forest. (2006 VDOF State Forester Report, Garrison). Providing the other 85 percent of forest landowners with this needed information is the main mission of the Virginia forest Landowner Education Program, and one of the main missions of the field-based Forestry and Natural Resources Extension agents.

What has been done
In 2007, Virginia Department of Forestry was approached by a private donor who had a desire to assist in landowner education efforts. The Educational Coordinator for VDOF then invited VCE and the VA Tech
Forest Landowner Education program to administer a program to meet this need. In the fall of 2008, the first state Landowner Weekend Retreat was held in the Appomattox/Buckingham State Forest - Holiday Lake 4-H Center. Twenty-four landowners participated.
Because of the positive response to the 2009 event, the program was continued in 2009 (with 38 participants) and 2010 (with 18 participants). A combination of classroom and field exercises comprise this event with topics such as estate planning, timber harvesting, alternative forest income opportunities, and wildlife management.

Results
A total of 80 participants owning 10,797 acres have attended the three retreats. One-hundred percent of participants indicated on the exit survey that topics and field events over the weekend would help them accomplish their land management objectives more effectively. Sixty percent of the participants indicated they would obtain a management plan and begin working toward at least one new management activity on their forestland. Funds supporting this program to date exceed $12,000, and plans are underway to expand and continue the landowner retreat.

4. Associated Knowledge Areas

- ☑ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☑ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

Outcome #10

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increased public awareness of biodiversity and ecosystem services.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	100	1100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Forests are Virginia's primary land cover. Because 68% of the Commonwealth's forests are privately owned, private forest landowners (PFLs) are an important link to meet the Commonwealth's goal that "Virginia's natural resources will be enhanced." Regionally, "private forestland stewardship" is a priority issue in the Northern District Forestry and Natural Resources Situation Analysis. Extension's Northern District holds 2.4 million acres of these woodlands. Traditionally, PFLs have been difficult to reach because of their sheer numbers and short

ownership tenure. Forestland ownership is turning over faster than ever as land continues to be sold and divided into smaller pieces. On average, a given piece of woodland will have a new owner every seven years or less. As a result, there is a continual need to educate new landowners and acquaint them with professional assistance availability. Research into forest landowner decision making repeatedly highlights the importance of planning, active management and professional assistance to maintain or enhance ecosystem integrity while meeting society's demands.

What has been done

A variety of venues provide forest landowners with learning and networking opportunities. Annual Landowners' Woods & Wildlife Conferences and Forestry and Wildlife Bus Tours showcase good management practices and connect landowners with local natural resource professionals. Peer-to-peer learning is facilitated through the Piedmont Landowners Association (PLA), a volunteer lead association that offers monthly educational and networking opportunities. Additional outreach targets forest landowners through online and printed media such as the On-line Woodland Options Course.

Results

An average of 1000 landowners, representing approximately 280,000 forested acres, participate in at least one educational offering each year. Participants of management related programs indicated an increase in knowledge and an intention to put practices into place. Follow-up evaluations reveal various implementations such as, completed management plans, controlled invasive plants, improved wildlife habitat and conducted successful timber sales. Approximately 30% of program participants contacted a natural resource professional following educational events.

4. Associated Knowledge Areas

- ☑ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☑ 131 - Alternative Uses of Land
- ☐ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☐ 403 - Waste Disposal, Recycling, and Reuse

Outcome #11

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increased number of stakeholders involved in community natural resource management and decision-making.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1000	1400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Urban Tree Canopy Program is a partnership between the Chesapeake Bay Program, the Virginia Department of Forestry (VDOF), the Virginia Geospatial Extension Program (VGEP) and local jurisdictions. The goal of the program is to assist the efforts of partnering localities to manage their urban tree canopy. An essential key to the management of the urban tree canopy is to provide localities with the tools and technical infrastructure to assess urban tree canopy coverage using remote sensed multispectral imagery (and LIDAR). Once a baseline of urban tree canopy is established, the program works with each of the respective localities to support their efforts to maintain or increase urban tree canopy coverage.

What has been done
This program has provided UTC estimates for twenty-two localities across the state. This area covers over 200 square miles. UTC metrics are generated for each locality. These metrics are summarized in a report, which is provided to the Virginia Department of Forestry, as well as to each local jurisdiction. These reports provide jurisdictional level canopy and land cover information, and identify specific parcels and zoning classes where jurisdictions can target programs to increase tree canopy coverage. Education is an important component of the program. Program partners provide local education on UTC to officials from each locality. In addition, partners actively engage in round table discussions, state conferences, etc.

Results
This project works primarily with localities that are geographically situated in the Chesapeake Bay watershed. Ecosystem benefits of the urban canopy are emphasized through educational programs. The ecosystem service benefits associated with UTC can be quantified, and provide long-term benefits. Fairfax county, Virginia, estimates that urban trees provide the following ecosystem benefits:

*$261/acre annually in air pollution benefits;

*$5-57 annually for carbon update

*$231/acre each year in energy conservation; and more than *$25,000/acre in storm water management benefits.

4. Associated Knowledge Areas

- ☑ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☑ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 135 - Aquatic and Terrestrial Wildlife
- ☐ 403 - Waste Disposal, Recycling, and Reuse

Outcome #12

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase program participants understanding of raw material conversion and modern business management practices.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	250	875

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The forest industry contributes over $25 billion annually to Virginia's economy. Wood product companies rank first in manufacturing jobs and second in payroll, yet employees and owners in the forest industry cite increasingly narrower profit margins. Efficiency in daily business operations such as mapping and area calculations can improve profit margins. A competitive and profitable forest industry is a vital tool for comprehensive forest management resulting in a more sustainable natural resource and economy for all Virginians.

What has been done

Twenty hands-on workshops have been delivered to SHARP loggers to teach them how to use hand-held Global Positioning Systems (GPS) throughout Virginia to 324 participants. In partnership with the Virginia Department of Forestry, a cost-sharing agreement has been instituted to reduce the cost of GPS purchase for current SHARP loggers who have completed GPS training.

Results

On average, 95% of participants reported a significant (1.9 to 4.2 on a 5 point scale) knowledge gain with 88% indicating that this would improve their efficiency. Seventy-two percent plan to integrate these skills into their current practices, which are expected to increase accuracy and efficiency to boost profitability. To date, 12 GPS units have been purchased by trained SHARP loggers through the cost-share program. These natural resource professionals directly impact approximately 50,000 acres of forestland annually.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☐ 111 - Conservation and Efficient Use of Water
- ☐ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☑ 131 - Alternative Uses of Land
- ☐ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

<u>Outcome #13</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

The general public, landowners, and loggers use the forest in alternative and traditional ways to increase value and profit.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	300	525

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Landowners and loggers in Virginia seek value-added forest product opportunities from the land that differ from traditional forest products. Although this market comprises less than 5% of the total forest products market, public interests in renewable and natural products is gaining more attention each year. Natural hardwood charcoal has been around since fire began, and in the early 1960's, as much as 150 acres of land were cleared annually in the United States to supply market demands for the briquette market (USFS Report, 1963). Briquettes are made on a large scale and include additives and petroleum products that dilute the original natural charred wood product, thus making the natural product last longer in the market once made. However, today's more informed regulatory agencies and the public at large are less tolerable to the additives from charcoal briquette production, and harvesting timber purely for charcoal use is not the best answer in today's market. However, wood that is not suitable for firewood or some higher-value wood product may be used for charcoal production. In fact, Virginia's most threatening invasive woody tree species - Tree of Heaven (Ailanthus) - is a prime candidate for natural hardwood charcoal production.

What has been done
In cooperation with a Virginia Discussion group consisting of an Associate Professor at Virginia Tech, Virginia Department of Forestry Marketing Specialist, New River/Highlands Resource and Development Forester, and Northern District Extension Forester, grant funds of $5,000 were secured from Virginia Department of Forestry Invasive Species Budget allocations to advance the use of natural hardwood charcoal into Southside Virginia. Three kilns were ordered and fabricated within budget, with two remaining in Central District for loan to forest landowners.

Results
Currently three landowners have produced over 1,800 pounds of natural hardwood charcoal successfully with input from this group under the guidance of the Central District Extension Forester. Of this production, three cords (6,000 pounds) of the invasive tree Ailanthus has been harvested in Southside for use as charcoal. As a pilot project, a combination of natural hardwood charcoal made from Ailanthus, Yellow Poplar, Hickory, and Red Oak was produced and sold to the public during five (5) public events at area Farmer's Markets generating over $800 in direct

revenue. One local County High School Vocational Department has entered into a relationship with the project and presently assists with sorting and bagging the product. Presently, discussions are underway to contract with Virginia State Park campgrounds which will begin to put money in the pockets of local producers on a more consistent basis rather than relying solely on direct-marketing alone.

4. Associated Knowledge Areas

- ☐ 101 - Appraisal of Soil Resources
- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☐ 111 - Conservation and Efficient Use of Water
- ☐ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☐ 124 - Urban Forestry
- ☑ 131 - Alternative Uses of Land
- ☐ 133 - Pollution Prevention and Mitigation
- ☐ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

Outcome #14

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of acres directly impacted by new or improved land management practices.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10000	40000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Of Virginia's 25 million acre land base, 15.8 million acres, or 63%, is forested. These forested areas generate over $25 billion annually for the commonwealth's economy, and an additional $5.1 billion in environmental benefits (e.g., clean air and water, wildlife habitat, carbon sequestration). The majority of these lands, 10.1 million acres, are privately owned family forests. In order to sustain and enhance these economic and ecological benefits, it is imperative that private family forest landowners know how to implement sustainable forestry practices to keep their forests healthy and productive. However, only 4% of US family forest landowners have a written forest management plan (Butler 2006).

What has been done

In 2010,Virginia Forest Landowner Education Program (VFLEP) offered 14 short courses, field tours and workshops to 633 landowners. VFLEP coordinates numerous educational opportunities for private forest landowners across the commonwealth. Events include short courses, field tours, and workshops, and are hosted with numerous state-wide partners, including state and federal natural resources agencies, land trusts, Virginia Tree Farm Committee, Sustainable Forestry Initiative SIC, and private consulting foresters. All educational opportunities are intended to empower landowners to make wise decisions regarding the management of their forest resources, with particular emphasis on obtaining a written forest management plan and seeking professional assistance for forestry activities.

Results

Between 400-500 new Forest Stewardship Plans are written each year in Virginia, representing between 40,000 and 66,0000 forested acres annually. Although not all participants in VFLEP programs seek a written management plan, the programs do increase awareness of the plans and their importance. According to exit evaluations, over 80% of VFLEP program participants plan on seeking more information on management planning as a result of attending the program.

4. Associated Knowledge Areas

- ☑ 101 - Appraisal of Soil Resources
- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 104 - Protect Soil from Harmful Effects of Natural Elements
- ☐ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 123 - Management and Sustainability of Forest Resources
- ☑ 124 - Urban Forestry
- ☑ 131 - Alternative Uses of Land
- ☑ 133 - Pollution Prevention and Mitigation
- ☑ 135 - Aquatic and Terrestrial Wildlife
- ☑ 403 - Waste Disposal, Recycling, and Reuse

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☑ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

Numerous external factors affect both the outcomes and the ability to support educational programs behind the outcomes. Natural disasters can siphon off funds and create new issues related to natural resources and the environment. Virginia forestry has been impacted severely by the economic downturn and drought the past two years. Hurricane blow down can flood the market with low cost wood and create fuel buildup and insect and disease problems. Floods and droughts have unique problems and have impacted the ability to develop and deliver new programs. Finally, new laws and regulations create new issues and opportunities and also cause other issues to fade away. In most cases, new regulations resulted in a need for more education for those impacted by these regulations.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☑ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☑ Time series (multiple points before and after program)
- ☑ Case Study
- ☑ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☑ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☑ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Families and Communities

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	10%	10%	0%	0%
802	Human Development and Family Well-Being	90%	90%	0%	0%
	Total	100%	100%	0%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	104.0	3.5	0.0	0.0
Actual	15.5	1.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
278283	163850	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
315680	63548	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
774229	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Activities include entrepreneurial education, asset-based economic development, leadership, civic

engagement, child care provider education, parent education, online education and distance learning, and specialized trainings and workshops to qualify instructors and to educate trainers.

2. Brief description of the target audience

Parents, grandparents, caregivers of children or adults, child care providers and early childhood educators, providers of after-school care, community organizations, community partners, community leaders and government officials, donors, K-12 educators, and volunteers.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	227900	245200	453800	488200
Actual	24015	66685	8603	129

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	5	0	
Actual	6	0	6

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of trainings, educational workshops, and on-line education sessions for VCE's targeted audiences.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	3500	492

Output #2

Output Measure

- Number of fact sheets, publications and curricula on youth development, families, and communities.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	55	156

Output #3

Output Measure

- Number of members enrolled in-school, after-school, community clubs, special interest activities, 4-H military programs, and camps.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	140000	0

Output #4

Output Measure

- Number of citizens receiving entrepreneurial education.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	900	1200

Output #5

Output Measure

- Number of youth and adults engaged in leadership development education.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	5000	129

Output #6

Output Measure

- Number of clubs where youth are involved in structured after school programming

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	2200	0

Output #7

Output Measure

- Number of programs offered regarding community food systems.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	10	0

Output #8

Output Measure

- Number of communities partnering with Virginia Cooperative Extension faculty to address emerging issues (i.e. land use, agritourism, local foods, bioenergy, youth gangs, and others).

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	3	6

Output #9

Output Measure

- Number of workshops, activities, or programs offered to address emerging issues.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	10	30

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	4-H Camping - Increase the number of 4-H youth, or parents of youth that report a positive change in responsibility and social development as a result of participation in a 4-H camp.
2	4-H Citizenship - Increase the number of 4-H youth participating as volunteers and through community service that demonstrate teamwork skills and community commitment.
3	4-H Animal Science - Increase the number of 4-H youth and adults participating in animal science programming that demonstrate increased knowledge of raising animals in a responsible, ethical, and economically viable manner.
4	4-H Communication and Expressive Arts - Increase the number of 4-H youth participating in communication and expressive arts programming that demonstrate increased self-efficacy in public speaking, presentations, visual arts, and performing arts.
5	4-H Foods, Nutrition and Health - Increase the number of 4-H youth participating in foods, nutrition, and health programs that demonstrate healthy living choices.
6	4-H Natural Resources and Environmental Education - Increase the number of 4-H youth participating in natural resources and environmental education programs that demonstrate environmentally responsible behavior.
7	4-H Plants, Soils and Entomology - Increase the number of 4-H youth participating in plant, soils, and entomology programming that learn the interconnectedness of organisms and their environment.
8	4-H Science, Engineering and Technology - Increase the number of 4-H youth that demonstrate sustained learning in science and technology programming.
9	4-H Careers and Consumer Education - Increase the number of 4-H youth that increase their awareness of potential career pathways through service learning programs and/or through the 4-H college fair.
10	4-H Careers and Consumer Education - Increase the number of 4-H youth that indicate increased knowledge/skills related to economic education and/or entrepreneurship.
11	4-H Leadership and Personal Development - Increase the number of 4-H youth that demonstrate leadership knowledge by participating in a leadership position on the club, county, state, or national level.
12	4-H Character Counts! - Increase the number of 4-H youth or parents of youth that indicate a positive change in behavior as a result of participating in 4-H Character Counts! programming.
13	4-H Adult Leaders - Increase the percent of adult 4-H volunteers participating in leadership and volunteer development trainings that indicate increased knowledge and skills in implementing 4-H programming as a result of participation.
14	Parenting Education - Increase percentage of parenting education participants that indicate increased knowledge of effective parenting practices, such as nurturing and guiding children, understanding basic child development, reducing family conflict and managing stress, and knowing how to access available community resources to meet family needs.
15	Parenting Education - Increase percentage of parenting education participants that adopt developmentally appropriate, effective parenting practices, such as nurturing and guiding children, and actively seeking to manage stress and reduce family conflicts.
16	Parenting Education - Increase percentage of parenting education participants that use community resources more frequently to meet family needs regarding housing, food,

	health/mental health issues, employment, legal concerns, educational needs, etc.
17	Child Care Provider/Early Childhood Training - Increase percentage of early childhood professional development participants that indicate increased knowledge of core competency areas, such as basic child development, appropriate child observation and assessment, effective interaction strategies, and effective learning environments.
18	Child Care Provider/Early Childhood Training - Increase percentage of early childhood professional development participants that improve their early childhood learning environment by making practice changes, such as implementing developmentally-appropriate learning practices, interaction practices and observation assessment strategies.
19	Child Care Provider/Early Childhood Training - Increase percentage of early childhood professional development participants that improve program management practices, such as effective relationships with enrolled families, record keeping, facilities management, budgeting, and emergency preparedness.
20	Facilitation Skills Training - Increase percentage of trained volunteers and citizens participating in facilitation skills training that indicate increased knowledge and skills as a result of participation.
21	Leadership Development Education - Increase percentage of adult citizens participating in leadership development education programs that indicate increased knowledge and skills as a result of participation.
22	Local Food Systems - Increase the number of local communities partnering with Virginia Cooperative Extension faculty to strengthen the connection between local agriculture producers and growers with local food-related businesses and purchasing institutions.
23	Food-Based Business Workshops - Increase the percentage of trained volunteers and citizens participating in food-based business workshops that indicate increased understanding/knowledge of food-based businesses as a result of participation.
24	Training Virginia's Child Care Providers
25	Teaching Effective Parenting: So Important for Child and Family Success

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. **Outcome Measures**

☑ Not Reporting on this Outcome Measure

4-H Camping - Increase the number of 4-H youth, or parents of youth that report a positive change in responsibility and social development as a result of participation in a 4-H camp.

2. **Associated Institution Types**

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	200	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #2

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Citizenship - Increase the number of 4-H youth participating as volunteers and through community service that demonstrate teamwork skills and community commitment.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	350	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #3

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Animal Science - Increase the number of 4-H youth and adults participating in animal science programming that demonstrate increased knowledge of raising animals in a responsible, ethical, and economically viable manner.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #4

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Communication and Expressive Arts - Increase the number of 4-H youth participating in communication and expressive arts programming that demonstrate increased self-efficacy in public speaking, presentations, visual arts, and performing arts.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	400	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #5

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Foods, Nutrition and Health - Increase the number of 4-H youth participating in foods, nutrition, and health programs that demonstrate healthy living choices.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	14000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #6

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Natural Resources and Environmental Education - Increase the number of 4-H youth participating in natural resources and environmental education programs that demonstrate environmentally responsible behavior.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	4000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #7

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Plants, Soils and Entomology - Increase the number of 4-H youth participating in plant, soils, and entomology programming that learn the interconnectedness of organisms and their environment.

2. Associated Institution Types

- ☑ 1862 Extension

- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	3000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #8

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Science, Engineering and Technology - Increase the number of 4-H youth that demonstrate sustained learning in science and technology programming.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	34000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #9

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Careers and Consumer Education - Increase the number of 4-H youth that increase their awareness of potential career pathways through service learning programs and/or through the 4-H college fair.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #10

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Careers and Consumer Education - Increase the number of 4-H youth that indicate increased knowledge/skills related to economic education and/or entrepreneurship.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	700	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #11

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Leadership and Personal Development - Increase the number of 4-H youth that demonstrate leadership knowledge by participating in a leadership position on the club, county, state, or national level.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #12

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Character Counts! - Increase the number of 4-H youth or parents of youth that indicate a positive change in behavior as a result of participating in 4-H Character Counts! programming.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	25000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #13

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

4-H Adult Leaders - Increase the percent of adult 4-H volunteers participating in leadership and volunteer development trainings that indicate increased knowledge and skills in implementing 4-H programming as a result of participation.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research

☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	70	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome under the Youth Development Planned Program.

4. Associated Knowledge Areas

Outcome #14

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Parenting Education - Increase percentage of parenting education participants that indicate increased knowledge of effective parenting practices, such as nurturing and guiding children, understanding basic child development, reducing family conflict and managing stress, and knowing how to access available community resources to meet family needs.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	60	91

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Parents who lack an understanding of their children's developmental stages, who hold unreasonable expectations for their child's abilities, or who are unaware of effective discipline strategies, may be abusive or neglectful. Every 75 minutes a Virginia child is abused or neglected, and every fourteen days, a child dies from abuse or neglect. If children are abused, placement of children in foster care is needed, which costs approximately $43,667 per child each year in Virginia. There are 6,424 children in foster care in Virginia.

What has been done
To identify parenting issues in Virginia, agents partnered with local schools and agencies to identify issues. As a
result, educational programming focused on effective parenting techniques, communication and positive discipline.
The programs were provided to an array of audiences, including DSS referred or court ordered parents, teen parents,
workplace audiences, welfare to work audiences, Title I parents, preschool public education program parents,
alternative school students, grandparents and other relatives raising grandchildren or kin, and workshops for women in
local battered women's shelter care.

Results
More than 1124 individuals participated in parent education programs across the state. Ninety-one percent of these parents increased their knowledge of effective parenting practices to include nurturing and guidance, understanding child development, and awareness of available community resources to meet family needs.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #15

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Parenting Education - Increase percentage of parenting education participants that adopt developmentally appropriate, effective parenting practices, such as nurturing and guiding children, and actively seeking to manage stress and reduce family conflicts.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	40	94

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Parents who lack an understanding of their children's developmental stages, who hold unreasonable expectations for their child's abilities, or who are unaware of effective discipline strategies, may be abusive or neglectful. Every 75 minutes a Virginia child is abused or neglected, and every fourteen days, a child dies from abuse or neglect. If children are abused, placement of children in foster care is needed, which costs approximately $43,667 per child each year in Virginia. There are 6,424 children in foster care in Virginia.

What has been done
To identify parenting issues in Virginia, agents partnered with local schools and agencies to identify issues. As a result, educational programming focused on effective parenting techniques, communication and positive discipline. The programs were provided to an array of audiences, including DSS referred or court ordered parents, teen parents, workplace audiences, welfare to work audiences, Title I parents, preschool public education program parents, alternative school students, grandparents and other relatives raising grandchildren or kin, and workshops for women in local battered women's shelter care.

Results
More than 1124 individuals participated in parent education programs across the state. 91 percent of respondents indicated that they adopted developmentally appropriate effective parenting practices to include nurturing and guidance and utilizing community resources to meet family needs.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #16

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Parenting Education - Increase percentage of parenting education participants that use community resources more frequently to meet family needs regarding housing, food, health/mental health issues, employment, legal concerns, educational needs, etc.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	25	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Parents who lack an understanding of their children's developmental stages, who hold unreasonable expectations for their child's abilities, or who are unaware of effective discipline strategies, may be abusive or neglectful. Every 75 minutes a Virginia child is abused or neglected, and every fourteen days, a child dies from abuse or neglect. If children are abused, placement of children in foster care is needed, which costs approximately $43,667 per child each year in Virginia. There are 6,424 children in foster care in Virginia.

What has been done
To identify parenting issues in Virginia, agents partnered with local schools and agencies to identify issues. As a result, educational programming focused on effective parenting techniques, communication and positive discipline. The programs were provided to an array of audiences, including DSS referred or court ordered parents, teen parents, workplace audiences, welfare to work audiences, Title I parents, preschool public education program parents, alternative school students, grandparents and other relatives raising grandchildren or kin, and workshops for women in local battered women's shelter care.

Results
More than 1124 individuals participated in parent education programs across the state. Ninety percent of respondents indicated that they used community resources to meet family needs.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #17

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Child Care Provider/Early Childhood Training - Increase percentage of early childhood professional development participants that indicate increased knowledge of core competency areas, such as basic child development, appropriate child observation and assessment, effective interaction strategies, and effective learning environments.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	60	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
About 599,000 children under age of 6 live in Virginia. About 62% of them are routinely cared for by someone other than their parents. One in five Virginia children enter Kindergarten without the basic skills needed to succeed. Research shows the first five years of life are crucial to long term cognitive, social and emotional development. And, every dollar invested in high quality childcare returns $7 to $8 to society by reduced cost related to crime, special education and welfare and increased revenues through improved employee productivity.

What has been done
To enhance the quality of early childhood care and education, Family and Consumer Sciences Agents conducted childcare provider trainings throughout Virginia. Participants from family day homes, childcare facilities, public school pre-K, Head Start and other groups attended these events to learn about effective guidelines for successful early childhood program operations.

Results
More than 934 child care providers/early childhood educators participated in trainings in 2010. As a result of the trainings, ninety percent of respondents indicated that they had increased knowledge of core competency areas, such as basic child development, appropriate child observation and assessment, effective interaction strategies, and effective learning environments.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #18

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Child Care Provider/Early Childhood Training - Increase percentage of early childhood professional development participants that improve their early childhood learning environment by making practice changes, such as implementing developmentally-appropriate learning practices, interaction practices and observation assessment strategies.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	40	87

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
About 599,000 children under age of 6 live in Virginia. About 62% of them are routinely cared for by someone other than their parents. One in five Virginia children enter Kindergarten without the basic skills needed to succeed. Research shows the first five years of life are crucial to long term cognitive, social and emotional development. And, every dollar invested in high quality childcare returns $7 to $8 to society by reduced cost related to crime, special education and welfare and increased revenues through improved employee productivity.

What has been done

To enhance the quality of early childhood care and education, Family and Consumer Sciences Agents conducted childcare provider trainings throughout Virginia. Participants from family day homes, childcare facilities, public school pre-K, Head Start and other groups attended these events to learn about effective guidelines for successful early childhood program operations.

Results

More than 934 child care providers/early childhood educators participated in trainings in 2010. Evaluation post-tests were administered three to six months after the trainings to a select group of participants. Eighty-seven percent of those respondents indicated that they had improved their early childhood learning environment by making practice changes, such as implementing developmentally-appropriate learning practices, interaction practices and observation assessment strategies after completing the training.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #19

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Child Care Provider/Early Childhood Training - Increase percentage of early childhood professional development participants that improve program management practices, such as effective relationships with enrolled families, record keeping, facilities management, budgeting, and emergency preparedness.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	40	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

About 599,000 children under age of 6 live in Virginia. About 62% of them are routinely cared for

by someone other than their parents. One in five Virginia children enter Kindergarten without the basic skills needed to succeed. Research shows the first five years of life are crucial to long term cognitive, social and emotional development. And, every dollar invested in high quality childcare returns $7 to $8 to society by reduced cost related to crime, special education and welfare and increased revenues through improved employee productivity.

What has been done
To enhance the quality of early childhood care and education, Family and Consumer Sciences Agents conducted childcare provider trainings throughout Virginia. Participants from family day homes, childcare facilities, public school pre-K, Head Start and other groups attended these events to learn about effective guidelines for successful early childhood program operations.

Results
More than 934 child care providers/early childhood educators participated in trainings in 2010. Evaluation post-tests were administered three to six months after the trainings to a select group of participants. Ninety-five percent of those respondents indicated that they had improved program management practices, such as effective relationships with enrolled families, record keeping, facilities management, budgeting, and emergency preparedness after completing the training.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #20

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Facilitation Skills Training - Increase percentage of trained volunteers and citizens participating in facilitation skills training that indicate increased knowledge and skills as a result of participation.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	60	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Virginia Cooperative Extension agents and community leaders have indicated a lack of knowledge and experience in effectively managing and facilitating meetings and community discussions as reported by local Extension offices and Extension Leadership Councils. The 2009/2010 strategic planning listening sessions indicated community leaders needed assistance in creating change through individual and community leadership development, facilitation, and conflict resolution skills development.

What has been done
Community Viability specialists researched and selected a curriculum for enhancing facilitation skills developed by the University of Maine. Strengthening Your Facilitation Skills (SYFS) addresses VCE focus area, Cultivating Community Resiliency and Capacity, and provides a strategy to achieve Goal 2: Develop and deliver educational programming to improve capacity among community members to engage in community planning, decision-making, and community leadership.

Results
In 2010, three (3) 15-hour trainings were conducted along with one (1) train-the-trainer program. Facilitation trainings were held in Grayson County, Abingdon, and Petersburg with 35 community members and 6 agents (41 total) completing the training. One-hundred percent of respondents to the post-survey indicated that they learned and will adopt at least one of the facilitation practices that they learned in the 6 month period following the training. In June 2010, a train-the-trainer session was hosted for 7 agents.

Since 2008, 64 Extension educators have completed the training. From this group, 26 are certified as Master Trainers, 23 use the skills in their Extension work, and 15 educators have left Extension's employment. Extension has also become a resource for public and private organizations when facilitators are needed. During 2010, at least 25 organizations contacted facilitation master trainers requesting these facilitators to guide discussions and/or strategic planning sessions.

4. Associated Knowledge Areas

- ☑ 608 - Community Resource Planning and Development
- ☐ 802 - Human Development and Family Well-Being

Outcome #21

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Leadership Development Education - Increase percentage of adult citizens participating in leadership development education programs that indicate increased knowledge and skills as a result of participation.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	60	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Communities face increasing operational costs, stagnant revenue, growing taxpayer demands, and a lack of citizens who accept community leadership roles. Strategic planning 2009/2010 VCE listening sessions revealed concerns related to the quality of life within communities, namely workforce, economic and leadership development, public service infrastructure, urban sprawl, and the ability to respond to emerging critical issues within local communities. Community groups asked how local residents can be empowered to create and drive positive change.

What has been done
Innovative Leadership: Building Community Connections is a key training tool for developing leadership skills of community residents. It is an 18-hour curriculum that enables individuals to build leadership skills, raise awareness of community issues, network with other leaders, and become more engaged in civic activities. Modules include: leadership traits/styles; effective communication; collaboration and conflict management; group dynamics and teambuilding; community vision and goal setting; data utilization; and 6) boards/organizations.

Results
In 2010, 12 new trainers were certified including 8 Extension educators and 4 individuals from public organizations. Six leadership trainers taught 4 adult leadership classes with 65 residents completing the training. In addition, Innovation Leadership was designed as a youth (middle school) training curriculum and offered to 36 youth participating in a leadership program at Lynchburg College sponsored by the United Way of Lynchburg.

4. Associated Knowledge Areas

- ☑ 608 - Community Resource Planning and Development
- ☐ 802 - Human Development and Family Well-Being

Outcome #22

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Local Food Systems - Increase the number of local communities partnering with Virginia Cooperative Extension faculty to strengthen the connection between local agriculture producers and growers with local food-related businesses and purchasing institutions.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	3	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Being reported on in the Global Food Security and Hunger - Local Food Systems PP.

What has been done

Results

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #23

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Food-Based Business Workshops - Increase the percentage of trained volunteers and citizens participating in food-based business workshops that indicate increased understanding/knowledge of food-based businesses as a result of participation.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	60	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☑ 608 - Community Resource Planning and Development
- ☐ 802 - Human Development and Family Well-Being

Outcome #24

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Training Virginia's Child Care Providers

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Child care workers nurture, teach, and care for children who have not yet entered kindergarten. They also supervise older children before and after school. These workers play an important role in children's development by caring for them when their parents are at work or are away for other reasons or when the parents place their children in care to help them socialize with children their age. In addition to attending to children's health, safety, and nutrition, child care workers organize activities and implement curricula that stimulate children's physical, emotional, intellectual, and social growth and prepare them for more formal schooling. Many states require child care centers, including those in private homes, to be licensed if they care for more than a few children. In Virginia, licensed programs must meet the standards promulgated by the Child Day-Care Council. The Virginia Department of Social Services enforces these standards by inspecting centers at least twice a year and investigating complaints.

What has been done
The objective of Virginia State University's Quality Childcare Education/Training Program is to educate child care providers about what constitutes quality care; the benefits of quality care to children; and to assist child care providers in developing quality care giving skills and practices. This objective is in concert with national, state, and local needs and priorities related to child care availability, affordability, quality, and family economic growth. In 2010, Virginia State University's Family and Consumer Sciences Program offered a series of workshops and training sessions to over 300 child care providers in topics ranging from child development, keeping children healthy and safe, to problem solving, and kindergarten readiness skills such as math and quantitative concepts and science for young learners.

Results
Due to free childcare provider training from Virginia State University's Family & Consumer Sciences program, over 1,500 Virginia children experienced healthy and safe childcare. Without training the providers would be uncertified and unable to operate. These businesses generate up to $7.2 million dollars into the local economy. Ninety four percent (94%) of the workshop participants reported that they obtained new information; 90% reported that they would make practice changes as a result of the new ideas, strategies, and demonstrations presented during

the sessions. Seventy-eight percent (78%) reported specific plans to institute changes in the child care setting/program. Comments included: "I plan to let children attempt to solve their own problems"; "I plan to make the environment accessible so children can wash their own hands"; "make transitions smooth for children"; "make science activities fun for children"; "stop using no so much and refrain from using a loud voice for discipline"; "use rewards and recognize children for desired behavior", etc. Other comments related to improved parent relations, improved center operations, developing operations manuals, and revising policies for staff.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

Outcome #25

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Teaching Effective Parenting: So Important for Child and Family Success

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There are signs all around that many parents are not as effective as possible, which is costing our nation an enormous price. Our rates of parental abuse and neglect of children are still shockingly high, with over three million nationally reported cases a year. Such children and their families require an array of expensive services to prevent further abuse and to treat children for the physical, mental and learning problems that are the usual accompaniment of child maltreatment. Parent education, before there are problems, would prevent many of these families from ever coming to the attention of the state and their children entering foster care, thereby saving each state millions of dollars each year.

In many of our cities the public school dropout rate has reached epidemic proportions, and ineffective parenting is one of the prime contributors. Dropouts drain our welfare resources and rarely reach their full human and workforce potential. Parent education teaches parents how to teach their children healthy family values, like the importance of getting an education, and skills for being supportive of and involved in their children's education. Childhood obesity and adolescent drug use are major health problems, and uninformed and ineffective parenting is again implicated. The gang problems that plague our communities can also be seen as resulting from parents not being as responsible and effective in carrying out their guidance and supervision responsibilities, which causes children to seek out other outlets to replace the family. All of these problems cost our nation billions of dollars, and thus should be addressed for economic as well as humanitarian purposes. For example, the direct costs of child maltreatment (judicial, law enforcement and health system responses) are estimated at 24 billion each year. The indirect costs (long term economic costs of child maltreatment such as lost wages and taxes paid) exceed an estimated $69 billion annually.

What has been done

Virginia State University responded to several requests from parents and grandparents for information, assistance, and guidance in disciplining and advocating for their children who were experiencing behavioral and/or academic difficulty. Grandparent Support Groups, Parent Education sessions, and Parent Education Provider sessions were held through consultation and training to assist with issues such as positive child management, accessing community resources, dealing with crisis situations with children, understanding and supporting the child with special needs, school adjustment issues etc. Education materials, videos, home interventions, behavioral management contracts, and referrals to appropriate community agencies and professionals were methods used in consultations and training.

Results

One hundred percent (100 %) of the parents reported progressive and positive changes in the home and school environment (from school reports and parent conferences). All reported using one or more of the suggested interventions and an increased awareness of how and where to seek assistance. Parents reported a greater sense of empowerment and confidence to advocate (ask questions, seek resources, referrals, consultation, etc.) for their child. Two grandparents sought treatment and counseling for their grandchildren. Empowering parents with knowledge led to positive changes in child behavior and greater parent involvement.

4. Associated Knowledge Areas

- ☐ 608 - Community Resource Planning and Development
- ☑ 802 - Human Development and Family Well-Being

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☑ Other (Early retirement option for Extension faculty)

Brief Explanation

This year, Virginia Cooperative Extension received an additional funding cut from the state government. There was an option provided to field faculty - agents, to retire early. A disproportionate number of the agents that retired were in family and consumer sciences and provided programming in food-based business workshops, child care provider training, and parenting education. It should also be noted that the specialist that provided leadership for the food-based business workshops across the state resigned at the beginning of the year. Thus, it was difficult to provide those workshops with shrinking field agents and no specialist to support it. It is also important to note that all 4-H outcomes are listed in the youth development program area, and that outputs and outcomes related to local foods will be reported in the Global Food Security and Hunger - Local Foods program area. There is also an error in the output entitled "Number of trainings, educational workshops, and on-line education sessions for VCE's targeted audiences." The target number listed is that of participants and should be more reflective of the number of workshops/trainings.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☑ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☑ Time series (multiple points before and after program)
- ☑ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing

different levels of program intensity.

- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

Results of a select child care provider training revealed:
As a result of attending Extension educational programs, participants reported the following knowledge gains: (Percentages based on number completing program evaluations for each separate training.)
100%/47 at least one new strategy to engage children when working through stress
100%/47 new ways to respond supportively to children's emotions
100%/47 at least one new idea about how to interact with children who are experiencing stress
98%/46 about what risk and protective factors are and how the contribute to or detract from a child's ability to cope successfully with stressful events
100%/39 about the importance of outdoor play and how it contributes to children's cognitive development
100%/39 about various types of plants and how they can be included in an outdoor learning environment
100%/39 at least three new ideas for activities to do with children outdoors
100%/39 how to develop a plan to enhance their site's outdoor learning environment
100%/39 new techniques for implementing more outdoor learning activities into their daily schedule

Based on 4 month follow up evaluations: (% based on number completing program evaluations for each separate training.)
100%/27 had used children's books to help children express feelings and provide a coping strategy for stress
100%/27 have improved their listening skills
96%/26 have used more open-ended questions with children
93%/25 have used more role-play toys with children to help them relate strong feelings through play
100%/19 have observed children's interests and followed those to plan outdoor activities
100%/19 have taken activities normally done inside and moved them outside
100%/19 have provided children with more opportunities to collect and discover natural items
100%/19 have been personally more interested in exploring the outdoors with children
95%/18 have brought more outdoor items to the indoor learning setting
95%/18 have used more children's books related to the outdoors
Additional positive impacts listed by participants included: "I take more time to listen to and talk to the children.", "They (the children) have been talking out problems more and don't get frustrated as easy.", "They (children) seem as if they are more comfortable to express feelings with me.", "(The children) more calm and attentive. I think the children are more relaxed to find it easier to talk.", "Children paid more attention while outside.", "We added flowers to the front of the school.", "We made a garden, planted two trees, and gathered lots of outdoor play items.", "We go outside as much as possible.", "(We have) taken indoor toys outside to use.", and "We brought some plants into the classroom, had

some caterpillars and butterflies brought in as well."
One county parenting education program yielded the following results:
VCE staff and volunteers provided 28 STEP parenting classes; 12 Juvenile Justice Parenting Programs; and 14 When Families Get Angry classes. This includes the classes offered to Transitional Housing programs. Staff also offered monthly parenting presentations at three homeless shelters. Classes are open to all residents. Our collaborators make referrals to the programs. We also hold monthly meetings for homeless families at three shelters and we provide both STEP and WFGA at four transitional housing sites. Resources include the Systematic Training for Effective Parenting curriculum, Building Self-Esteem video by Dr. Ben Bissell, the When Families Get Angry curriculum, and other relevant materials. All of our classes are offered in both English and Spanish.

RESULT(S):
Knowledge outcomes
97 %/ 334 of parents reported increased knowledge in understanding child development
97 %/ 426 of parents reported increased knowledge of effective parenting practices
97 %/ 426 of parents reported increased knowledge in nurturing children
97 %/ 426 of parents reported increased knowledge in guiding children

Practice outcomes
97 %/ 426 of parents reported adopting practices in guiding children
96 %/ 167 of parents reported adopting practices to reduce family conflict and manage stress

The following results relate to two of our most at-risk groups of participants. For those who completed one of parenting programs 12 to 23 months prior:

- No DSS referred clients had a new founded case of abuse or neglect;
- No DSS referred families had their children placed in foster care; and
- Only 12% of the youth whose parents completed the JJPP class, acquired a new court charge.

Key Items of Evaluation

Knowledge outcomes
97 %/ 334 of parents reported increased knowledge in understanding child development
97 %/ 426 of parents reported increased knowledge of effective parenting practices
97 %/ 426 of parents reported increased knowledge in nurturing children
97 %/ 426 of parents reported increased knowledge in guiding children

Practice outcomes
97 %/ 426 of parents reported adopting practices in guiding children
96 %/ 167 of parents reported adopting practices to reduce family conflict and manage stress

The following results relate to two of our most at-risk groups of participants. For those who completed one of parenting programs 12 to 23 months prior:

- No DSS referred clients had a new founded case of abuse or neglect;
- No DSS referred families had their children placed in foster care; and
- Only 12% of the youth whose parents completed the JJPP class, acquired a new court

charge.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Family Finance and Community Viability

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
602	Business Management, Finance, and Taxation	10%	10%	10%	0%
603	Market Economics	5%	5%	10%	0%
604	Marketing and Distribution Practices	5%	5%	5%	0%
605	Natural Resource and Environmental Economics	5%	5%	15%	0%
607	Consumer Economics	20%	20%	15%	0%
608	Community Resource Planning and Development	20%	0%	15%	0%
610	Domestic Policy Analysis	5%	0%	5%	0%
801	Individual and Family Resource Management	25%	55%	15%	0%
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%	0%	10%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	9.0	1.0	3.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
479746	187330	335722	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
544215	84579	1131722	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1334730	0	4125043	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research and educational programs will be conducted to support the needs of Virginians. Research in personal finance issues and evaluation of programming will be conducted to improve financial capability. Financial capability curriculum will be developed using proven delivery methods.

Research will be conducted to develop knowledge of production and market systems, alternative economic development, and overall community viability. Research-based information will be disseminated via media and informational meetings.

Decision aids, workshops, detailed curriculum, and distance educational methods will be used to support change in the overall behavior of learners in both areas.

2. Brief description of the target audience

Individuals, families, youth, owners and managers of farms, and small businesses; local, state, and federal personnel and policy makers; economic development, non-profit, and community organizations; and private sector service suppliers are the targeted audiences.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	21823	50495	16285	1146

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	5	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of education programs planned in public policy education

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	5

Output #2

Output Measure

- Number of individuals and families completing basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program, and implementing practices to reduce the chance for identity theft after receiving instruction.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	8060

Output #3

Output Measure

- Number of educational programs conducted on creating home-based and micro businesses

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	50

Output #4

Output Measure

- Number of communities and local governments partnering with Virginia Cooperative Extension faculty to seek and develop alternative economic development opportunities or address public policy and community planning goals.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	20

Output #5

Output Measure

- Number of youth educational programs conducted on completing basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program after receiving financial instruction.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	10976

Output #6

Output Measure

- Number of program participants improving their housing environment through new ownership, avoiding foreclosure or purchasing and maintaining a home.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	1463

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase the number of individuals completing basic financial management strategies including budgeting, setting financial goals, establishing a saving/investing program.
2	Increase the number of trained volunteers and citizens participating in Extension entrepreneurship workshops indicating increased entrepreneurial knowledge and skills applied to evaluation and planning of new enterprises (such as small businesses, micro-businesses, home-based businesses and agri-tourism).
3	Increase the percentage of communities and local governments partnering with Virginia Cooperative Extension faculty that seek and develop alternative economic development opportunities, and community planning goals.
4	Increase the number of individuals improving their housing environment by (learning or) adopting techniques allowing them to purchase a home or to avoid foreclosure.
5	Increase the number of youth learning the basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program after receiving financial instruction.
6	Helping Families Manage their Finances

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of individuals completing basic financial management strategies including budgeting, setting financial goals, establishing a saving/investing program.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	5560

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Almost 1/4 of Virginia households earn less than the amount needed to meet basic monthly expenses on their own; and, slightly more than 1/4 of Virginia households do not have enough cash assets to protect them from financial ruin in the case of emergencies. In 2009, Virginia ranked 27th in the nation for non-business bankruptcy filings with 36,191, up from 28,212 and a rank of 37th in 2008.Virginia ranks 6th highest among states in median credit card debt. Workers with financial problems cost their employers money.

What has been done
21 Family and Consumer Science educators and 369 volunteers of Virginia Cooperative Extension worked with adults in 31 counties along with the state specialists at Virginia Tech and Virginia State University. Volunteers contributed over 4700 hours of their time at a savings in salary of $94,000 at the $20.00 volunteer rate. Audiences included women, low and moderate income individuals and families, incarcerated individuals. Partnerships with private and local, state, and Federal agencies made these programs possible.

Results
Over 8,060 adults received some quantity of financial education. In addition, it is estimated that over 62,000 Virginians were reached by television and radio programs and the Living Well Newsletter.
Sixty-nine percent of these participants reported improving one financial management behavior.

The average number of behaviors changed my participants was 5. In one program participants reported saving an additional $31,900 over six months. One ex-offender wrote on his evaluation, "I learned how to get good credit and save money and build a bank account." Another said, "Incorporate this into high schools. If I knew this info earlier in life it might of saved me thousands of dollars & many hard times."

4. Associated Knowledge Areas

- ☐ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☐ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☑ 607 - Consumer Economics
- ☐ 608 - Community Resource Planning and Development
- ☐ 610 - Domestic Policy Analysis
- ☑ 801 - Individual and Family Resource Management
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of trained volunteers and citizens participating in Extension entrepreneurship workshops indicating increased entrepreneurial knowledge and skills applied to evaluation and planning of new enterprises (such as small businesses, micro-businesses, home-based businesses and agri-tourism).

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2010, Virginia was again recognized as the #1 State for Business by Forbes Magazine. However, SBA data also reveals that Virginia ranks in the bottom ten percent of states in terms of support for very small or microenterprise start-ups and growth. A state-wide study by the Department of Business Assistance found that many Virginia small businesses were unaware of or underutilizing available assistance resources.

What has been done

In 2006, VCE partnered with the Virginia Department of Business Assistance and other organizations to implement pilots of a one day program on small business fundamentals that also highlighted sources of business support and assistance. Since the pilots in southwest Virginia, VCE has worked with VDBA and partner organizations to conduct the Entrepreneur Express Workshop Series.

Results

Since 2006, over 6000 entrepreneurs (about 60% looking to start a business, about 40% existing business owners) have participated in Entrepreneur Express workshops in nearly every municipality around the Commonwealth. In 2010 alone, 42 Entrepreneur Express events were held, serving over 1,200 people. End-of-event surveys indicate that participants gained greater awareness and knowledge of funding sources, business planning, marketing strategies, and available resources for assistance. Program participants often connect individually with small business counselors, discover new markets, or find new funding sources. Workshops provide participants with the knowledge and resources to make effective decisions regarding start-up or growth of their enterprise.

4. Associated Knowledge Areas

- ☑ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 607 - Consumer Economics
- ☑ 608 - Community Resource Planning and Development
- ☐ 610 - Domestic Policy Analysis
- ☐ 801 - Individual and Family Resource Management

☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the percentage of communities and local governments partnering with Virginia Cooperative Extension faculty that seek and develop alternative economic development opportunities, and community planning goals.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Communities, in challenging economic conditions, increasingly look for alternative opportunities to create jobs and grow local and regional economies.

What has been done
Virginia Cooperative Extension agents and specialists have provided training to community leaders on facilitation, leadership, community planning, and discourse-based problem-solving.

Results
In 2010, over 600 citizens completed training by Community Viability Specialists or trained agents in facilitation, leadership, planning, and problem-solving resulting in a higher number of community citizens equipped with the skills to more effectively facilitate, plan, and lead community-based, alternative economic development efforts.

4. Associated Knowledge Areas

☑ 602 - Business Management, Finance, and Taxation
☐ 603 - Market Economics

- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 607 - Consumer Economics
- ☑ 608 - Community Resource Planning and Development
- ☐ 610 - Domestic Policy Analysis
- ☐ 801 - Individual and Family Resource Management
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of individuals improving their housing environment by (learning or) adopting techniques allowing them to purchase a home or to avoid foreclosure.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	860

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Almost one-quarter of Virginia households earn less than the amount needed to meet basic monthly expenses on their own; and, slightly more than one-quarter of Virginia households do not have enough cash assets to protect them from financial ruin in the case of emergencies. As of July of 2010, 1 in every 652 households in Virginia received a foreclosure filing, with Fairfax and Prince William counties having the highest rates. Workers with personal financial problems have difficulty getting and keeping jobs and cost their employers money.

What has been done
10 county Family and Consumer Science educators along with the state specialist from Virginia Tech. Presented classes and offered one-on-one counseling sessions. Educators are either Virginia Housing and Development Authority or U.S. Department of Housing and Urban

Development certified.

Results

Over 445 individuals received one-on-one counseling that helped some purchase a new home, to not losing their homes to foreclosure, or on reverse-mortgages to be able to stay in their home as they age. 517 individuals attended classes for first time home buyers. 401 received classes on caring for their home. Sixty percent of those receiving foreclosure counseling were able to avoid foreclosure, protecting not only their own financial well being but their local economies, as well. Eighty people received home equity conversion or reverse mortgages allowing them to stay in their homes.

4. Associated Knowledge Areas

- ☐ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☐ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☑ 607 - Consumer Economics
- ☐ 608 - Community Resource Planning and Development
- ☐ 610 - Domestic Policy Analysis
- ☑ 801 - Individual and Family Resource Management
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of youth learning the basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program after receiving financial instruction.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	10976

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The down turn in economic markets, financial issues are on everyone minds. On March 26, 2005, the Virginia General Assembly Code of Virginia Section 22.1-200.03B directing the Virginia Board of Education to "establish objectives for economic education and financial literacy". In 2009 the Department of Education required a class for graduation. In 2010, the Financial Literacy and Education Commission (FLEC) issued "Promoting Financial Success in the United States: National Strategy for Financial Literacy 2011".

What has been done
Working with youth were 22 FCS Educators and 19 4-H educators and 1197 volunteers in 50 counties. The Volunteers provided 2476 hours or the equivalent of $49,520 in salary saving had VCE been required to pay for these services. VCE uses several programs for increasing the financial capacity of Virginia's youth. The Reality Store, a simulation program, is the most widely used. Some of the other curriculums used are: the National Endowment for Financial Education (NEFE) High School Financial Planning Program (HSFPP). Kid's Market Place and Camp Millionaire.

Results
Over 8,080 students participated in Reality Store. Evaluations from 2-3 months after the event indicate that students are creating spending plans, not buying everything they want, saving money, paying cash for what they purchase, shopping smarter, and making better choices based on their experience with Reality Store. They have shared what they learned with brothers and sisters, parents, and friends. Some of the things they shared were that it was expensive having children, that it is important to save, that it hard to make decisions, that things are expensive, and that the higher the education you have, the better the job you will get. Kid's Marketplace, Camp Millionaire, and NEFE HSFPP workshops directly reached an additional 2,896 youth. NEFE provided the HSFPP to 255 teachers and 16,620 students at 152 schools in Virginia in 2010.

4. Associated Knowledge Areas

- ☐ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☐ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☑ 607 - Consumer Economics
- ☐ 608 - Community Resource Planning and Development
- ☐ 610 - Domestic Policy Analysis
- ☑ 801 - Individual and Family Resource Management
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Helping Families Manage their Finances

2. Associated Institution Types

☐ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The national economic climate is rapidly changing and individuals and families are unprepared. As a result, bankruptcies are up, savings are down, and families face layoffs or job losses. Collaborators such as churches, senior centers, 4-H groups, Girl Scouts, and others who wish to assist their members, request educational programs that will assist their members in dealing with these changes.

What has been done
In 2009-10, Virginia State University designed and conducted family financial management seminars to assist Virginia families in developing the skills needed to effectively navigate today's financial climate. Seminars on family financial management were presented to youth, families, college students and older adults and included instruction on setting financial goals, developing a spending plan, understanding credit, identity theft and other critical basic financial management concepts. All seminars included displays related to particular seminar topics. Participants were provided the opportunity to practice skills and were provided feedback that allowed them to refine their financial options.

Results
Individuals who participated in the VSU Family and Consumer Sciences Financial Management programs self-reported that they gained knowledge and skills in identifying how needs and wants affect purchasing decisions and the impact of identity theft on family financial stability. They

increased knowledge about developing personal financial goals, spending plans/budgets and the affect on family financial stability. Additionally, they learned credit management concepts and how credit management affects family financial stability.

4. Associated Knowledge Areas

- ☐ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☐ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 607 - Consumer Economics
- ☐ 608 - Community Resource Planning and Development
- ☐ 610 - Domestic Policy Analysis
- ☑ 801 - Individual and Family Resource Management
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☐ Appropriations changes
- ☐ Public Policy changes
- ☐ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

Virginia has lost many county Family and Consumer Educators due to budget restraints. The remaining agents have done their best to fill the void left my these agents.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☐ Before-After (before and after program)
- ☐ During (during program)

- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Food, Nutrition, and Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	20%	0%	35%	0%
703	Nutrition Education and Behavior	40%	60%	35%	0%
724	Healthy Lifestyle	40%	40%	30%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	38.0	2.0	32.8	3.0
Actual	8.3	1.0	7.6	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
205165	154869	143572	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
232735	123468	483984	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
570801	5000	1764086	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct educational classes, workshops, meetings, and trainings, develop products, curriculum, resources, facilitate coalitions and/or task forces, conduct assessments and community surveys, partner with community agencies and institutions to facilitate programs and community development, create/revise social systems and public policies, conduct research studies, disseminate program and research results through papers, reports, and media, develop and implement marketing strategies using various outlets to promote program participation, disseminate research-based information to consumers using a variety of media and technology resources, cooperate with media and other community agencies to seek effective means of reaching new and non-traditional audiences, and respond to consumer inquiries.

2. Brief description of the target audience

Young adults (ages 25 - 59), older adults (age 60 and older), caregivers of older adults, adults with type 2 diabetes, parents and caregivers of individuals with type 2 diabetes, senior center and meal site staff and volunteers, and Extension educators.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	120000	100000	120000	5000
Actual	23011	292710	8481	1260

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 2

Patents listed

1. Using routine blood chemistry results to estimate plasma amino acids during an acute or chronic transmissible disease episode
2. Mixture of non-starch polysaccharidases increases the metabolizable energy content of co-products fed to livestock and poultry.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	3	20	
Actual	5	67	72

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Food Safety - Number of food service managers, supervisors and food handling personnel from restaurants, cafeterias, daycare and other food service facilities completing food safety training offered by extension educators in Virginia

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	1000	0

Output #2

Output Measure

- Adult Nutrition and Chronic Disease Prevention - Number of adults participating in diabetes educational programs.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	120	266

Output #3

Output Measure

- Childhood Nutrition and Fitness - Number of pre-school aged youth participating in Extension educational programs at childcare centers or schools

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	2000	0

Output #4

Output Measure

- Childhood Nutrition and Fitness - Number of elementary and middle school-aged youth participating in Extension nutrition education programs

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	57000	0

Output #5

Output Measure

- Childhood Nutrition and Fitness - Number of adolescents participating in Virginia Cooperative Extension nutrition education programs

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	0	0

Output #6

Output Measure

- Childhood Nutrition and Fitness - Number of youth participating in Virginia Cooperative Extension school-based wellness initiatives or efforts to address local school wellness policies aimed at improving available foods and physical activity opportunities

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	17300	0

Output #7

Output Measure

- Adult Nutrition and Chronic Disease Prevention - Number of adults participating in at least one session on adult nutrition, fitness, or health

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	2700	20700

Output #8

Output Measure

- Food Safety - Number of home-based food business workshops conducted for food product formulation, facility planning, food processing and safety, product evaluation, food packaging and labeling, and record keeping

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	4	0

Output #9

Output Measure

- Food Safety - Number of short courses provided on food safety practices including HACCP training, Good Agricultural Practices and recall workshops for industry personnel, consumer organizations, Extension Agents and local, state, and federal health inspectors

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	5	0

Output #10

Output Measure

- Number of home food preservation trainings offered by Extension educators in Virginia

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	4	0

Output #11

Output Measure

- Number of consumers completing safe food handling and preparation classes for civic/community groups and volunteer fund raisers supplying food for large groups of people.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	230	0

Output #12

Output Measure

- Chronic Disease: Number of research projects completed or in progress on obesity and related chronic disease.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	10	65

Output #13

Output Measure

- Chronic Disease: Number of research papers published on obesity and related chronic disease.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	6	65

Output #14

Output Measure

- Food Safety: Number of research projects completed or in progress in the area of food safety.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	6	0

Output #15

Output Measure

- Food Safety - Number of home based business entrepreneurs that have products evaluated for thier safety by the 'Food Processor Technical Assistance Program' to prevent foodborne illness across the commonwealth.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	100	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Food Safety - Increase in the number of food handlers (managers, supervisors, and food handling personnel from restaurants, public school and hospital cafeterias, daycare centers, nursing homes, university food service, correctional centers, civic/community groups and volunteers) who increase knowledge and skills in safe food handling practices.
2	Food Safety - Increase in number of home-based business entrepreneurs that increase awareness and knowledge in producing safe high acid and acidified food products.
3	Chronic Disease Prevention - Increase in the number of individuals with diabetes who have lowered their Hemoglobin A1c level at least 0.5, three months after participating in a Diabetes Education programs offered in collaboration with a local health care provider.
4	Nutrition, Physical Activity and Health - Increase in number of youth and adults that make lifestyle changes which improve their dietary quality and/or physical activity level after participation in VCE programs.
5	Food Safety Research - Increase in number of discoveries from completed food related research projects which focus on enhancing the safety of the Nation's food supply and the development of value added foods.
6	Chronic Disease Prevention Research - Number of discoveries from completed obesity related research projects which focus on examining obesity from its root causes to its association with disease.
7	Diabetes Education
8	Nutrition Education in the Workplace
9	Expanded Food and Nutrition Education Program Promotes Positive Health Behavior Change
10	The Expanded Food and Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Education Program (SNAP-Ed) Reduces Health Care Costs in Virginia.
11	Virginia Cooperative Extension Partnering with Share Our Strength Cooking Matters.

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Food Safety - Increase in the number of food handlers (managers, supervisors, and food handling personnel from restaurants, public school and hospital cafeterias, daycare centers, nursing homes, university food service, correctional centers, civic/community groups and volunteers) who increase knowledge and skills in safe food handling practices.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Reporting on this outcome in the Food Safety PP section.

What has been done

Results

4. Associated Knowledge Areas

Outcome #2

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Food Safety - Increase in number of home-based business entrepreneurs that increase awareness and knowledge in producing safe high acid and acidified food products.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	150	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Reporting on this outcome in the Food Safety PP section.

What has been done

Results

4. Associated Knowledge Areas

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Chronic Disease Prevention - Increase in the number of individuals with diabetes who have lowered their Hemoglobin A1c level at least 0.5, three months after participating in a Diabetes Education programs offered in collaboration with a local health care provider.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research

☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	6550	239

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Approximately 466,800 Virginians have been diagnosed with diabetes (DM) and another 233,441 have undiagnosed DM. DM is the 6th leading cause of death in VA and adds to deaths from heart disease and stroke. DM and related complications carry a high cost in money, loss of productivity, and a lower quality of life. In VA, DM leads to 11,700 hospitalizations each year, adding nearly $173 million to VA?s health care bill.

What has been done
Dining with Diabetes helps individuals with diabetes and their families learn about healthy eating and active living to lower blood sugar levels and prevent complications. In 2010 FCS agents with funding from the National Institutes of Health cooperated with the College of Osteopathic Medicine, the Carilion Clinic CNRV Diabetes Program, and the Virginia Tech Center for Research in Health Behavior to offer this series. This program teaches people about self care, appropriate food choices, and life style patterns relating to diet and physical activity to prevent or slow disease complications.

Results
Lifestyle changes such as healthier eating, increased activity, and modest weight loss were shown to substantially reduce progression from pre-diabetes to type 2 diabetes by 58%. In one group class, the average HgbA1c, a marker of the level of control of diabetes, dropped, on average, from 8.9% to 8.3%. Research published in the Journal of the American Medical Association found that people who decrease their hemoglobin A1c by even 0.5% may require fewer physician visits in the years following and could save at least $685 per year in health care costs. A 1.0% drop in hemoglobin A1c is associated with a 40% decrease in risk of diabetes complications including blindness, kidney failure, and amputations.

4. Associated Knowledge Areas

☑ 702 - Requirements and Function of Nutrients and Other Food Components
☑ 703 - Nutrition Education and Behavior
☑ 724 - Healthy Lifestyle

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Nutrition, Physical Activity and Health - Increase in number of youth and adults that make lifestyle changes which improve their dietary quality and/or physical activity level after participation in VCE programs.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	90000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Health care costs have nearly tripled in the past 30 years in the US. In 2004, it was estimated that health care expenditures per Virginian were $4,822. Obesity and diabetes contribute to these rising costs, as well as an increasing aging population and emergency room visits by uninsured persons. It has been estimated that one in 8 Virginian adults, including middle-income, are uninsured, based on estimates before the recession.

An individual who is obese will require more health care over a lifetime than an individual who has a healthy weight. It is estimated that individuals who are roughly 100 pounds overweight have twice the healthcare costs than healthy weight individuals and cost the US $73.1 billion. Currently, 62% of adult Virginians are overweight or obese, 466,883 adult Virginians have diabetes, 233,441 adult Virginians have diabetes and do not know it (undiagnosed), and 1.2 million Virginians 40 to 74 years-of-age have pre-diabetes.

What has been done
Good nutrition and physical activity are central in preventing chronic diseases, such as obesity and diabetes, and saving healthcare costs. VCE offers education on a wide variety of food, nutrition, health, and chronic disease topics for individuals to reduce the number of visits to doctors and other healthcare providers, fewer costly laboratory tests, and lower numbers of

hospital visits for unmanaged diabetes for uninsured individuals. One of the signature VCE programs includes the FIT Extension program. The FIT Extension program was conducted in 19 Virginia localities to increase physical activity and consumption of fruits and vegetables. Teams of approximately six people pooled miles walking or actively moving across Virginia in eight weeks. Accumulated miles of physical activity and cups of fruits and vegetables were posted weekly on the FIT Extension website and participants received weekly newsletters with behavior change strategies. VCE educators trained an additional 2,000 volunteers, who contributed over 100,000 hours of time to the delivery of programs.

Results

Across the state of Virginia 1188 people participated in FIT Extension alone. Participants of Fit Extension who were not meeting the physical activity guidelines prior to the start of the program showed significant increases in physical activity by 40 minutes. Specifically, previously inactive participants increased their moderate to vigorous activity by an average of 77.5 minutes per week. Participants who were somewhat active prior to the start of the program increased their moderate to vigorous activity by 41 minutes per week. The proportion of participants meeting the program goal of 5 cups of fruits and vegetables improved from 36.8% at the start of the program to 70.4% at the end of the program, which reflects, on average, an increase of 2.25 cups per day. Similar improvements were seen in other community-based programs delivered by VCE Educators.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #5

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Food Safety Research - Increase in number of discoveries from completed food related research projects which focus on enhancing the safety of the Nation's food supply and the development of value added foods.

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	4	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Reporting on this outcome in the Food Safety PP section.

What has been done

Results

4. Associated Knowledge Areas

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Chronic Disease Prevention Research - Number of discoveries from completed obesity related research projects which focus on examining obesity from its root causes to its association with disease.

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	4	52

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Recent data indicate 17% of children and adolescents are obese and more than 30% of adults. Excess body fat increases the risk of hypertension, cardiovascular disease, and diabetes, major contributors to health care costs, loss of productivity, early mortality, and diminished quality of life.

Obesity-related illnesses place a significant burden on the economy and obesity is believed to account for as much as 9 percent of total health care expenditures and a minimum of $26.8 billion in medical spending.

What has been done

The etiology of obesity extends beyond energy imbalance to include genomic, molecular, cellular, and organ components that interact with individual preferences, family and community, work life, economics, and public policy. Virginia Tech scientists are striving to examine obesity from bench to behavior through inter-disciplinary and translational science and applications that will result in positive public health impacts.

Results

In 2010, 52 peer-reviewed articles (in childhood obesity and food, nutrition, and health) were published or in press. Current research studies aim to explore a multitude of factors and interventions related to obesity, health, and well-being, including: Hypothalamic control of body weight, using mouse models; If economics can influence genetics and whether the genetics of an individual can influence economic decisions using mice and an operant behavior chamber to set food prices; The effect of resistance training as an approach to prevent diabetes from developing among older, overweight individuals with pre-diabetes; The potential effectiveness of the magnitude, type, and timing of financial incentives in stimulating weight loss program reach in overweight and obese adults; Identification and characterizing of phytochemicals from food sources or medicinal herbs that provide beneficial effects on cardio-vascular disease and diabetes; Conceptualization and implementation of a cost-effectiveness analysis of a youth nutrition education program for limited resource youth; The impact of lifestyle and pharmacological therapies, both alone and in combination, to alter the course of the cardiovascular and metabolic consequences that occur with aging and obesity.

4. Associated Knowledge Areas

- ☑ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Diabetes Education

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension

- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The American Diabetes Association (ADA), reports that 25.8 million children and adults in the United States, 8.3% of the population have diabetes. Diabetes rate in Virginia has nearly doubled from 3.8 percent in 1995 to 8.0 in 2008. In 2006, there over 11,880 hospital discharges listing diabetes as the primary cause in Virginia, costing over $227 million dollars. Nationwide the cost of diabetes in the U.S. exceed $174 billion in 2007. The chronic disease of diabetes increases the risk of adult Virginians to have high blood pressure, high cholesterol, engage in less physical activity, than adults without diabetes.

What has been done
Our program seeks to alleviate the growing diabetes trend. Research has shown that good diabetes management can help to reduce or delay complications and thus the cost of diabetes. Virginia State University conducts a series of classes themed ?Fitting together the Pieces of Diabetes? to give type 2 diabetics, those at risk, and their families information on nutrition, physical activity, and community support for complications.

Results
Approximately 90% of the participants have increased their knowledge of how to choose healthy foods, read nutrition labels, the importance of physical activity and advocating for their health. They are now, ?more willing to try new {healthy} foods?. Several participants have commented on their improved A1C levels and less need for medication since becoming part of the program. A support has been started by the participants.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☐ 724 - Healthy Lifestyle

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Nutrition Education in the Workplace

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Health and wellness education implemented in America workplaces have proven to reduce costs related to medical insurance provisions and have proven to increase employee production while at work. Half of all diseases have a link to poor health behaviors, and 20% of employees account for 80% of medical claims costs. With almost a seventy percent rate of obesity, the American workforce is in need of healthy food choice education. Obesity is often the result of poor nutrition and misinformation. Virginia is striving for healthy communities, healthy behaviors, such as eating nutritious foods and being physically active are important.

What has been done
Virginia State University?s FCS health specialist created an interactive program that helps persons to make better food choices using MyPyramid. Partnering with Chesterfield County government employees through their employee training program, twice a year, ?Balancing Nutrition? is offered through Chesterfield University, to promote better food choices to interested employees. A version of the program is also offer to other community groups that request nutrition education.

Results
The program reaches approximately 100 Chesterfield county employees with nutrition education. 90% of participants in a recent class said they would recommend the class to others. Additional comments on what they would change as a result of the class included: Cut portion sizes, ?I will

ensure that all food categories are included in each meal,? ?start eating a variety of healthy foods ?start snacking on nuts and fruits rather than sugary alternatives?. The FCS program also partnered with the faith-based and other community organizations to reach an additional 225 person with nutrition information.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☐ 724 - Healthy Lifestyle

Outcome #9

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Expanded Food and Nutrition Education Program Promotes Positive Health Behavior Change

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity has reached epidemic proportions in the United States and 30% of children bear the burden at larger proportion than ever before. The highest rates of obesity incidence are in low income populations. The combination of poor or compromised health status (high blood pressure, stroke, diabetes, cancers) and low income has significant emotional, physical and spiritual impacts. It is critical that education programs operate with a health promotion/disease prevention mindset to alter this trend through positive behavior change.

What has been done
In 2009, the Virginia Cooperative Extension?s Expanded Food and Nutrition Education Program (EFNEP) enrolled 2045 low income adults and 14,669 low income youth whose incomes were up

to 185% of federal poverty guidelines. Through a six nutrition lesson series, participants learned to selected, buy, prepare, and store foods to meet the nutritional needs of their families, while operating within sound budget and gaining organizational skills.

Results
Pre and post program measures showed that of adults participating in EFNEP:
83% showed improvement in food resource management practices
88% engaged in sound nutrition practices more often
70% followed food safety recommendations more often
Youth participating in EFNEP:
81% increased their consumption of vegetables.
82% increased their consumption of whole grains.
86% increased their consumption of nutrient dense snacks
74% decreased their consumption of soft drinks.
86% increased their physical activity level.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #10

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

The Expanded Food and Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Education Program (SNAP-Ed) Reduces Health Care Costs in Virginia.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Chronic diseases are the leading cause of morbidity and mortality in the United States. A sedentary lifestyle and poor diet are linked to being overweight and obese. Unhealthy lifestyles and poor diets can also lead to an early onset of chronic diseases. Heart disease, stroke, cancer, and diabetes are the most prevalent, but respond best to sustainable health behavior changes. The Centers for Disease Control and Prevention reports, of the deaths occurring in Virginia during 2005, 25% were linked to heart disease and 24% were associated with cancer. A reported 1,642 Virginians died from diabetes in 2005. In 2007, 62% of Virginians were overweight or obese and 74% consumed less than 5 fruits and vegetables each day (Centers for Disease Control and Prevention, 2008). Chronic diseases results from unhealthy lifestyle and are become a financial burden to the state and federal government. The estimated medical cost associated with obesity is $147 billion. Likewise, an obese person has medical costs that are $1,429 more than his or her normal weight counterpart (Centers for Disease Control and Prevention, 2010).

What has been done
EFNEP and SNAP-Ed teaches families, youth and seniors skills necessary to promote healthy lifestyles eat more meals at home, prepare healthy and tasty meals for their families, increase fruit and vegetable consumption, control portion sizes, move more everyday, move more and watch less, and replace sugary beverages with healthy options.

Results
Participants completing the EFNEP and SNAP-ED series of 6 lessons improved nutrition and food behavior. Post lesson data gathered through behavior change questionnaires in EFNEP have shown:
61% used food labels more often to make food choices
18% of participants increased physical activity
96% of participants improved their diet
44% increased fruit consumption
54% increased vegetable consumption
53% increased consumption of calcium-rich foods
Post-lesson data gathered through behavior change questionnaires in SNAP-ED have shown:
53% used food labels more often to make food choices.
83% of participants improved their diets

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

Outcome #11

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Virginia Cooperative Extension Partnering with Share Our Strength Cooking Matters.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Overweight and obesity are major health and economic issues, costing Americans over $147 billion each year. Likewise, an obese person has medical costs that are $1429 more than his or her normal weight counterpart (Centers for Disease Control and Prevention, 2010).Thirty percent of children and adolescents are overweight and 64% of adults are overweight or obese in the US. Families of low-socioeconomic status suffer disproportionately from poor health.

What has been done
Virginia Cooperative Extension?s (VCE) Family Nutrition Program, Family Consumer Science Agents, 4-H Agents and chef volunteers collaborated with Share Our Strength to deliver interdisciplinary programs to address nutritional needs of limited income communities and/or family systems whose income was up to 150% of federal poverty guidelines.
Participants were taught to select, buy, prepare, and store foods to meet the nutritional needs of their families, while operating within sound budget, and develop organizational skills. Courses are offered exclusively to low-income families; most participants are enrolled in food assistance programs including SNAP (food stamps) and free or reduced-price school meals. Families were provided take-home groceries after each class to supplement the family food budget. In addition, VCE has the capacity to provide financial management, family and youth development skills.

Results
Beginning in 2008, Virginia received a 3 year grant for $100,000. Twelve units were awarded $2500 - $3500 to pilot and conduct 3- six week (24) courses each year. Twenty- six courses were conducted. National Extension Agents contributed more time to limited income family programming therefore increasing the amount of cost share for the SNAP-Ed program. Evaluation data from the first year were 76 staff and volunteers conducted 26 courses for 38 teens, 69 youth and 163 adults. 100% of children learned at least one new thing about cooking; 88% practiced preparing recipes at home with their parents, 92% reported that cooking skills were improved, 70% are eating more fruits and vegetables. The average cost of 978 take-home groceries were $25.00 per bag (an average of $19, 560). Additional collaboration with local agencies and program sustainability were established.

4. Associated Knowledge Areas

- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 703 - Nutrition Education and Behavior
- ☑ 724 - Healthy Lifestyle

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☑ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☐ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

The economy (i.e. employment opportunities, etc.) can directly influence food purchases and food security of adults and families and furthermore weight status.

Public policy changes, such as the Affordable Healthcare Act, may impact a multitude of factors related to food, nutrition, health, and healthcare access in 2011 and beyond.

Several populations, particularly Hispanic and African American individuals, have higher rates of obesity. With population shifts within Virginia, it is possible to see changes in obesity prevalence rates.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☑ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☑ Time series (multiple points before and after program)
- ☐ Case Study

- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

All major programs relating to children and youth are evaluated to determine program effectiveness, although outcomes may not be available from all locations statewide. Research funding has enabled us to expand our reach in various program areas and in that situation, data are gathered at every location.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Food Safety

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%	0%	0%	0%
501	New and Improved Food Processing Technologies	20%	0%	25%	0%
502	New and Improved Food Products	25%	0%	25%	25%
702	Requirements and Function of Nutrients and Other Food Components	0%	0%	0%	25%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	25%	0%	25%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	25%	100%	25%	50%
	Total	100%	100%	100%	100%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	6.7	0.3	9.5	3.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
254527	93892	178116	665210
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
288731	74807	600431	452343
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
708136	0	2188528	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct educational classes, workshops, meetings, and trainings, develop products, curriculum, resources, facilitate coalitions and/or task forces, conduct assessments and community surveys, partner with community agencies and institutions to facilitate programs and community development, create/revise social systems and public policies, conduct research studies, disseminate program and research results through papers, reports, and media, develop and implement marketing strategies using various outlets to promote program participation, disseminate research-based information to consumers using a variety of media and technology resources, cooperate with media and other community agencies to seek effective means of reaching new and non-traditional audiences, and respond to consumer inquiries.

2. Brief description of the target audience

Retail and food service employees, retail and food service management, temporary food vendors, child care providers, young adults (ages 25-59), older adults (ages 60 and older), Extension educators, and commercial food processors.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	11620	18588	955	209

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	5	14	19

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of food service managers, supervisors and food handling personnel from restaurants, cafeterias, daycare and other food service facilities completing food safety training offered by extension educators in Virginia.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	872

Output #2

Output Measure

- Number of home-based food business workshops conducted for food product formulation, facility planning, food processing and safety, product evaluation, food packaging and labeling, and record keeping.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	3

Output #3

Output Measure

- Number of short-courses provided on food safety practices including HACCP training, Good Agricultural Practices and recall workshops to industry personnel, consumer organizations, Extension Agents and to local, state, and federal health inspectors

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	37

Output #4

Output Measure

- Number of home food preservation trainings offered by Extension educators in Virginia

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	56

Output #5

Output Measure

- Number of consumers completing safe food handling and preparation classes for civic/community groups and volunteer fund raisers supplying food for large groups of people.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	234

Output #6

Output Measure

- Number of research projects completed or in progress in the area of food safety.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	6

Output #7

Output Measure

- Number of home based business entrepreneurs that have products evaluated for thier safety by the 'Food Processor Technical Assistance Program' to prevent foodborne illness across the commonwealth.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	59

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase in the number of food handlers (managers, supervisors, and food handling personnel from restaurants, public school and hospital cafeterias, daycare centers, nursing homes, university food service, correctional centers, civic/community groups and volunteers) who increase knowledge and skills in safe food handling practices.
2	Increase in number of home-based business entrepreneurs that increase awareness and knowledge in producing safe high acid and acidified food products.
3	Increase in number of discoveries from completed food related research projects which focus on enhancing the safety of the Nation's food supply and the development of value added foods.
4	Increase in the number of Virginia Food Producers receiving enhancing their knowledge in safe food production, handling and processing through Good Agricultural Practices, Good Manufacturing and HACCP trainings
5	Improving Farm Hygiene and Produce Sanitization
6	Value-adding Components and Properties of Pomace from Virginia Grown Fruits and Vegetables

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of food handlers (managers, supervisors, and food handling personnel from restaurants, public school and hospital cafeterias, daycare centers, nursing homes, university food service, correctional centers, civic/community groups and volunteers) who increase knowledge and skills in safe food handling practices.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	494

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Foodborne illness significantly affects public health in the United States and the overall cost to the public is high. The Centers for Disease Control and Prevention estimate there are 76 million cases of foodborne illness per year resulting in 325,000 hospitalizations and 5,000 deaths2. The cost of foodborne illness in terms of pain and suffering, reduced productivity and medical expenses is estimated to be between $10 billion and $83 billion dollars per year. This equates to an estimated cost between $131 and $1,092 per foodborne illness case.

Between 2000 and 2006, the state of Virginia averaged 17 foodborne outbreaks per year resulting in an average of 578 confirmed cases (sick individuals) per year3. For each confirmed case there are an estimated 20-38 unconfirmed cases2. Between 11,560 and 21,964 Virginians suffered from foodborne illness each of those years. The estimated economic loss from foodborne illness is between $1,514,360 and $23,984,688 per year.

According to the CDC, inadequate cooking, improper holding temperatures, contaminated

equipment, poor personal hygiene and food from unsafe sources are the top factors contributing to foodborne illness1. Safe food handling and preparation by food handlers can dramatically reduce illness and health costs.

What has been done

In 2010 VCE conducted food handler trainings across the state including: 36 manager food safety certification courses (16 hour nationally recognized certification program) were provided to 494 individuals from the food service industry, schools, senior and day care centers across the state; 14 employee food safety certification courses (6 to 10 hour trainings) were provided to 378 individuals were food handlers preparing foods in non-supervisory roles; 12 general safe food handling and preparation courses were provided to 234 individuals. These included consumers preparing foods in their homes, individuals from non-profit organizations such as church, civic groups and public service organizations preparing food occasionally for the public.

Nineteen family and consumer sciences Extension educators provided these programs in over 40 counties across the state. Over 461 restaurants, schools, day care centers, churches, civic groups, public service organizations and other locations sent individuals to VCE to complete food safety training.

Results

Food handler trainings were evaluated to determine the knowledge and behavior changes of participants. Of those who completed pre and post evaluations, 89% increased their knowledge of food safety practices.
132 participants responded to a follow-up survey, for a response rate of 12%. Of respondents, 100% adopted at least one new food safety behavior including, 100% improved time and temperature practices; 100% made changes to prevent food contamination; 100% made changes to personal hygiene practices.
In addition, respondents shared food safety information with 870 additional food handlers.

It is conservatively estimated that if one case of foodborne illness is prevented per food handler completing proper food safety training and application through VCE, this translates into a potential annual savings of between $145,527.48 and $1,207,873.66 for the state of Virginia. This savings is calculated from pain and suffering, reduced productivity and medical expenses. This range of economic costs ensures a broad, accurate measure of the potential impacts from food safety programming provided across Virginia.

4. Associated Knowledge Areas

- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☐ 501 - New and Improved Food Processing Technologies
- ☐ 502 - New and Improved Food Products
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in number of home-based business entrepreneurs that increase awareness and knowledge in producing safe high acid and acidified food products.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	59

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Food processors in Virginia need guidance on formulation and regulation of their products in order to produce safe and wholesome food products that are in compliance with state and federal laws.

What has been done
Food products and processes are analyzed and recommendations for formulation and processing are delivered. Since we are recognized as a Process Authority for acidified foods, food processors who receive guidance through this program are able to file required processing documents with the Food and Drug Administration (FDA).

Participating companies and individuals receive education on the following topics:
- Federal, state and local regulations for processed food products
- Appropriate modifications in formula and/or process to be in compliance with regulations or to otherwise improve
the safety and wholesomeness of food products
- Filing and maintenance of required documentation.

Results
In 2010, the Food Processor Technical Assistance Program analyzed 209 products submitted by 59 clients. The products can be categorized as follows:

-178 products were evaluated to validate the production processes.
-126 products required a process or packaging change.
- 42 of these products had major safety issues.
- 7 of these products were considered unsafe and were already on the market.
- 41 products were evaluated to determine if the product was a Potentially Hazardous Foods.
- 50 products needed evaluation for FDA compliance.
- 25 products were analyzed to determine if the food product was considered as a formulated acid food.
- 56 nutritional facts labels were computed for producers.

The program also performed the following services for major Virginia Food Companies:
- Process validation for two beef jerky processors - a requirement before the business could be inspected and launched.

Savings to Virginia Food Processors in Direct Costs Associated with Testing and Recommendations:
1. Process Analysis/Thermal Process validation (compared to a well-known Maryland company) base price $300/product; 178 products x $300 = $53,400.

2. Nutritional Analysis Computation (compared to a California based company) - $495/product 29 labels x $495 = $14,355.

3. Consultation for major problems such that safety protocol is applied. Using a base consultation price of $125/hour and an estimate of 0.5 hours/issue: 126 issues X 0.5 hours x $125 = $7,875.

4. Product Development 13 clients in 2010 required extensive product development to launch their products. UGA Department of Food Science offers a product development package which comparable services for $750/client. 13 clients X $750 = $9,750.

5. Consultation for Company Audits (2 companies). Using a base consultation price of $125/hour and an estimate of 10 hours for issue one and 2 hours for issue two: 10 hours X $125 = $1,250.

TOTAL DIRECT COST SAVINGS TO VIRGINIA FOOD COMPANIES IN 2010: $86,630.
This calculation does not include over 1500 phone calls and emails fielded by this office to individual Virginia residents, VCE agents, VDACS agents and VDH agents.

TOTAL SAVINGS TO THE COMMONWEALTH THROUGHT PREVENTION OF FOODBORNE ILLNESS: If each client prevents just one foodborne illness (using Salmonella as a low-cost basis), then the savings is $120,186 annually.

Botulism is the primary foodborne illness agent of concern in canned foods. If all of the clients assisted in 2009 prevented one case of botulism (collectively), then the savings to the commonwealth is $100,000.

TOTAL SAVINGS TO VIRGINIA:
Therefore, a conservative estimate of the value of this program to Virginia is approximately $306,816 annually.

4. Associated Knowledge Areas

- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards

- ☐ 501 - New and Improved Food Processing Technologies
- ☑ 502 - New and Improved Food Products
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in number of discoveries from completed food related research projects which focus on enhancing the safety of the Nation's food supply and the development of value added foods.

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	13

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Center for Disease Control and Prevention estimates that there are approximately 76 million cases of foodborne illness each year. Strategies to improve the safety of the food supply and decrease foodborne illness are critical. Additionally, work to improve food quality to extend shelf-life and nutritional content of foods is critical to the Nations ability to address food security and hunger issues. All of these topics are being addressed by research in the College of Agriculture and Life Sciences.

What has been done
Approximately 10 faculty members from the Food Science & Technology Department, Plant Pathology and Weed Science and Biological systems engineering are conducting research in this area. Approximately 13 projects were completed in 2010 with over 14 peer reviewed publications.

Results

Selected discoveries from this work include: Identified extraction and fractionation procedures that result in natural anti yeast compounds from peanut skins; Identified natural compounds that inhibit the formation of benzene in beverages that use sodium benzoate as an anti mold/yeast additive; Identified a natural compound that inhibits the non enzymatic browning of peaches; Using a fixed inactivation level of 3 logs and a fixed quality of 95% best quality, optimal cooking conditions were determined that both provide a high quality product and assure microbial safety of shrimp and Atlantic salmon; Cooking to74°C is recommended as the internal temperature endpoint when cooking fish/shellfish; Developed Omega-3 enriched beverages that demonstrated physical properties and characteristic of whole milk while delivering 432mg of omega-3 fatty acid per 8oz serving; Developed improved methodology for detection and optimized sample recovery of Campylobacter in poultry processing; Testing of products for mycotoxins has improved the ability of Virginia wheat and barley to compete in national and global markets, and has broadly improved food safety and security in the United States by providing accurate and timely mycotoxin testing services for DON in raw grain.

4. Associated Knowledge Areas

- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☑ 501 - New and Improved Food Processing Technologies
- ☑ 502 - New and Improved Food Products
- ☑ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of Virginia Food Producers receiving enhancing their knowledge in safe food production, handling and processing through Good Agricultural Practices, Good Manufacturing and HACCP trainings

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	{No Data Entered}	630

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food safety trainings, specifically Good Agricultural Practices (GAPs), Good Manufacturing Practices (GMP?s), Hazard Analysis Critical Control Point (HACCP), sanitation, and allergen controls, continue to address a primary need of food producers in Virginia. In-house custom training programs allows us to focus trainings on issues of concerns by the company, help employees acquire skills and understand how their work function affects the quality and safety of the product. Since high portion of the employees in these industries are Spanish speakers, providing trainings in their native language (Spanish) decreases the chance for misunderstanding of work expectations and allows for the proper application and performance of required dutiesOverall, basic understanding and proper application of GMP?s, sanitation and HACCP procedures is the backbone for the production of safe and quality seafood in the USA.

What has been done

One hundred and twenty (120) farmers and sixty (60) USDA farm auditors were trained in Good Agricultural Practices. Eleven (11) custom English and Spanish Good Manufacturing Practices (GMP?s) trainings were developed and delivered to a total of 258 food processing employees, seven (7) English and Spanish HACCP trainings were delivered to a total of 87 employees, two (2) English and Spanish food allergen processing controls trainings to 29 seafood employees and supervisors, one (1) sanitation control procedures training and one (1) English and Spanish food defense training to 65 were developed and delivered to seafood processing employees in Virginia

Results

The GAPs trainings better prepares the auditors to make farm-level decisions that will result in improved safety of fresh fruits and vegetables. The training also provides the auditors with knowledge to better communicate with farmers who have chosen to become GAPs certified. Bilingual training and materials provided, helped companies employees gained better understanding and application of manufacturing procedures, how to effectively identify and control food safety hazards and prevent contamination of products before it reaches the consumer. Statements excerpted from a follow up survey sent to seafood processors indicated that these trainings "provided a foundation for their success in the business", "helped them pass product protocols due to bilingual training regarding safe food handling, hand-washing, cross-contamination" and "helped meet training requirements by VDHSS, FDA, so that we can continue to produce safe quality food products". Another company indicated that "prior to training they were having unsatisfactory finished product sampling results". After training and recommended procedures were applied, they were able to meet necessary requirements.

4. Associated Knowledge Areas

- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☑ 501 - New and Improved Food Processing Technologies
- ☑ 502 - New and Improved Food Products
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Improving Farm Hygiene and Produce Sanitization

2. Associated Institution Types

☐ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☑ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Fresh fruits and vegetables are considered by consumers to be healthful, nutritious foods. However, numerous recent food-borne illness outbreaks have been linked to contaminated produce in the United States. In investigations of such outbreaks, researchers often conclude that contamination likely occurred on the farm or during produce packing, where more effective control strategies are needed.

What has been done
Researchers at Virginia State University have been looking for new and/or alternative approaches to better prevent and eliminate microbial contamination in fresh fruits and vegetables during produce production and handling. Research has been conducted to develop an effective produce sanitization procedure. This study evaluated the efficacies of chlorine dioxide, ozone, organic acids, etc. under various application conditions for produce sanitization and prevention of cross-contamination within washing systems and wash runoff.

Results
Researchers found that spray washing fruits with high-purity chlorine dioxide on roller brushes is an effective method for tomato sanitization on packing lines. This research increased knowledge of microbial ecology with regard to the routes of contamination and intervention. Based on current scientific data, industry groups recognized chlorine dioxide as a valid alternative sanitizer to chlorine in best management practices for tomato packinghouses. Nationally over 60 tomato

packing lines (including four Virginia facilities) have now adopted the alternative method for fruit sanitization. The conversion reduced the usage and environmental impact of chlorine, a conventional biocide that may react with organic materials to form potentially carcinogenic compounds.

4. Associated Knowledge Areas

- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☐ 501 - New and Improved Food Processing Technologies
- ☐ 502 - New and Improved Food Products
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☑ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Value-adding Components and Properties of Pomace from Virginia Grown Fruits and Vegetables

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Pomace is the remaining byproduct from the juice extraction procedure and is mainly comprised of skin and seeds. Pomace extracts could be used to treat chronic diseases such as diabetes which affects more than 20 million Americans.

What has been done
Experiments have been conducted to investigate anti-diabetic properties of 340 fruit and

vegetable pomace extracts. Pomace samples were investigated for their ability to inhibit the enzyme, alpha-glucosidases and reduce blood sugar spikes include grape apple, and tomato.

Results

The skin from Norton grape (Vitis aestivalis) was the only sample that had an alpha-glucosidase inhibitory effect, and it was similar to Acarbose. The Norton grape skin extract's inhibitory effect began as low as 7.1 equivalent g/mL (g eq. mL), which is a very low concentration. Scientists then tested 15 grape pomace (skin and seed) extracts grown in Virginia on both yeast and rat intestine for -glucosidase inhibitory effects. We found that all of the grape pomaces showed inhibition in both models. In the yeast, we found a decrease in activity from 16.3% to 99.5% at 2.5 mg equivalents/mL (mg eq. /mL). In the rat intestinal model we found that 20 (mg eq. /mL) decreased -glucosidase activity from 14.6% to 75.6%.
Current sales of pharmaceutical alpha-glycosidase inhibitors in the U.S., such as Acarbose and Voglibose, et cetera, total more than $300,000,000 per year, and tapping into that market could be very lucrative for grape producers. This study has the potential to significantly increase the value of this product that is currently treated as waste by growers and producers of grapes. The potential health and financial benefits of this research can be far-reaching and significant for Virginia and the U.S.

4. Associated Knowledge Areas

- ☐ 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards
- ☐ 501 - New and Improved Food Processing Technologies
- ☑ 502 - New and Improved Food Products
- ☐ 702 - Requirements and Function of Nutrients and Other Food Components
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☐ Appropriations changes
- ☐ Public Policy changes
- ☐ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

Significant budget reductions across the state has resulted in a reduction in Extension educators in VCE. This has resulted in a drop in numbers of participants for many of our classes.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☐ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

Evaulation results are described in the outcomes which are provided.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Global Food Security and Hunger - Agricultural Systems

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%	10%	10%	0%
111	Conservation and Efficient Use of Water	10%	10%	10%	0%
112	Watershed Protection and Management	10%	10%	10%	0%
131	Alternative Uses of Land	10%	10%	10%	0%
205	Plant Management Systems	10%	10%	10%	0%
307	Animal Management Systems	10%	10%	10%	0%
402	Engineering Systems and Equipment	10%	10%	10%	0%
403	Waste Disposal, Recycling, and Reuse	10%	10%	10%	0%
601	Economics of Agricultural Production and Farm Management	10%	10%	10%	0%
605	Natural Resource and Environmental Economics	10%	10%	10%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	50.0	6.2	56.2	0.0
Actual	20.0	4.8	21.3	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
617036	390914	431797	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
699955	419225	1455591	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1716694	674880	5305522	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct research experiments that educate and solve applied problems, establish partnerships to identify needs and develop solutions, conduct workshops, both traditional procedures and hands-on, and meetings to provide training for farmers and educators, organize and conduct state and regional conferences, establish on-farm demonstrations, develop enterprise budgets, develop products, curriculum, and resources for use by educators and directly by producers, and conduct assessments as needed to evaluate progress.

2. Brief description of the target audience

Commercial producers
4-H youth
Master Gardeners
State and federal agency personnel
Extension educators
Policy makers
Consumers
Supermarket chain store buyers.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	60000	90000	12000	3000
Actual	85906	80535	16648	1912

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	15	20	
Actual	23	26	49

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educator training workshops

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	25	22

Output #2

Output Measure

- Number of field research experiments

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	35	37

Output #3

Output Measure

- Number of on-farm demonstrations

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	25	37

Output #4

Output Measure

- Number of producer training workshops

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	220	268

Output #5

Output Measure

- Number of existing and future nutrient management planners and educators trained

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	400	365

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Percent increase in gross income from agriculture attributable to extension efforts.
2	Increase in farms and acres subject to organic management due to extension programming efforts which will increase overall profitability of organic agriculture (total annual sales).
3	Increase in the amount of agricultural land under best management practices due to extension programming efforts.
4	Increase and maintain the amount of agricultural land under continuous no-till management due to extension programming efforts.
5	Increase in the number of individuals improving water quality and reducing erosion through participation in an advanced grazing system program.
6	Increase and maintain the percentage of acres employing cover crops to improve nutrient management by trapping nitrogen and reducing runoff.
7	Increase in the number of nutrient management plans, resulting in more efficient utilization of nutrients, and in the number of plan writers trained by Extension.
8	Increase the profitability (total annual sales) of small, part-time and limited resource farmers through sustainable production of specialty agriculture crops and livestock products.

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Percent increase in gross income from agriculture attributable to extension efforts.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
○ Change in Action Outcome Measure
◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	4	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Improved financial security of individuals, families, and agricultural businesses is critical for the long-term economic health of Virginia. Profitable and successful farms and small businesses are the cornerstone of robust families and the communities in which they live. Crop and livestock producers need to balance farm and feed resources to
maximize profits.

What has been done
Agents and specialists conducted on-farm demonstrations, field days, and workshops that demonstrated profitable practices to producers. Crop variety and management evaluations, profitable dairy production strategies meetings, beef production programs, and many other specialty crop and animal production meetings and demonstrations
were held.

Results
Agricultural profitability decreased in Virginia last year, due to higher input costs and lower commodity prices

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 111 - Conservation and Efficient Use of Water
- ☐ 112 - Watershed Protection and Management
- ☐ 131 - Alternative Uses of Land
- ☑ 205 - Plant Management Systems
- ☑ 307 - Animal Management Systems
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 605 - Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in farms and acres subject to organic management due to extension programming efforts which will increase overall profitability of organic agriculture (total annual sales).

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	4500000	400000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Organically raised products often garner a premium from consumers, enhancing producer's profitability.

What has been done
Meetings, demonstrations, and a large conference, the Virginia
Biological Farming Conference were used to educate and teach the process of organic production.

Results
Farmers, USDA agriculture professionals, representatives from non-government organizations and youth attended the conference and meetings. Virginia producers reported organic sales equal to about one percent of all U.S. organic sales.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 131 - Alternative Uses of Land
- ☑ 205 - Plant Management Systems
- ☐ 307 - Animal Management Systems
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the amount of agricultural land under best management practices due to extension programming efforts.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	360000	500000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Approximately 25 percent of Virginia's land area is used for some kind of agricultural activity and these activities can be the source of nutrients and sediment pollution. Best management practices (BMPs) reduce these losses and improve water and ecosystem quality.

What has been done
Virginia's five priority agricultural conservation practices have been, and will continue to be, a focus for additional reductions. These include:
* Nutrient Management Planning
* Cover Crops
* Conservation Tillage
* Riparian Buffers
* Livestock Exclusion

Results
To date more than 500,000 acres of agricultural land is managed using BMPs that support many positive ecosystem services and protect water quality in the Chesapeake Bay. Agricultural clients statewide depend on VCE to provide information about benefits and implementation of these BMPs.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☐ 131 - Alternative Uses of Land
- ☐ 205 - Plant Management Systems
- ☐ 307 - Animal Management Systems
- ☑ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

<u>Outcome #4</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase and maintain the amount of agricultural land under continuous no-till management due to extension programming efforts.

2. Associated Institution Types

☑ 1862 Extension

- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	120000	120000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Through publication of the Watershed Implementation Plan, Virginia is committed to making significant reductions of sediment, nitrogen and phosphorus to the Chesapeake Bay waters. The tributary strategies developed for each major watershed are counting on agriculture to provide the largest share of reductions because pound for pound agriculture can do it more efficiently.

What has been done
The Virginia No-Tillage Alliance (VANTAGE) was created in 2007 to provide a venue for significantly increasing the acres of continuous no-till production in Virginia. Studies have indicated that producers learn best when learning from each other. The VANTAGE program provides for peer-to-peer mentoring opportunities where successful notill farmers can provide information to those making the transition. VANTAGE is a consortium of farmers, agribusiness and agricultural government organizations that are using no-till systems in their operations or are advising others about these systems. Farmer-run and farmer-oriented, this non-profit organization also serves as a clearinghouse for no-till information and research, and exists to maximize farm productivity and profitability by promoting the successful implementation of no-till practices through shared ideas, technology, conservation and education.

Results
VANTAGE is designed to be a statewide program, with regional chapters that will provide leadership and guidance for producers on the local level. In 2008, the Shenandoah Valley VANTAGE chapter became a reality. Under direction from the board of directors, the a VANTAGE conference has been held for the last two years. Nearly 300 individuals attend annually. A VANTAGE website has been developed and will serve as a clearinghouse for no-till information. This website will also feature an "Ask the Expert" forum, currently under development, where new and experienced producers may share ideas and knowledge.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☐ 131 - Alternative Uses of Land
- ☑ 205 - Plant Management Systems
- ☐ 307 - Animal Management Systems
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of individuals improving water quality and reducing erosion through participation in an advanced grazing system program.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	220900	250000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Grazing animals make up a large portion of Virginia's agricultural income and their management affects millions of acres.

What has been done
Conferences, short courses, regional meetings and other trainings have been conducted to demonstrate the economic and environmental advantages of advanced grazing systems.

Results
Additional fencing and advanced grazing techniques have been implemented.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☐ 131 - Alternative Uses of Land
- ☑ 205 - Plant Management Systems
- ☑ 307 - Animal Management Systems
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase and maintain the percentage of acres employing cover crops to improve nutrient management by trapping nitrogen and reducing runoff.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50000	85000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Increased cover crop acreage is one of the main efforts to be implemented to improve water

quality

What has been done
Research trials, demonstrations and meetings have been held to report on the most profitable and effective cover crop systems.

Results
Farmer adoption of cover crops has increased in recent years due to these research and education efforts.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☑ 131 - Alternative Uses of Land
- ☑ 205 - Plant Management Systems
- ☐ 307 - Animal Management Systems
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of nutrient management plans, resulting in more efficient utilization of nutrients, and in the number of plan writers trained by Extension.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	200	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
All large animal feeding operations in Virginia, biosolids applicators and many farms that receive cost share money, are required to have nutrient management plans.

What has been done
Twice a year we conduct a two day science-based training on soils and crop production that the planners undergo before taking the nutrient management exam. We also do the Phosphorus Index component of the three day session organized by the Department of Conservation and Recreation.

Results
This year we trained a total of 47 new nutrient management planners. These planners and those certified in previous years wrote over 200,000 acres of nutrient management plans for permitted farms this year.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 111 - Conservation and Efficient Use of Water
- ☑ 112 - Watershed Protection and Management
- ☐ 131 - Alternative Uses of Land
- ☑ 205 - Plant Management Systems
- ☐ 307 - Animal Management Systems
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the profitability (total annual sales) of small, part-time and limited resource farmers through sustainable production of specialty agriculture crops and livestock products.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2500000	2000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Improved financial security of individuals, families, and agricultural businesses is critical for the long-term economic health of Virginia. Profitable and successful farms and small businesses are the cornerstone of robust families and the communities in which they live. Producers need to balance farm resources and purchased inputs to maximize profits. Many small farmers in Virginia are growing niche market crops. They are selling these crops at farmers markets to maximize net revenue per acre compared to growing commodity crops (e.g. corn, wheat, soybeans) whose prices are determined on world markets. Since niche market crops are grown on limited acres in the nation, it is extremely difficult to find enterprise budgets for these crops.

What has been done
An exhaustive review of enterprise budgets for niche market crops grown in the nation was conducted. Enterprise budgets were found for the following niche market crops: blue berries, black berries, straw berries, raspberries, water melons, cantaloupes, okra, baby lima beans, cut flowers fresh market tomatoes and sweet corn, and bell peppers, black turtle beans, goat production and brown eggs. The budgets were sent to Agriculture Management Agents in the Small Farm Outreach Program at VSU.

Results
Producers gained knowledge to determine breakeven costs for niche market crops grown on their small farms. Then the producers were able to set sales prices that were greater than their costs of production and determine net profit for each crop grown. Consequently, producers will be able to determine the optimal acreage of crops to be grown that would maximize profitability their farms.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 111 - Conservation and Efficient Use of Water
- ☐ 112 - Watershed Protection and Management

- ☑ 131 - Alternative Uses of Land
- ☑ 205 - Plant Management Systems
- ☐ 307 - Animal Management Systems
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☑ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

Drought limited crop productivty in many areas in 2010. The overall economic downturn has influenced lending and investment.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☑ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention

☑ Other ()

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Global Food Security and Hunger - Animals and Animal Products

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	15%	15%	15%	15%
302	Nutrient Utilization in Animals	15%	15%	15%	15%
303	Genetic Improvement of Animals	10%	10%	10%	10%
305	Animal Physiological Processes	10%	10%	10%	10%
307	Animal Management Systems	20%	20%	20%	20%
308	Improved Animal Products (Before Harvest)	10%	10%	10%	10%
311	Animal Diseases	15%	15%	15%	15%
315	Animal Welfare/Well-Being and Protection	5%	5%	5%	5%
	Total	100%	100%	100%	100%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	28.8	4.0	33.2	4.0
Actual	24.6	26.0	26.0	3.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
758955	254842	531110	745035
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
860944	334638	1790377	665210
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2111534	0	6525792	166295

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct research experiments, conduct workshops, meetings, trainings, develop publications, curriculum, resources, provide consultation, leadership, facilitation, partner with industry, and conduct needs assessment and impact.

2. Brief description of the target audience

The target audience includes animal owners, youth, Extension educators, allied industry personnel, consumers, policy makers, and academic colleagues.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	85000	150000	30000	7000
Actual	63977	101141	29954	9274

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 2

Patents listed

1. Using routine blood chemistry results to estimate plasma amino acids during an acute or chronic transmissible disease episode
2. Mixture of non-starch polysaccharidases increases the metabolizable energy content of co-products fed to livestock and poultry.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	5	10	
Actual	79	11	90

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational meetings, workshops, conferences, training sessions, and field days

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	600	518

Output #2

Output Measure

- Number of fact sheets, publications, newletters, and other print resources

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	750	423

Output #3

Output Measure

- Number of web sites, applications, modules

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	40	63

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Percent increase in beef cattle marketed through value-added programs
2	Number of additional beef producers trained and certified for quality assurance/best management practices
3	Percent of participating farms reducing phosphorus over previous year in dairy animal waste
4	Number of dairy herds improving milk quality by culturing quarter milk samples and implementing mastitis control procedures.
5	Number of swine producers receiving continuing education credit for waste management permit requirements
6	Number of youth adopting best practices related to animal agriculture through youth animal projects and events
7	Percent increase in sheep population in Southwest Virginia as a result of favorable lamb marketing arrangements
8	Number of program participants acquiring knowledge on best management practices related to equine.
9	Percent increase in freshwater shrimp production by Virginia farmers utilizing best management practices
10	Percent increase in sales of pond raised fish due to adoption of best management practices.
11	Increased fish production via recirculating aquaculture system (RAS) and pond production techniques through innovative research and dissemination and application of results through VCE programming to producers.
12	Number of individuals who gain knowledge to improve small ruminant production.
13	Effect of Management Practices on Alpaca Fiber Production
14	Aquaculture Pond Management Education

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Percent increase in beef cattle marketed through value-added programs

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Adding value to Virginia's beef cattle operations is critical to sustainability of Virginia agriculture and rural communities. Adopting improved health, management, and marketing practices for Virginia feeder cattle adds value to the Commonwealth's second largest agricultural commodity.

What has been done
Extension Specialists partnered with the Virginia Cattlemen's Association to develop and administer this program which encourages the use of scientifically-based cattle health and management procedures for feeder cattle. The VQA program is a cooperative effort among VCE, the Virginia Cattlemen's Association, VDACS, VMRCVM, and producer organizations. Producers that manage their cattle in this manner are eligible to market their calves through the VQA certified feeder cattle program.

Results
In 2010, a total of 10,887 calves were marketed through the VQA program. Producers received a premium of $46 per calf resulting in $508,432 of additional income realized by Virginia beef producers. Since 1997, producers have marketed over 110,000 head of feeder cattle resulting in $3.7 million in value-added income.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☑ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☐ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☑ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of additional beef producers trained and certified for quality assurance/best management practices

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	125	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
U.S. consumers are very concerned about the saety and wholesomeness of the food they eat. If beef is to be safe so as to be competitive with other food choices producers must make choices at the farm level based
on scientific knowledge and a commitment to produce a quality product.

What has been done
The Virginia Beef Quality Assurance Program educates and certifies beef producers in best management practices that improve the safety and quality of beef. $16,800 was secured to carry out the training efforts from the Virginia Beef Industry Council. Agents throughout Virginia have conducted training and demonstrations and have invited producers to make a commitment to

conducting their operations in such a manner that quality beef is produced.

Results

The total number of certified producers in Virginia stands at over 4000 which makes Virginia one of the national leaders in BQA activities. During 2010 there were 625 producers either certified or re-certified. These producers came from 50 counties and two surrounding states. We estimate that the certified producers represent over half of the cattle produced in Virginia. Added value of cattle produced on BQA certified farms is estimated to be $1.5 to $2.0 million annually.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☑ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☐ 311 - Animal Diseases
- ☑ 315 - Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Percent of participating farms reducing phosphorus over previous year in dairy animal waste

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Water quality is a significant issue in the Mid-Atlantic especially in the Chesapeake Bay drainage area. Phosphorus is a nutrient of concern by federal and state agencies. Reduction of phosphorus excretion results in less potential for pollution due to water runoff from fields.

What has been done
The Phosphorus Feeding Incentive Program is a collaborative program between Virginia Cooperative Extension, Virginia Tech Department of Dairy Science, and the Virginia Department of Conservation and Recreation. The program utilizes research-based dietary management of dairy cattle and an incentive program to reduce phosphorus feeding on dairy farms, thereby decreasing phosphorus run-off and potential pollution

Results
In 2008-2010, the program had 160 enrolled herds, representing 24,522 dairy cows or 25% of Virginia dairy cows. There was a measured reduction in the amount of phosphorus fed and thus excreted of 2.65 pounds per cow per year or 32.6 total tons of phosphorus. In addition, $158,975 has been approved for incentive payments to Virginia dairy farms and free feed testing has contributed thousands of dollars in support of better feeding management to reduce environmental pollution potential from dairy farms.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☑ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☑ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☐ 308 - Improved Animal Products (Before Harvest)
- ☐ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

<u>Outcome #4</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of dairy herds improving milk quality by culturing quarter milk samples and implementing mastitis control procedures.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension

- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	20	145

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Producing high quality milk with low bacterial numbers, results in increased farm profitability, increased shelf life and improved food safety. The average herd in Virginia can earn an additional $8,400 per year by producing milk of highest quality. However, milk quality bonuses are often missed due to the complexity and difficulty in achieving the cut-offs required for the premium payments. A new premium/penalty system was due to be initiated as of January 2010. This program involved the preliminary incubation (PI) count, one that many producers did not previously focus on, as it was not part of the payment scheme. This new premium program resulted in a surge of producers needing help troubleshooting problems related to high PI counts.

What has been done
A team of Extension and industry representatives formed with the mission to work together to troubleshoot VA farms with high PI counts and work until these farms were in a state where premiums were achieved. Specifically, our team worked closely with seven dairy producers in 2010. In each situation, it was a team effort to troubleshoot the problem, determine the cause, and recommend change and conduct follow-ups.

Results
Working intensively with these seven producers, we were able to improve milk quality counts on all farms. Evidence of impact was highly apparent in one particular situation. The PI count on this farm was consistently running 100,000-300,000 cells/ml. Premiums are awarded for counts less than 40,000 cells/ml ($0.10-0.30/100 lbs of milk) and penalties are assessed when counts are above 100,000 cells/ml ($1.00/100 lbs of milk). The start date for the penalties was April 2010 and this farm contacted us in December of 2009. Over the course of the next 4 months, our team of experts worked to troubleshoot the problem. Initial issues we found included an improperly functioning washing machine used to wash towels prior to milking, not enough soap dispensed into the washing machine and not enough hot water from the hot water heater. Our laboratory cultured the towels and found an overabundance of Pseudomonas spp., which was also the main bacterial contributor to the high PI count. We thought the contaminated towels must have been contributing to the high PI count and therefore, the washing machine was replaced and the hot water heater was repaired. Following these changes, the PI count dropped and remained steady at 30,000 cfu/ml. Although this was a considerable improvement, we continued to work to further lower the count below the goal of 10,000 cfu/ml. After many hours spent examining equipment function, milking procedures and wash procedures, we noticed that

the gaskets were being removed from the milk weigh jars during cleaning and not replaced. This allowed the dirty wash water to run into the weigh jars and thus into the bulk tank. All of the gaskets were immediately replaced, farm personnel were informed this was not necessary to properly clean the equipment and within one month this farm was receiving their premium check (averages $8,640/month). This farm is just one example of how we, as a team, have made a significant impact to improve the milk quality on Virginia dairy farms.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☑ 303 - Genetic Improvement of Animals
- ☑ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☑ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of swine producers receiving continuing education credit for waste management permit requirements

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	25	136

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

State regulations dictate that all swine producers maintaining a no-discharge permit are required

to receive periodic continuing education in manure management and environmental protection. Additionally producers who raise or sell market hogs to packers with process verified systems must be trained as certified Pork Quality Assured Plus (PQA-Plus) producers. Those hauling pigs to market must be Transport Quality Assurance certified. The Extension Swine Specialist collaborates with the Virginia Department of Conservation and Recreation (DCR) and with swine production integrators in developing and delivering these continuing education and certification programs.

What has been done

Educational seminars were developed and delivered at multiple locations throughout the state including one 6-hour seminar for manure management training, two PQA-Plus producer certification seminars, two TQA producer certification seminars and three PQA-Plus advisor training sessions.

Results

Thirty seven producers received continuing education credits in manure management and environmental protection. A direct impact of the continuing education program has been the ability of producers holding waste management permits to maintain those permits and operate their farms in an environmentally sound manner. An additional 77 producers were certified in PQA-Plus and 22 producers in TQA via training sessions. These certification programs allow maintenance of market access and assure customers of safe wholesome pork produced under appropriate animal welfare conditions. In addition nine Extension Agents, one swine researcher, one veterinarian and one packing company representative were trained and certified as PQA-Plus advisors.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☑ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☐ 307 - Animal Management Systems
- ☐ 308 - Improved Animal Products (Before Harvest)
- ☐ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

<u>Outcome #6</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of youth adopting best practices related to animal agriculture through youth animal projects and events

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	27000	30706

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Livestock projects (beef, sheep, swine, dairy, equine, and poultry) and educational events provide a vehicle for educating youth about the importance of animal agriculture to society and are instrumental in developing life skills in youth. Participation in youth livestock projects serve as a foundation for stimulating career choices in agriculture,and provide a vehicle for the dissemination of knowledge to the public.

What has been done
Training of youth occurs locally by Extension agents, volunteer 4-H leaders, and agriculture educators. State contests are coordinated by campus-based Extension specialist faculty with assistance from Extension agents, volunteers, and agriculture educators. Comprehensive competition is held at the state level for youth age 9-19. In these events, youth are asked to evaluate animal quality, identify items, rank groups of items, perform calculations, and justify their decisions to others.

Results
Youth participation in animal projects and embryology totaled 30,706 in 2010. An additional 2,980 youth participated in state-level livestock and equine contests. The ability to observe and evaluate, ability to make decisions, and communication skills were enhanced by the students' participation in these events. State 4H Horse Judging Team finished first at regional and national contests, as well as first place team at Arabian Nationals and 2nd and 3rd at Quarter Horse Congress. The state 4H Skillathon team finished second at the national contest. Youth livestock members showed and sold over 3000 project animals at the various show and sale events held throughout the state and received sales proceeds in excess of $2.3 million.

4. Associated Knowledge Areas

- ☑ 301 - Reproductive Performance of Animals
- ☑ 302 - Nutrient Utilization in Animals
- ☑ 303 - Genetic Improvement of Animals

- ☑ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☑ 311 - Animal Diseases
- ☑ 315 - Animal Welfare/Well-Being and Protection

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Percent increase in sheep population in Southwest Virginia as a result of favorable lamb marketing arrangements

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	5	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Declining burley tobacco production has resulted in economic losses to local communities in Southwest Virginia. With a prime climate, suitable topography, and an abundance of forage the region is well suited for livestock production systems as an alternative to tobacco.

What has been done
Research and Extension efforts at the Southwest Agricultural Research and Extension Center demonstrated the profitability and utility of hair sheep in low-input, easy-care production systems. Results of this research have been disseminated throughout the region through field days, publications, and demonstrations and applied by local producers and producer marketing groups.

Results
Sheep numbers in Virginia increased a modest 1% in 2010 according to USDA after a 15% increase in 2009. With the renewed interest in sheep, Virginia Cooperative Extension assisted local sheep producers with production and marketing endeavors. Direct sales to a local grocery

chain resulted in $250,000 in sales which was down compared to 2009 as a result of very strong commercial live lamb prices. Extension worked with local producers to facilitate a 10% increase in price paid for direct-marketed lambs to the local grocery chain. This will result in an additional $15.00 per head premium and bring prices comparable to local and regional livestock markets.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☑ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☐ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of program participants acquiring knowledge on best management practices related to equine.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	500	600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The 2006 Virginia Equine Survey reported a 26% increase in the number of horses and a 41% increase in the number of horse operations since 2001 (NASS Virginia Equine Survey Report, 2008). Many horse owners, whether new or experienced, are attempting to maintain their horses

on their own property to try and decrease expenses and allow them more opportunity to enjoy time with their horses. Unfortunately, they often lack the necessary horse or pasture management experience to select appropriate feeds and health care products for their animals or to maximize forage production while minimizing the environmental impact of having horses on their small farm. Relative to pastures in particular, this leads to over-grazed pastures lacking sufficient forages resulting increased purchase of hay, grain, and feed supplements, as well as erosion problems. Also, the number of complaints of potential pollution from horse operations rose from 19% to 23% of all founded complaints lodged in 2009 (Ag Stewardship Annual Report, 2010). Educating horse owners on best management practices for equine health and pasture care should allow them to implement said practices and help increase pasture health, decrease expenses associated with hay and feed purchases, and decrease the potential for pollution from horse operations.

What has been done

Four one-day programs and six separate presentations were delivered at various Virginia Cooperative Extension and horse industry events. Additionally, over a dozen on-site visits were conducted to discuss specific problems and issues of concern to farm owners. Presentations and discussions covered such topics as choosing hay alternatives in an economically challenged time; the economics of the hay industry for horse owners; evaluating hay and the hay market; equine forage issues and considerations for hay producers; general pasture management; large animal mortality composting, and health and feeding strategies for horses. Hands-on participation including identification of various species of fresh forage and hay; evaluation of quality based on visual inspection; taking forage samples and reading forage analysis results; comparison of visual inspection to actual hay test results; compost pile evaluation; and evaluation of horse health through body condition score, body weight estimation, and growth measurements.

Results

Approximately 600 Virginians attended the various programs and presentations. In one program in particular, 41 of 67 participants responded to an after-program survey. One of the more highly valued topics included the impact of composting on pasture nutrition, where over 50% of participants strongly agreed that they had a better understanding of the potential value of composting, and the remaining participants agreed with the statement. Over 68% learned some or a lot about the topics presented and 100% found the program to be highly valuable. One participant responded, "Great speakers; they made things easy to understand.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☐ 308 - Improved Animal Products (Before Harvest)
- ☐ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #9

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Percent increase in freshwater shrimp production by Virginia farmers utilizing best management practices

2. Associated Institution Types

☐ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	5	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A sustainable alternative agriculture enterprise is needed to stimulate rural economic conditions in Southside Virginia.

What has been done
Site checks were conducted for new producers. Contingency plans were developed and followed due to the destruction of regional shrimp nursery. Eight regional workshops and two field days were held to promote best management practices for shrimp farming. Assistance was provided during the labor intensive juvenile stocking period. Value-added alternatives to day-of-harvest sales were explored. Low-density pond production demonstration was conducted at Virginia State University's Randolph Farm. Media promoted shrimp farming. Extension support provided to two shrimp grant proposals. Furthermore, baseline value-added post-harvest processing techniques were developed and evaluated with a processor in Hampton, Virginia. This is a critical component to large-scale expansion of Virginia's shrimp industry, allowing for proper freezing of an otherwise perishable and seasonal product.

Results
Freshwater shrimp pond production continues to expand and has been shown to be a viable alternative agriculture operation stimulating rural economies throughout the Commonwealth. Target production for 2010 was: 700,000 juveniles stocked; >25,000 lbs produced; value = $200,000. Actual results for 2010 were 500,000 juveniles produced and distributed primarily in

the tobacco growing counties of Southside VA; 22,000 lbs harvested; approximately 50% sold at an average price of $9.00/lb for a total value of $99,000; remainder frozen and processed before IQF and future sale during months until next harvest. Growth is expected next year as operations expand and new producers start pond construction. Two grant proposals were funded. Furthermore, post-harvest value-added freezing trials were conducted with excellent results. Ongoing product quality sensory and food safety analyses are being conducted over time to verify shelf-life.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☑ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #10

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Percent increase in sales of pond raised fish due to adoption of best management practices.

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	5	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Adopting best management practices (BMP) for fish production will increase production level, protect aquatic environments and reduce losses due to poor water quality and diseases. Fish farmers and the Virginia AquaFarmers Network (VAN) are in need of adopting BMPs. VAN wants BMPs as part of their overall production strategy to make their organization successful.

What has been done

A list of preliminary BMPs for catfish production was given to VAN for their review and possible acceptance. Seven workshops were given that covered BMPs in pond production, transportation and processing of fish (Catfish). These workshops also covered feed management, water quality and fish health. Technical Assistance was provided for live fish transport for sales.

Results

VAN and other fish farmers have developed new markets for processed and live fish sales, especially for stocking pond and lakes with many in urban fishery zones. Live fish represented around 50% of sales for catfish farmers. Farmers have increase stocking by more than 30% to meet previous year demand. Three workshops are planned for 2011 to increase farmer's awareness of BMPs especially water quality, for fish farming. By adopting best management practices (BMP), fish production. Fish farmers and the Virginia AquaFarmers Network (VAN) are in need of adopting BMPs. VAN wants BMPs as part of their overall production strategy to make their organization successful.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☐ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #11

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increased fish production via recirculating aquaculture system (RAS) and pond production techniques through innovative research and dissemination and application of results through VCE programming to producers.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	5	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many farm pond owners are searching for alternative uses for their farm ponds. Many would like to raise fish for fun and profit. However, these ponds are not suitable for open pond culture of fish without expensive renovation.

What has been done
Three workshops were conducted that showed alternate production methods for farm ponds. Two workshops were conducted showing owners of farm ponds how to construct cages for these ponds. Handouts were developed and distributed on cage culture for farm ponds that was distributed as part of Aquaculture Field Day program at Virginia State University. Improved fish population management was promoted at regional workshops. Workshops also exposed participants to the basics of recirculating aquaculture production systems (RAS), including benefits as well as issues and opportunities. Furthermore, significant efforts into development of live markets in Washington DC have been done, and are ongoing to expand available markets while concurrently developing value-added niche markets in the live fish sector. Furthermore, a demonstration/validation was conducted for a private entrepreneur at the VT-VSAREC. This demonstration collected all inputs and performance curves for intensive hybrid striped bass production in RAS. Also, ongoing research and support has increased the sale of live spot to the baitfish markets for an Eastern shore producer. In addition, preliminary research on the production of Atlantic Spadefish was conducted at the VT-VSAREC.

Results
Five new producers adopted cage production for their farm. One farmer is selling trout to a local farmers market as both a frozen and smoked added value product. Twenty-five site visits in conjunction with ANR Educators were conducted to evaluate ponds for alternative aquaculture production methods. A workshop on recirculating systems is planned for 2011. A research proposal is being designed for using tanks production using pond water for 2011. Further, a new large-scale 100,000 pound per year expansion facility for the production of hybrid striped bass in under construction in Mathews Virginia. This facility is a scale-up for the R&D trial at the VSAREC, and is a proportional scale-up to what will be a 500,000 pound per year facility by 2015. Further, spot sales increased to $85,000 in 2010 from an Eastern Shore Producer. Furthermore,

live cobia are now being test-marketed in Washington DC, from a producer in S.W. Virginia. Also, resulting for the preliminary work conducted on spadefish, successful funding form Sea Grant was achieved to further research closed life-cycle and nutrition research towards enhanced spadefish production. 3 producers are interested in this species both for foodfish and ornamental markets, and the Virginia Marine Resources Commission is interested from the potential perspective of future stock enhancement opportunities.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☐ 308 - Improved Animal Products (Before Harvest)
- ☑ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #12

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of individuals who gain knowledge to improve small ruminant production.

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	100	533

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Small ruminants (sheep and goats) are a relevant component of rural economies in Virginia, with over 5,000 farms (>10%)having small ruminants as a part of their livestock enterprise.

What has been done
Many small ruminant farmers have livestock enterprises as a secondary income, or are new to the business. Therefore, there is a strong need for fundamental education which provides basic skills related to animal management, marketing, and business principles.

Results
In 2010, Virginia Cooperative Extension reached over 500 small ruminant producers through various educational workshops, field days, and activities.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☑ 308 - Improved Animal Products (Before Harvest)
- ☑ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #13

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Effect of Management Practices on Alpaca Fiber Production

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alpacas make the greatest contribution to camelid fiber production, providing approximately 90 percent of the world production. Raw alpaca fleeces range in price from $30 to $50/lb, depending on fiber quality and coloration. As domestic and world demand for alpaca fiber exceeds supply, the expansion of the alpaca fiber industry has potential as a high-value, alternative crop for specialty and niche markets in a non-traditional production system. Parasites are a major concern for alpaca breeders, and little is still known about the effectiveness and dosage of anthelmintics (anti-parasite drugs).

What has been done

A project is underway at Virginia State University to document deworming practices on Virginia alpaca farms and determine evidence of anti-parasite drug resistance in these herds. Twenty-five breeders were identified and agreed to participate in the survey and on-farm sampling. Fecal samples were collected from a minimum of eight and maximum of 30 alpacas on each farm to conduct a fecal egg count reduction test to determine the presence of dewormer resistance. During the first season, the survey was completed on 13 farms. Twelve additional surveys are scheduled for the upcoming parasite season, and data will be analyzed as surveys are completed following the second year collections.

Results

Data collected to date indicate that alpacas limited to on-demand anti-parasite drug treatment had the same fiber yield and quality compared to alpacas receiving standard frequent deworming that are industry practice. There were no differences in the internal parasite load between the two groups or clinical signs of parasitism. This suggests that an alpaca fiber herd can be managed with an on-demand protocol which limits the number of dewormings, and will help to decelerate the development of resistance of gastrointestinal nematodes to pharmacological dewormers. Information from this project has been communicated to alpaca producers through an alpaca field day and a workshop on parasite management has been conducted.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals
- ☐ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☑ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☐ 308 - Improved Animal Products (Before Harvest)
- ☑ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

Outcome #14

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Aquaculture Pond Management Education

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Aquaculture is an expanding sector in Virginia agriculture with an increased demand for locally produced products. Aqua-farmer organizations, pond owners and VCE personnel seek best pond management techniques to increase the value of their aquatic resources.

What has been done
Multiple approaches were used to meet the demand. A three day summer hands-on aquaculture education program was conducted at Virginia State University's pond complex. Regional management workshops were conducted. Demonstrations were held at farmer facilities in conjunction with farm labor. Literature was developed and distributed.

Results
Adoption of pond best management practices has led to improved water quality, feed conversions, and successful harvests. Extension labor, although still participating, has been replaced by farm employees. These farmers are the base on which the private sector pond aquaculture industry will build.

4. Associated Knowledge Areas

- ☐ 301 - Reproductive Performance of Animals

- ☐ 302 - Nutrient Utilization in Animals
- ☐ 303 - Genetic Improvement of Animals
- ☐ 305 - Animal Physiological Processes
- ☑ 307 - Animal Management Systems
- ☐ 308 - Improved Animal Products (Before Harvest)
- ☐ 311 - Animal Diseases
- ☐ 315 - Animal Welfare/Well-Being and Protection

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☑ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☑ null

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☐ Before-After (before and after program)
- ☐ During (during program)
- ☑ Time series (multiple points before and after program)
- ☐ Case Study
- ☑ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☑ Comparison between locales where the program operates and sites without program intervention

☐ Other

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Global Food Security and Hunger - Biotechnology and Genomics

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	50%	0%	70%	100%
304	Animal Genome	50%	0%	15%	0%
311	Animal Diseases	0%	0%	15%	0%
	Total	100%	0%	100%	100%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.1	1.0
Actual	0.8	0.0	4.0	1.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
26224	0	18351	53217
1862 Matching	1890 Matching	1862 Matching	1890 Matching
29748	0	61863	106434
1862 All Other	1890 All Other	1862 All Other	1890 All Other
72960	0	225485	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Processes of research studies, dissemination of research results, papers and citations, commercialization of techniques and products, conduct research experiments, conduct workshops, meetings, develop products, resources, work with media and establish and sustain partnerships.

2. Brief description of the target audience

Research scientists, government officials, high school teachers, interested public

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	200	1500	50	0
Actual	38	0	2	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 2
Actual: 1

Patents listed
New Switchgrass Line That Produces Exceptionally High Biomass Yield

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	0	50	
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects in program areas

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	20	4

Output #2

Output Measure

- Number of peer reviewed research papers published

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	45	8

Output #3

Output Measure

- Number of presentations

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	50	17

Output #4

Output Measure

- Number of non-peer-reviewed publications

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	25	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Advancements in scientific knowledge as demonstrated by research articles published in peer-reviewed journals.
2	Advances in understanding of biotechnology and genomics by high school students as demonstrated by partnerships with high schools.
3	Advances in public understanding of biotechnology and genomics as demonstrated by numbers of presentations, publications, and non-peer-reviewed journals demonstrating biotechnology research results.
4	Understanding Plant Defense System for Crop Stress Tolerance Improvement

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Advancements in scientific knowledge as demonstrated by research articles published in peer-reviewed journals.

2. Associated Institution Types

☐ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Other scientists in the fields of biotechnology and genomics, educated public, government agency specialists, high school teachers

What has been done
Sequence capture technology was employed to retrieve exons and upstream regulatory sequences for all expressed genes in black cottonwood, and captured targets were sequenced in a large mapping population that spans most of the species range. Transcriptional networks were developed using both published and unpublished transcriptome data relevant to wood-forming tissues. Crosses between susceptible and resistant carp lines were characterized regarding variation in viral resistance and variation at candidate genes such as major histocompatibility complex and Toll-like receptors was screened.

Results
A population genomics approach was applied to dissect the genomic basis for endodormancy transitions and cold hardiness in poplar. Gene regulatory networks governing wood formation were characterized in order to identify novel targets for genetic manipulation. Resistance to CyHV-3, the causative agent for a viral pathogen of common carp, was linked to a single nucleotide polymorphism at the interleukin-10 gene.

4. Associated Knowledge Areas

- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 304 - Animal Genome
- ☑ 311 - Animal Diseases

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Advances in understanding of biotechnology and genomics by high school students as demonstrated by partnerships with high schools.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	6	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Familiarity with biotechnology, its potentials and its issues among members of the general public is limited. Only by achieving better understanding of technical and societal issues will the public accept biotechnology for what it offers in terms of food security and resource sustainability.

What has been done
The Fralin Biotechnology Center has a high school outreach program coordinated by Dr. Erin Dolan. Tree biotechnology expert Dr. Amy Brunner has participated in the program by making presentations to school groups that visit the biotechnology center and tour relevant laboratories at Virginia Tech.

Results
By touring the laboratory, hearing a presentation, and engaging in discussion, approximately sixty high school students were made aware of progress in tree biotechnology and genomics. Beyond achieving as immediate gain in knowledge narrowly defined, student gained a better sense of the range of issues pertaining to biotechnology and genomics.

4. Associated Knowledge Areas

- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☐ 304 - Animal Genome
- ☐ 311 - Animal Diseases

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Advances in public understanding of biotechnology and genomics as demonstrated by numbers of presentations, publications, and non-peer-reviewed journals demonstrating biotechnology research results.

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50	17

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Understanding of biotechnology and genomics among nonscientists, including government officials and the general public, is very incomplete. Proper understanding of the issues at least a semi-technical level is needed in order to understand issues before the public and regulatory agencies.

What has been done
All three CNRE investigators have made presentations to technical and non-technical audiences. In particular, Hallerman made a presentation on risk assessment and risk management issues pertaining to transgenic fish at a public workshop organized by the US Food and Drug Administration.

Results
Some of these presentations led to coverage by the news media. Increases in understanding of biotechnology-related issues by the public likely increased, but cannot be demonstrated

quantitatively.

4. Associated Knowledge Areas

- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 304 - Animal Genome
- ☑ 311 - Animal Diseases

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Understanding Plant Defense System for Crop Stress Tolerance Improvement

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Environmental stresses affect agricultural production. In Virginia, the combination of heat and drought stresses in 2010 accounted for an approximate 50 percent loss in yield for corn and peanuts, and 30 percent for soybeans. Understanding mechanisms and identifying new genes that control plant stress tolerance will improve crop stress management.

What has been done
Research at Virginia State University is characterizing several new mutants on Jasmonic acids (JA) which are plant hormones involved in a plant defense system. The current project is focusing on genetically and physiologically characterizing previously isolated mutants involved in JA signaling pathway in Arabidopsis thaliana. Both drought and salt tolerant phenotypes for all JA signaling mutants were evaluated in-pots in the growth chamber with 16/8 hr light/dark photoperiod.

Results

Based on the wilt symptom, scientists identified mutants 23B13 and 38B9 as drought tolerant and 82B4 as drought sensitive mutant. Harvest index was evaluated at both control and drought treatment conditions. All lines tested were significantly affected by drought treatment, however, all mutants that suppressed JA signaling are more tolerant to drought than parental line. On the other hand, all mutant with activated JA signaling showed no difference with parental line.
For salt tolerance, the evaluation was performed by harvest index, mutants 4B4, 5B29, 23B13, 82B4, and 45R1 were significantly tolerant to 200 mM slat treatment. Especially for mutant 23B13, its performance on 200mM salt is better than that in control condition. However this needs to be confirmed by further investigation. When comparing to seedling stage salt tolerance, results indicated that trait of seedling salt tolerance is controlled differently from that of salt tolerance at adult stage. Results advance the body of knowledge on understanding the roles of JA in plant defense to environmental stresses.

4. Associated Knowledge Areas

- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☐ 304 - Animal Genome
- ☐ 311 - Animal Diseases

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☐ Economy
- ☑ Appropriations changes
- ☐ Public Policy changes
- ☐ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)

- ☐ Retrospective (post program)
- ☐ Before-After (before and after program)
- ☐ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Global Food Security and Hunger - Agricultural Management, Marketing and Policy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	25%	20%	15%	0%
602	Business Management, Finance, and Taxation	20%	20%	15%	0%
603	Market Economics	10%	30%	15%	0%
604	Marketing and Distribution Practices	10%	30%	15%	0%
605	Natural Resource and Environmental Economics	25%	0%	25%	0%
610	Domestic Policy Analysis	10%	0%	15%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	28.0	1.5	17.9	0.0
Actual	6.4	0.8	6.8	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
278283	222935	194740	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
315680	226418	656472	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
774229	38864	2392790	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research and educational programs will be conducted to support the needs of Virginians and Virginia farm and small business managers. Financial research will be conducted to develop knowledge of production and market systems. Research-based information will be disseminated via media and informational meetings. Decision aids, workshops, detailed curriculum, and distance educational methods will be used to support change in the overall behavior of learners.

2. Brief description of the target audience

Individuals, families, owners and managers of farms, and small businesses; local, state, and federal personnel and policy makers; and private sector service suppliers are the targeted audiences.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	40000	400000	20000	15000
Actual	17813	50991	1840	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	5	10	
Actual	3	18	21

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of education programs planned in public policy education

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	20	0

Output #2

Output Measure

- Number of farmers creating succession/transition plans for their farm business

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	50	65

Output #3

Output Measure

- Number of individuals and families completing basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program, and implementing practices to reduce the chance for identity theft after receiving instruction.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	3000	0

Output #4

Output Measure

- Number of educational programs conducted on creating home-based and micro businesses

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	50	0

Output #5

Output Measure

- Number of communities and local governments partnering with Virginia Cooperative Extension faculty to seek and develop alternative economic development opportunities or address public policy and community planning goals.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	15	0

Output #6

Output Measure

- Number of youth educational programs conducted on completing basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program after receiving financial instruction.

☑

Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	3000	0

Output #7

Output Measure

- Number of program participants improving their housing environment through new ownership, avoiding foreclosure or purchasing and maintaining a home.

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	500	0

Output #8

Output Measure

- Number of education programs conducted in farm and agribusiness management and risk management

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	20	57

Output #9

Output Measure

- Number of education programs conducted in marketing and direct marketing

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	20	30

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase the number of land owners who implement transition plans.
2	Increase the number of program participants (farmers, agricultural business managers and leaders, food processors, government agencies, and agribusiness firms) making more informed business and economic decisions.
3	Increase the number of individuals completing basic financial management strategies including budgeting, setting financial goals, establishing a saving/investing program.
4	Increase the percentage of trained volunteers and citizens participating in Extension entrepreneurship workshops indicating increased entrepreneurial knowledge and skills applied to evaluation and planning of new enterprises (such as small businesses, micro-businesses, home-based businesses and agri-tourism).
5	Increase the percentage of communities and local governments partnering with Virginia Cooperative Extension faculty that seek and develop alternative economic development opportunities, and community planning goals.
6	Increase the number of individuals improving their housing environment by (learning or) adopting techniques allowing them to purchase a home or to avoid foreclosure.
7	Increase the number of youth learning the basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program after receiving financial instruction.
8	Assisting Virginia's Small Farmers in USDA Program Participation
9	Helping Small Farmers Preserve the Farm
10	Web-based Marketing Skill Development for Small Businesses
11	Developing Viable Alternative Enterprises through Business Management and Web-based Marketing

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of land owners who implement transition plans.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	60	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many African American farms are sold when the older generations dies because the farm is inherited by family members who live on and off the farm. In numerous cases, one or more family members want to cash in their share of the farm ownership. Usually, the remaining family members can't afford to buy out their siblings' interest. Consequently, the farm is sold in order to pay off these family members. Thus the acres of farmland owned by the African American farmers continue to decline for future generations. Since many of the landowners were illiterate, they signed documents which stripped them of the ownership of their farmland.

What has been done
At the request of faculty at Virginia State University (VSU), the Northern District Farm Business Management Agent held a two day farm transition program in April 2010 at VSU. In November the agent made the presentation on Saving the farm family and saving the small family farm at the VSU Small Farm Family Conference in Williamsburg.

Results
Participants completed an evaluation with percentages as listed as follows: Percent plan to do the following: 85% plan to hold a meeting about transition and assembled a Financial Management Team; 77% developed an inventory of farm and non-farm assets (i.e. your resource inventory); 73% make changes to your current estate plan and prepared an advanced medical directive; 70% to written a will; 62% develop a written personal & farm goals; and 50% will

created power of attorney. At the conclusion of the presentation made at the VSU Small Farm Family Conference in November, many participants asked the agent to conduct farm transition workshops within their communities. The agent has been contacted by leaders in the African American community who have asked the agent to schedule farm transition workshop in their communities. These individuals feel that the workshops would provide African American families information that families could use to transfer and preserve farmland for future generations.

4. Associated Knowledge Areas

- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☐ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of program participants (farmers, agricultural business managers and leaders, food processors, government agencies, and agribusiness firms) making more informed business and economic decisions.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	60	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Eastern Virginia cash grain producers face unprecedented volatility of grain prices and costs. The breakeven cost of producing corn will likely be over $4.00/bushel for many producers in 2011, and near $9.00/bu. for soybeans in eastern Virginia. Current contract prices for fall 2011

delivery in Tappahannock, Virginia for corn is about $5.50 per bushel, soybeans are almost $13.00 per bushel, and wheat is over $7.00 per bushel. From a historical perspective, all of these prices are great. However, due to the volatility, some grain elevators have imposed bushel restrictions on cash contracts, the most popular tool for forward pricing. Commodity price risk has never been greater, and farmers have expressed a need for educational programs in marketing and price risk management.

What has been done

The Eastern Virginia Marketing Club under the educational support of VCE has conducted hands-on educational meeting to help farmers understand the details and use of price risk management tools including crop insurance, enterprise budgeting, hedging with futures and technical analysis.

Results

As a result of participation in the club, all participants have increased their knowledge in the areas of crop insurance, hedging with futures, determining break-even prices for crops, and using options on futures and all are using at least one practice to help manage price risk.

4. Associated Knowledge Areas

- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☑ 603 - Market Economics
- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☑ 610 - Domestic Policy Analysis

Outcome #3

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Increase the number of individuals completing basic financial management strategies including budgeting, setting financial goals, establishing a saving/investing program.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	80	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome in another Planned Program.

4. Associated Knowledge Areas

- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 602 - Business Management, Finance, and Taxation
- ☑ 603 - Market Economics
- ☐ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #4

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Increase the percentage of trained volunteers and citizens participating in Extension entrepreneurship workshops indicating increased entrepreneurial knowledge and skills applied to evaluation and planning of new enterprises (such as small businesses, micro-businesses, home-based businesses and agri-tourism).

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	40	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome in another Planned Program.

4. Associated Knowledge Areas

- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #5

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Increase the percentage of communities and local governments partnering with Virginia Cooperative Extension faculty that seek and develop alternative economic development opportunities, and community planning goals.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	20	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
We are reporting on this outcome in another Planned Program.

4. Associated Knowledge Areas

- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #6

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Increase the number of individuals improving their housing environment by (learning or) adopting techniques allowing them to purchase a home or to avoid foreclosure.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	500	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

We are reporting on this outcome in another Planned Program.

4. Associated Knowledge Areas

Outcome #7

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Increase the number of youth learning the basic financial management strategies such as budgeting, setting financial goals, establishing a saving/investing program after receiving financial instruction.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	3000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

We are reporting on this outcome in another Planned Program.

4. Associated Knowledge Areas

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Assisting Virginia's Small Farmers in USDA Program Participation

2. Associated Institution Types

☐ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
○ Change in Action Outcome Measure
◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Socially disadvantaged farmers and ranchers in Virginia need increased participation in United States Department of Agriculture (USDA) programs that empower them to acquire and operate profitable and successful farm enterprises. The Virginia State University Small Farm Outreach Program sought to improve the economic and financial well-being of socially disadvantaged farmers and landowners through educational outreach and technical assistance on alternative and environmentally sound cost-efficient production practices.

What has been done
Through the nine (9) informational meetings, programs reached 536 socially disadvantaged farmers in the project area on USDA Farm Loan Programs, USDA Conservation Reserve Programs, Rural Business Cooperative Programs, Risk Management Programs, and other Government Programs and Services. This is an increase of 47% from the previous two-year participation.

Results
One hundred nineteen (119) socially disadvantaged farmers received assistance and are currently participating in USDA-FSA Farm Loan Programs and USDA-NRCS Programs. As a result of receiving USDA assistance, two-hundred twenty (220) socially disadvantaged (SD) farmers and ranchers adopted cost efficient production practices. Four hundred twenty (420) socially disadvantaged farmers and ranchers are now producing alternative crops and/or

livestock.

4. Associated Knowledge Areas

- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☐ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #9

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Helping Small Farmers Preserve the Farm

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Recently, there has been an increase in the rate at which socially disadvantaged farmers and ranchers lose their family farms due to foreclosures. Many farmers lack adequate knowledge in estate planning and management, financial and farm management and other areas.

What has been done
Between 2009 and 2010, more than 3,000 small farms received technical training on tobacco income replacement strategies, farmland conservation, and estate planning from the Virginia State University Small Farm Outreach Program.

Results
In 2010, five-hundred forty eight (548) farms saved an additional $396,200 ($723/farm), and 510 farms earned an additional $342,750 ($672/farm).

4. Associated Knowledge Areas

- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☐ 603 - Market Economics
- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #10

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Web-based Marketing Skill Development for Small Businesses

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Web-based communications is an essential component of the marketing mix ignored by small businesses. Small companies compete with big corporations for online customers. Unaware of cost efficient web marketing techniques, small businesses fail to profit from social media marketing.

Americans continue to increase online purchasing. Seventy-five percent (75%) buy products,

66% make travel plans. Social media used to market products or services includes blogs, Facebook, Twitter community sites, and YouTube video sharing sites. Over five million visitors visit social media sites daily establishing importance in small business marketing efforts.

Social media is a low cost investment of time. Many social media are free offering word of mouth marketing capabilities generating traffic comparable to expensive commercial advertising. Extension based social media education and outreach to Virginia small businesses stimulates local economies.

What has been done
The Virginia State University Mobile Computer Lab, Virginia Tourism, and Regional Small Business Development Centers partnered to train small businesses to self list on web directories, set up Google maps, blog, Twitter and Facebook pages.

Results
In 2010, 79 businesses self listed on free web directories, set up Google maps, blogs, Twitter and Facebook pages. Participants estimated 200% additional sales or minimum of $1,000 minimum sales increase per business.

4. Associated Knowledge Areas

- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☑ 603 - Market Economics
- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #11

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Developing Viable Alternative Enterprises through Business Management and Web-based Marketing

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Socially disadvantaged farmers and ranchers in Virginia need increased participation in United States Department of Agriculture (USDA) programs that empower them to acquire and operate profitable and successful farm enterprises. There is a need to strengthen their production, food safety and marketing skills through outreach and technical assistance to develop viable and profitable alternative enterprises.

What has been done
To increase the awareness of marketing opportunities, provide educational outreach and technical assistance in developing new marketing strategies, and increase involvement in existing marketing networks, associations, and cooperatives, Virginia State University provided training via the VSU Mobile Computer Lab. Trainings on the mobile computer lab were used to instruct farmers on how to write business and marketing plans, develop a marketing webpage and brochure, conduct on-farm marketing, and add value to farm productions to enhance profitability.

Results
Two hundred fifty-five (255) limited-resource, socially disadvantaged farmers and landowners participated in hands-on training to manage records and conduct business planning and analysis; obtain resources information from the internet, access and apply online for USDA farm and loan programs. One hundred seventy five (175) socially disadvantaged farmers are currently participating in regional marketing outlets, networks, cooperatives, or association. Sixty-nine (69) socially disadvantaged farmers and landowners have written business and/or marketing plans. Fifty-two (52) socially disadvantaged farmers and landowners have developed web pages or brochures as marketing tools.

4. Associated Knowledge Areas

- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 602 - Business Management, Finance, and Taxation
- ☑ 603 - Market Economics
- ☑ 604 - Marketing and Distribution Practices
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☑ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

In the last 2 years Virginia Cooperatives Extension has lost more than 50% of the personnel resources in this program area.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☑ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☑ Time series (multiple points before and after program)
- ☑ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 12

1. Name of the Planned Program

Global Food Security and Hunger - Family Nutrition Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
704	Nutrition and Hunger in the Population	100%	100%	100%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	9.1	2.0	9.7	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
254527	204494	178116	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
288731	50704	600431	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
708136	318335	2188528	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Family Nutrition Program which is comprised of two nutrition education programs are funded by USDA, NIFA and FNS. The Expanded Food and Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) are nutrition education programs targeting impoverished citizens of Virginia. Our goal is to teach good nutrition practices, how to stretch

their food dollars and SNAP benefits, incorporate physical activity into their daily lives, and prevent chronic diseases related to poor dietary habits and inactivity.

During 2010, we taught over 300,000 participants in comprehensive programs as well as one time interventions. Those participating in comprehensive programs less often ran out of food by the end of the month after participating in our nutrition programs.

2. Brief description of the target audience

The target population for EFNEP and SNAP-Ed are people who receive SNAP benefits (formerly food stamps), are eligible for SNAP benefits but do not receive them, and participate in the Supplemental Nutrition Education Program for Women, Infants, and Children.

The children we work with are in schools, after school programs, and summer food service feeding sites. These children are eligible for the National School Lunch Program (NSLP). They dwell in households at or below the federal poverty line.

The adults of the Family Nutrition Program can be the parents of children who qualify for NSLP. Adults are also reached in court appointed parenting classes, community center gatherings, and community - based senior groups.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	190521	67608	316102	4273

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of sites where programming was delivered.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	31957

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase the number of adult participants who report that they ran out of food less often after participating in the Family Nutrition Program.

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of adult participants who report that they ran out of food less often after participating in the Family Nutrition Program.

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
○ Change in Action Outcome Measure
◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	2375

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Being food insecure is a health risk. Children do not grow adequately and properly, they do not learn well in the classroom and develop social stigma. Children who are food insecure are frequently malnourished because their diets lack nutrient density.

What has been done
Educating their parents to sound nutrition practices and stretching their resources allows our target population to prevent food insecurity issues. The FNP comprehensive programs document behavior changes that allow us to report these changes.

Results
Forty percent of our FNP population who participated in the comprehensive programs less often run out of food after completing the series of lessons.

4. Associated Knowledge Areas

☑ 704 - Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☐ Appropriations changes
- ☐ Public Policy changes
- ☐ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

The national economy has affected all communities, increasing the risk of food insecurity. SNAP benefits has grown expediently in the last one year. The outcome of an increase in SNAP participation has resulted in people depending on food pantries, soup kitchens and other alternate resources for food.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☐ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

Thirty eight percent of our graduated participants less often ran out of food before the end of the month.

Key Items of Evaluation

This data was aggregated from the NEERS5 system.

V(A). Planned Program (Summary)

Program # 13

1. Name of the Planned Program

Global Food Security and Hunger - Local Food Systems

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
704	Nutrition and Hunger in the Population	100%	100%	100%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	6.7	2.0	7.1	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
206707	132024	144652	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
234485	248612	487623	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
575093	0	1777350	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct consumer education workshops and training on food budgeting, the cost effectiveness of local and regional foods, healthy eating and cooking skills
- Conduct educational programs on crop and livestock production specific to local marketing channels

- Conduct research on the economic and environmental impacts of local or regional food system to communities
- Conduct research on local or regional food system impact on the dietary and health of consumers
- Encourage collaboration and partnerships to improve food availability, food access, and consumption of fresh, nutritious local foods
- Provide educational programming on whole farm planning, marketing, food safety, and other educational needs to improve supply and availability of local foods.
- Develop and conduct a Virginia food system assessment and farm-to-table plan
- Organize and conduct, local regional and state conferences

2. Brief description of the target audience

Consumers
Producers
Educators pre-K - 12
Governmental officials
Extension educators
Food-based business owners
Farm-related business owners
Environmental professionals
Health and nutrition professionals
Retail and institutional food service
Distributors
Community advocates

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	22287	11283	2634	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan:
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total

Actual	4	0	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of programs offered regarding community food systems.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	33

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of community gardening programs implemented to address food insecurity/hunger issues
2	Increasing Access to Fresh Foods and Produce for Low Income Populations at Virginia Farmers Markets
3	Strengthening Virginia's Food System from Farm-to-Table for Economic Vitality and Community Viability
4	Engaging Institutions to Facilitate the Aggregation, Distribution and Scaling Up of Local Food Supply and Use
5	Fostering Tangible Social and Economic Benefits with a More Locally-Integrated Community-Based Food System
6	Workplace Farmers Market Development
7	Establishing Community Supported Agriculture Marketing Programs

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Number of community gardening programs implemented to address food insecurity/hunger issues

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
○ Change in Action Outcome Measure
◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to USDA, 16% of Americans experience food insecurity and 10% experience hunger. Access to high quality fresh produce by lower income families is limited at best. Local food banks, food pantries, and hunger relief centers have seen a 30% increase in requests for services in 2010 alone. It is becoming evident that a viable and sustainable solution is needed to effectively address local hunger issues and improved nutrition particularly for low income families.

What has been done
In response to the need for more local food at the local food bank and shelters, the Portsmouth Master Gardeners converted an annual display garden to a vegetable garden in 2008. Over 25 difference vegetable types were planted, cared for and harvested. All of the produced harvested went to the local food bank in Norfolk as well as two local churches which distributed the food to families in need in Portsmouth. Other communities have initiated similar garden projects.

Results
With the Portsmouth community garden program, over 565 pounds of produce was harvested and sent to the local food bank for distribution. In Harrisonburg and Rockingham County, 4 community gardens were initiated serving low income, recent refugees, ethnic populations, new citizens, and school children. These are some emerging results, but interest continues to grow in the concept of community gardening.

4. Associated Knowledge Areas

☑ 704 - Nutrition and Hunger in the Population

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increasing Access to Fresh Foods and Produce for Low Income Populations at Virginia Farmers Markets

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Virginia's overall food system directly impacts the survival and viability of farms and farmland, the economic development of rural and urban communities, the care, restoration and resilience of ecological resources, and critical health issues. Within this context, there are a multitude of economic, environmental, and social challenges that Virginia farmers, agriculture, and communities are currently facing that limit the strength and vitality of Virginia's food system. The recent economic downturn and prolonged recession has resulted in increasing discussions of agricultural economic vitality, community viability and overall quality of life in relation to the food system at local, regional, state, and national levels.

What has been done
Agriculture and the availability of good, fresh, nutritious food are critically important to the social and economic vitality of rural and urban communities in Virginia. In late 2009, Virginia Cooperative Extension received $50,000 in grant funding from USDA Risk Management Agency (RMA) for the Shenandoah Valley Restorative Urban Food and Farm Project to improve overall access to fresh local nutritious foods and enhance the risk management strategies limited resource, immigrant, socially disadvantaged, and traditionally under-served farmers.

Results
An EBT/SNAP program was implemented and well-received at the Harrisonburg Farmers Market as part of the grant funding. As a result of Extension's efforts to make this component of the RMA grant a priority, the Agua Fund and Shenandoah RC&D Council provided an additional $15,000 for a double value incentive program so SNAP participants could double the amount of fresh food purchases at the farmers market. In the first five months from late June to the end of November, SNAP recipients were able to purchase an additional $3,000 worth of fresh produce and food as direct result of the program. Similarly, this brought an additional revenue stream of $6,000 to farmers at the market. In other farmers markets, participation in the EBT/SNAP program at participating farmers markets has increase 300% in the second and third years.

4. Associated Knowledge Areas

- ☑ 704 - Nutrition and Hunger in the Population

Outcome #3

1. Outcome Measures

- ☐ Not Reporting on this Outcome Measure

Strengthening Virginia's Food System from Farm-to-Table for Economic Vitality and Community Viability

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	29

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many Virginia farmers, particularly small and mid-sized, are struggling to survive financially as they try to maintain and gain leverage and position in changing and volatile food markets. At the same time, individuals and Virginia communities are experiencing increased incidences of obesity, diabetes, diet-related diseases and in some instances, food insecurity. Expanding local fresh healthy food opportunities throughout Virginia's food system can improve agricultural economic vitality and strengthen community health and well-being.

What has been done
Despite these challenges, there are assets and resources that can be mobilized within the Virginia landscape to strengthen and enhance the resilience of Virginia's food system and ecological resources. Virginia Tech faculty and the Virginia Food System Council and its participating organizations are collaborating on a Virginia Food System Research and Extension Initiative to conduct an assessment of Virginia' food system and develop a plan to address these social, economic and environmental challenges with specific recommendations and strategies.

Results
A multi-disciplinary team has been formed for a truly integrated capacity-building networked approach that will be transformative in considering the food and farming system as integrally related to healthy soils and ecological resources, healthy plants, healthy people, healthy families and communities. Anticipated outcomes include: 1) the development of more farm-to-table connections throughout the food system and in communities 2) increased market economic opportunities for Virginia's farms and farmers, 3) decreased effects of diet-related health conditions, and 4) greater overall community viability for all Virginians.

4. Associated Knowledge Areas

- ☑ 704 - Nutrition and Hunger in the Population

Outcome #4

1. Outcome Measures

- ☐ Not Reporting on this Outcome Measure

Engaging Institutions to Facilitate the Aggregation, Distribution and Scaling Up of Local Food Supply and Use

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	118

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The movement of purchasing fresh, locally grown foods is an emerging trend transforming Virginia and the United States. Many opportunities exist in Virginia for the sale of locally grown foods to the public. The list includes farmers markets, restaurants, grocery stores, nursing homes, universities, hospitals, public schools and other institutions. Within Loudoun County, the National Conference Center presents a tremendous opportunity for the aggregation, distribution and use of local food products.

What has been done
The practice of selling local foods impacts Loudoun County by creating economic activity, developing agriculture enterprises, improving rural health and culture and cultivating the environment. A 4-hour seminar organized by Virginia Cooperative Extension, Loudoun County Farm Bureau, and Loudoun Economic Development was attended by 118 local farmers and interested land owners that focused on the challenges of and successes to building more robust regional markets for local farm products. Participants learned how farmers can work together and with others to build the marketing, production and distribution infrastructure necessary for success.

Results
An emerging result is that The National Conference Center has appointed a local foods purchasing agent and has agreed to provide a site to serve as a hub for local food distribution. A task force comprised of local producers and business leaders are developing plans to develop a local "food hub" at the National conference Center. Willsford Development has hired a local producer to incorporate local foods into a marketing plan for a 2500 home development in Loudoun.

4. Associated Knowledge Areas

- ☑ 704 - Nutrition and Hunger in the Population

Outcome #5

1. Outcome Measures

- ☐ Not Reporting on this Outcome Measure

Fostering Tangible Social and Economic Benefits with a More Locally-Integrated Community-Based Food System

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	54

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The prolonged economic recession has resulted in increasing discussions of economic vitality, community viability and overall quality of life. Within this discussion, some people are looking for a magic silver bullet to drive economic recovery rather than look at the economic foundations of society and those business sectors that directly impact everyone's daily life. Food, farming, and the food system affect's people's lives each and every day through its production, processing, distribution, consumption, and waste disposal pathways. Virginia's overall food system is socially, economically, and environmentally foundational and directly impacts the survival and viability of farms and farmland, the economic development of rural and urban communities, the care, restoration and resilience of ecological resources, and critical health issues.

What has been done

Within this context, Virginia Cooperative Extension has used a multi-faceted extension programming approach to address current and emerging relevant societal issues that positively and directly affect agricultural business, farm operations, hunger, public health, education, community development, rural economic viability, environmental stewardship, and small business development and job retention. The focus has been on developing a more locally-integrated community-based food system that supports agricultural sustainability, food security, and these overarching community needs.

Results

Extension's programming has incubated agricultural and entrepreneurial initiatives that have resulted in tangible social and economic benefits. By facilitating the development of the Shenandoah Valley Produce Auction, over $2 million of new farm income is generated annually within the farm community. The SV Produce Auction's development has also been instrumental in getting more fresh fruits, vegetables and whole foods into many school and university cafeterias. Farm-to-school and university programming as part of an overall strategy to impact individual and community nutrition has opened new markets for farmers and resulted in 7 school districts sourcing over 100,000 pounds of ground beef and patties from local beef producers. The success of these school districts with procuring local beef has been a model for Virginia's farm-to-school program and helped to create very practical ways to impact farm profitability, community viability and health.

4. Associated Knowledge Areas

- ☑ 704 - Nutrition and Hunger in the Population

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Workplace Farmers Market Development

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers markets increase healthy fresh food accessibility providing economically viable markets for small scale producers. Workplaces promote employee health initiatives by hosting farmers markets on-site. Workplace farmers markets offer healthy diet options of locally grown fresh farm products. Workplace locations are convenient allowing employees to purchase healthy foods during their lunch or breaks. Workplace farmers markets form strong community ties by inviting nearby residents to purchase from local farms.

What has been done
To start their Healthy Veterans Farmers Market, the Richmond Veterans Administration Medical Center (RVAMC) sought direction from the Virginia State University Agriculture & Natural Resources Program. Market feasibility studies and farm technical assistance was provided.

Results
This year, RVAMC visitors & staff have purchased $22,881.93 from local farms. The market runs every Friday, May to October. Pilot year success enables the market to continue in 2011.

4. Associated Knowledge Areas

- ☑ 704 - Nutrition and Hunger in the Population

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Establishing Community Supported Agriculture Marketing Programs

2. Associated Institution Types

☐ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
○ Change in Action Outcome Measure
◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Community Supported Agriculture (CSA) is a viable marketing outlet for small scale produce, livestock, and value added producers. In CSA, producers establish contacts and offer shares directly to customers before the growing season. Customers buy CSA subscriptions for the entire growing season and pick up products delivered weekly. CSA offers small scale producers a form of risk management through reliable income and crop failure security. In 2009, the 2007 Census of Agriculture reported over 12,500 American farms marketed through a CSA. Local Harvest.org, a self listing database of local farms indicates 137 Virginia farms utilize or operate CSAs. Attrition rate and failure occurs due to lack of production and marketing skills. Continuing Extension education and outreach fostering small scale adoption and sustainability is critical to small scale CSA adoption and advancement.

What has been done
In 2010, two train-the-trainer workshops (27 field faculty participants) were conducted and direct VCE technical assistance was provided to five Virginia small farmers (Chesapeake, Hillsville, and Dillwyn).

Results
Five (5) small farmers developed their own farm subscription programs. Combined year one sales were an estimated $20,000. Farms expect to increase customer numbers three-to-four fold.

4. Associated Knowledge Areas

- ☑ 704 - Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☐ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

The prolonged economic recession has been a challenge, but has also resulted in increasing discussions of economic vitality, community viability and overall quality of life. Within this discussion, some people are looking for a magic silver bullet to drive economic recovery rather than look at the economic foundations of society and those business sectors that directly impact everyone's daily life. Food, farming, and the food system affect's people's lives each and every day through its production, processing, distribution, consumption, and waste disposal pathways.

Compliance with some public policy and regulations has been a challenge for small scale farm operations and businesses who are well-positioned to meet the demand for fresh, healthy nutritious foods at the local level. However, through ongoing educational programming, Extension personnel are trying to address these challenges and open up new markets for small scale farmers and businesses.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☐ Before-After (before and after program)
- ☐ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study

- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 14

1. Name of the Planned Program

Global Food Security and Hunger - Pest Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
112	Watershed Protection and Management	10%	0%	10%	10%
211	Insects, Mites, and Other Arthropods Affecting Plants	10%	0%	10%	10%
212	Pathogens and Nematodes Affecting Plants	10%	0%	10%	10%
213	Weeds Affecting Plants	10%	0%	10%	10%
216	Integrated Pest Management Systems	20%	100%	20%	20%
403	Waste Disposal, Recycling, and Reuse	10%	0%	10%	10%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%	0%	10%	10%
723	Hazards to Human Health and Safety	10%	0%	10%	10%
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	10%	0%	10%	10%
	Total	100%	100%	100%	100%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	29.0	0.0	19.9	1.5
Actual	23.9	0.8	25.3	1.5

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
737358	79530	515997	292692
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
836446	50704	1739431	425734
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2051450	22120	6340099	132122

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct workshops, meetings, field tours, demonstrations, develop training media, training manuals, curriculum, resources, provide training, provide counseling, conduct assessments, facilitate meetings, and document stakeholder input, partner with other state and federal agencies including VDACS, USDA, EPA, NRCS conduct pesticide disposal events and related activities, conduct on-line courses and hands-on activities, conduct research experiments and surveys, Asian soybean rust/soybean aphid website, ag pest advisory, and phone assisted hotlines.

2. Brief description of the target audience

Consumers, landowners, homeowners, producers, producer groups, pesticide applicators seeking certification under federal and state laws, pesticide regulators, boards, commissions, and enforcement officials, local government, councils, and community groups, universities, colleges, K-12, youth aged 13-18, schools, advocacy and consumer protection groups and associations, pesticide safety educators, pest management specialists, and related experts, authors, journalists, other media specialists, institutional, industrial, and vector control groups and individuals, health/medical, environmental, and emergency response personnel and organizations, farm workers, migrants, and day-laborer groups and individuals, and researchers, scientists, pesticide toxicologists, extension educators and related experts.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	56000	56000	1300	1000
Actual	63096	65122	3227	435

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	10	25	
Actual	10	25	35

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of non-peer reviewed outreach citations incorporating information on the most effective IPM strategies and systems for use on selected commodities and/or at selected sites

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	125	214

Output #2

Output Measure

- Number of private applicators trained for certification

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	750	1510

Output #3

Output Measure

- Number of commercial applicators trained for certification

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	750	1000

Output #4

Output Measure

- Number of private applicators trained for recertification

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual

2010	2000	2441

Output #5

Output Measure

- Number of commercial applicators trained for recertification

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	1000	1000

Output #6

Output Measure

- Number of non-certified applicators trained

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	2000	9000

Output #7

Output Measure

- Number of stakeholders enrolled in the IPM Stakeholder Network

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	100	550

Output #8

Output Measure

- Number of trainers and regulatory officials trained

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	300	993

Output #9

Output Measure

- Educational media website hits communicated through the Pesticide Safety Education website

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	1000000	4500000

Output #10

Output Measure

- Number of non-peer reviewed research citations incorporating information on the most effective IPM strategies and systems for use on selected commodities and/or at selected sites.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	250	202

Output #11

Output Measure

- Number of presentations on IPM related topics.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	500	711

Output #12

Output Measure

- Number of volunteer hours dedicated to pest management programming

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	8000	10455

Output #13

Output Measure

- Number of extended learners with four or more hours of contact related to pest management

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	10000	19577

Output #14

Output Measure

- Amount of revenue generated in dollars for pest management Extension and research programming

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	1000000	5381320

Output #15

Output Measure

- IPM publications for clientele including extension publications, manuals and guides, multi-media

pieces, websites, newspaper and trade journal articles, and papers provided at production meetings and field days.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	600	446

Output #16

Output Measure

- Number of samples evaluated by current and improved plant diagnostic methods

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	1200	1243

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of individuals gaining knowledge of IPM through training course completion and/or examination
2	Number of applicators who gain knowledge in pesticide safety through certification training and pass the state certification exam(s)
3	Number of applicators who gain additional knowledge in pesticide safety through re-certification training and sufficient credit to maintain their certification
4	Number of applicators, farm workers, and the general public who gain knowledge in general pesticide safety who are not seeking certification as pesticide applicators
5	Number of trainers who gain knowledge in pesticide safety and pesticide curriculum and program training in established train-the-trainer workshops
6	Number of pesticide drift violations prosecuted by VDACS remains at 10 or below.
7	Threshold number of personal protective equipment violations prosecuted by VDACS
8	Through educational programming and collaborative efforts, support the collection and proper disposal of unwanted pesticides in Virginia localities.
9	Number of localities participating in a pesticide container recycling program.
10	Number of participants gaining knowledge about invasive NIS
11	Increase the number of stakeholders collaborating with pest management strategic planning activities -- which support the communication of the pest management needs of Virginia and regional agricultural interests to pesticide regulatory policymakers.
12	Increase in the number of facilities that are impacted in a positive way by IPM program activities.
13	Number of new strategies developed for pest control
14	Integration of Native Bees with Honey Bees for Sustainable Pollination of Fruit Crops
15	Urban pest management programming
16	Plant diagnostic laboratory analysis results in reduction in pesticide use by agriculture producers

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of individuals gaining knowledge of IPM through training course completion and/or examination

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2000	8461

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The federal and state pesticide laws and regulations require pesticide applicators to be certified to use restricted use pesticides. In addition, Virginia law requires all commercial applicators to be certified to use any pesticide. It is mandatory that these applicators renew their pesticide licenses through continuing education every two years. Without pesticide safety and integrated pest management (IPM) education to enable these individuals to do so, many would suffer economic hardships and violate the law. A lack of knowledge in pesticide safety and IPM practices threatens human health and the environment.

What has been done
Commercial and private applicator training workshops (over 300) were offered in 107 localities in 2010.

Results
As a result of these educational opportunities, over 8,461 applicators gained knowledge associated with pesticide safety and environmental protection sufficient enough to maintain their certifications in Virginia for two more years or take the state certification exam(s).

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of applicators who gain knowledge in pesticide safety through certification training and pass the state certification exam(s)

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1000	2510

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Federal and state pesticide laws and regulations require pesticide applicators to be certified to use restricted use pesticides. In addition, Virginia law requires all commercial applicators to be certified to use any pesticide. Without pesticide safety and integrated pest management (IPM) education to enable these individuals to do so, many would suffer economic hardships and violate the law. A lack of knowledge in pesticide safety and IPM practices threatens human health and the environment.

What has been done
Training was conducted statewide in thirty different localities to target new applicators. In addition, over 20 commercial venues offered training to new applicators seeking certification with the assistance of specialists and agents. Finally, 23 different training manuals are revised and maintained to meet current standards through the work of Cooperative Extension and Virginia Tech. Over 2,000 core safety manuals were sold to applicators for training in 2010.

Results
As a result of training opportunities offered to new applicators by Virginia Tech, Cooperative Extension and its collaborators, 2,510 new applicators successfully completed the requirements to pass the state certification examinations in 2010.

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of applicators who gain additional knowledge in pesticide safety through re-certification training and sufficient credit to maintain their certification

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	4000	5951

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The federal and state pesticide laws and regulations require pesticide applicators to be certified to use restricted use pesticides. In addition, Virginia law requires all commercial applicators to be certified to use any pesticide. It is mandatory that these applicators renew their pesticide licenses through continuing education every two years. Without pesticide safety and integrated pest management (IPM) education to enable these individuals to do so, many would suffer economic hardships and violate the law. A lack of knowledge in pesticide safety and IPM practices threatens human health and the environment.

What has been done
Commercial and private applicator training workshops (over 300) were offered in 107 localities in 2010.

Results
As a result of these educational opportunities, over 5,951 applicators gained knowledge associated with pesticide safety and environmental protection sufficient enough to maintain their certifications in Virginia for two more years.

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of applicators, farm workers, and the general public who gain knowledge in general pesticide safety who are not seeking certification as pesticide applicators

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	950	8199

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Pesticide safety education in an important part of best management practices for successful farming and specialty crop production. Commercial businesses depend on this knowledge if they are to succeed in pest management. Public entities hire competent pest managers who must become certified to be fully compliant to state and federal pesticide control laws. General practices in these businesses require a working knowledge of pesticide safety. The general public needs to be aware of pesticide safety practices whether they are using pesticides in their homes or hiring commercial applicators to do the work for them.

What has been done
Virginia Cooperative Extension, through the Master Gardener Program and through ongoing workshops, presentations, and web-based information provide pesticide safety education to uncertified applicators and the general public. Extension answers thousands of questions annually relating to pesticide use and safety. Local Extension agents and specialists interface with thousands of non-certified applicators and pest managers through their appearance on programs sponsored outside the agency and through agency sponsored educational opportunities.

Results
In 2010, it is estimated that Extension provided educational programs to over 8,199 uncertified applicators through its educational venues. In addition, Virginia Tech Pesticide Programs provided online (web-based) pesticide safety instruction through its online course to assist applicators in gaining certification knowledge. There were 112 individuals enrolled in this online course in 2010 and 88 employers. In addition, 20,555 users used the VTPP.ORG website to seek pesticide safety education information in 2010. Over 100 workshops were held to educate the public on pesticide and pest management methods and safety in 2010.

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management

- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of trainers who gain knowledge in pesticide safety and pesticide curriculum and program training in established train-the-trainer workshops

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	100	993

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Pesticide applicator education and IPM training are integral parts of a pesticide safety education program. In addition, IPM education is a major part of Extension programming assisting the public with reduced risk of pesticide exposure and environmental protection from pesticide misuse. Public policy and federal and state pesticide control laws require applicators to be knowledgeable in pesticide safety and integrated pest management. In order to train applicators and maintain compliance, pesticide safety educators must be trained to conduct training programs.

What has been done
Virginia Tech and Virginia Cooperative Extension with the support of the state lead agency, Virginia Department of Agriculture and Consumer Services and the Virginia Pesticide Control

Board sponsor several annual train-the-trainer workshops. In addition, Virginia Tech Pesticide Programs sponsors an ongoing, online course in pesticide recordkeeping compliance in cooperation with the USDA Federal Pesticide Recordkeeping Branch for pesticide investigators nationwide.

Results

In 2010, 85 Extension agent, six investigators, and one contract trainer were trained in the annual Virginia Pesticide Safety Educators Workshop held in Roanoke, VA. In addition, 28 vocational agricultural teachers were trained in Blacksburg at the 2010 Vo-Ag Teachers Pesticide Safety Education Institute. The online course in pesticide recordkeeping compliance trained 507 pesticide investigators from across 46 states and territories in 2010. As a result of these trainings, pesticide safety educators and investigators were able to conduct pesticide safety education and compliance assistance in 46 states and territories across the US, in 107 Virginia counties and city units, and in 12 school districts across Virginia. The impact of this effort helped applicators stay in compliance with federal and state pesticide control laws and regulations in the impacted states and territories, and maintain their licenses which enabled them to stay in business and avoid fines and violations. The un-measurable potential of avoidance of violation of these laws would number in the hundreds of thousands of dollars annually. The average fine (payment) made by violators in Virginia is over $800 per violation.

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #6

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Number of pesticide drift violations prosecuted by VDACS remains at 10 or below.

2. Associated Institution Types

☑ 1862 Extension

- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☐ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☐ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #7

1. Outcome Measures

☑ Not Reporting on this Outcome Measure

Threshold number of personal protective equipment violations prosecuted by VDACS

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	20	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Through educational programming and collaborative efforts, support the collection and proper disposal of unwanted pesticides in Virginia localities.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	20	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The federal and state pesticide laws and regulations require pesticide applicators to dispose of pesticides properly. The disposal of canceled, banned or unwanted agricultural and commercial pesticides poses a significant challenge to agricultural producers and other pesticide users due to its high cost. The proper disposal of waste pesticides eliminates a potential threat to health and the environment.

What has been done
Pesticide waste disposal programs were offered in 24 localities in Virginia this year. This is an ongoing program sponsored by Cooperative Extension and the Virginia Department of Agriculture and Consumer Services since 1990.

Results
As result of 24 units offering disposal programs to farmers, commercial applicators, golf courses, and some homeowners, 21,686 of waste pesticides were reported to have been disposed properly through these programs in 2010.

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☐ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☐ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☐ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #9

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of localities participating in a pesticide container recycling program.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	18

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Disposing of used plastic pesticide containers in a manner that does not threaten the environment poses a challenge for agricultural producers and custom applicators. Typically, pesticide applicators dispose of their empty, clean plastic pesticide containers by hauling them to the local landfill. Local drop-off points for pesticide container recycling allow farmers an economical and environmentally-friendly alternative.

What has been done
Local Extension units and agricultural suppliers (dealers) have sponsored local recycling programs throughout Virginia in 18 locations. This is an increase from past years, but there is a continuing emphasis to increase opportunities for recycling of waste pesticide containers.

Results
In 2010, an increased number of units held recycling programs. The result was that 18 localities sponsored recycling of waste pesticide containers. A total of 15,600 containers were reported to have been recycled this year.

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☐ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☐ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☐ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #10

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of participants gaining knowledge about invasive NIS

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	250	2000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
An invasive plant species is a non-native species whose introduction causes or is likely to cause economic harm, environmental harm, or harm to human health. The term "invasive" is used for the most aggressive species. These species grow and reproduce rapidly, causing major disturbance to the areas in which they are present. Invasive species, if left uncontrolled, can and will limit land use now and into the future. The United States suffers from $1.1-120 billion per year in economic losses due to exotic, invasive species.

What has been done

Over 2,000 plant nursery clients from throughout southeast Virginia attended short courses and field tours to learn about the benefits and options for nonchemical weed control of invasive weeds (doveweed reed, hamberbitter, phyllanthus, mulberryweed, and yellow nutsedge).

Results
Adoption of non-chemical control measures will result in fewer pesticide applications to lawns, landscape bed, and in production areas, reducing the adverse impact on the Chesapeake Bay.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☐ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 723 - Hazards to Human Health and Safety
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #11

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase the number of stakeholders collaborating with pest management strategic planning activities -- which support the communication of the pest management needs of Virginia and regional agricultural interests to pesticide regulatory policymakers.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	25	841

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Food Quality Protection Act of 1996 resulted in an ongoing transition by growers to new and alternative pest management strategies. FQPA created a crisis in specialty crop production nationwide and as a result USDA and EPA were required to provide stakeholder input into the decision-making process associated with FQPA. The loss of viable pest management strategies threatens to create crop losses as the regulatory process moves forward unless decisions are made with all available information from stakeholders.

What has been done

The Southern Region IPM Center, Virginia Tech, and its cooperators have developed a series of IPM documents that represent stakeholder input and needs associated with various crop pest management in the region. Virginia Tech is now responsible for coordinating a regulatory information network to allow input of stakeholders to FQPA decision-makers. We have created with direct stakeholder input a series of crop profiles, pest management strategic plans, and IPM Elements based on stakeholder priorities for Virginia and collaborating states. These include the commodities: honey bees, turfgrass, wine grapes, Christmas trees, broccoli, goats, pumpkins, sweet corn, and pumpkins in recent years. Emphasis is being placed on locally grown and specialty crops.

Results

In 2010, a pest management strategic planning workshop was held with wine grape stakeholders from Virginia and North Carolina. A pest management strategic plan (PMSP) was written and is in being published (2011) to document grower needs and the impact that regulatory decisions may have on the crop without grower input. Plans are in various stages of completion on turfgrass (for Virginia, North Carolina, South Carolina and Maryland), goats in North Carolina and Virginia; and broccoli in the Eastern United States. Christmas tree growers are implementing the PMSP information and have collaborated to develop and adopt an IPM Elements document (best management practices in IPM). Growers are adopting the IPM Elements to enhance profitability and to brand their crop IPM compliant for marketing and reduced pesticide use. Similar activities are being conducted for honey bees, broccoli, turfgrass, pumpkin, sweet corn, bell peppers, wine grapes, and other locally grown specialty crops in the region. There are 841 stakeholders participating in the stakeholder network involving 22 specialty crops.

4. Associated Knowledge Areas

- ☑ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☑ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #12

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increase in the number of facilities that are impacted in a positive way by IPM program activities.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	25	984

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
For the last two decades, there has been a growing national concern about childhood exposure to pesticides. Because of this concern, more and more states have mandated the use of IPM in public schools. In Virginia, School IPM has not been mandated, however, several of the current pest management practices used in schools (such as calendar-based insecticide applications whether they were needed or not) needed improving. The Virginia General Assembly legislated that IPM Guidelines be provided to all Virginia Schools by 2010.

What has been done
In April 2010, we drafted the School IPM guidelines (32 pages), along with a proposal to deliver a school IPM training program to each of the Department of Education divisions (there are 8 DOE regions) in the state of Virginia. In that same month, the Virginia Pesticide Control Board funded a training program to help schools transition to these guidelines.

Results
In June 2010, the Guidelines were accepted by the Virginia Department of Agriculture and Consumer Services, and distributed to the Virginia Department of Education in July. Since that time, we have been working with the regional representatives of the Virginia School Plant Managers Association (VSPMA) to schedule and organize the site arrangements for each training program (oversee the provision of lunches and securing the accessibility of kitchen and electrical rooms). So far, three of the School IPM training programs have been delivered to DOE regions 2

(Tidewater), 5 (Albemarle) and 7 (SW Virginia). A total of 169 school facilities managers, nurses, administrators and pest management professionals have participated in the full-day IPM training programs. These represented 35 school districts with authority over 984 school facilities. The training evaluations have been extremely favorable, with the majority of respondents indicating that they had gained the knowledge needed to begin the implementation of IPM.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☑ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #13

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of new strategies developed for pest control

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Incorporating integrated pest management protocols (best management practices) into agriculture

is a highly viable strategy for standardizing research, education and regulatory practices in agriculture. Standardization of IPM can lead to increased profitability, product branding, and low input sustainability.

What has been done

In Virginia and cooperating states, Virginia Tech has led an effort to develop a series of IPM protocols (IPM Elements) with the direct input of stakeholders. In 2010, IPM Elements, pest management strategic plans, and crop pest management profiles were developed or put into practice for landscape turf, wine grapes, honey bees, Christmas trees.

Results

As a result of developing IPM Elements for these crops, stakeholders are in various stages of adopting these practices across the region (mid-Atlantic states, including Virginia and North Carolina. The Mount Rogers Christmas tree growers are using the IPM Elements to brand their crops as IPM Complaint. IPM Elements are being used as a standard for establishment and production in a new Christmas tree seedling nursery for the region. Beekeepers in the region have incorporated IPM Elements into their master beekeeper programs and practices. Wine grape growers are adopting IPM Elements into their protocols. IPM Elements are being developed for locally grown crops including broccoli, pumpkins, sweet corn, bell peppers and meat goats. Work is being done with the Virginia turf industry to incorporate these protocols as a standard into turf production.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☑ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 723 - Hazards to Human Health and Safety
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

<u>Outcome #14</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Integration of Native Bees with Honey Bees for Sustainable Pollination of Fruit Crops

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A third of the nation's food supply requires pollination but overreliance on a single bee species for crop pollination is risky. Crop pollination in the United States is valued at nearly $10 billion. Virginia apple crops alone are valued at $35 million. Spring pollinations of orchards have relied on the European honey bee which is declining in population due to pests and diseases. Ergo, it is imperative that alternative pollinators be identified for greater fruit production diversity and security.

What has been done
Scientists at Virginia State University are developing management techniques to use a subspecies of an alternative pollinator, the blue orchard bee (Osmia lignaria Say) for apple and other fruit trees in Eastern orchards. Scientists are also working to develop management techniques that will allow commercial use of these bees in Eastern Orchards. A total of five orchards in Virginia and North Carolina were used in this study, mostly apple, but also with peach, plum, apricot and cherry.

Results
Virginia State University scientists were able to establish nesting populations of these bees within orchards, with population increases of up to several fold per year. Research at VSU provided understanding of bee emergence with respect to orchard bloom, and alternative nutritional resources important for bee nest establishment and population growth. Potential pest problems, including pollen mites and parasitoids, were identified along with promising management techniques.
There was a strong preference for the pollen of eastern redbud, Cercis canadensis L., even when apples were blooming nearby. Nests from within orchards that contained large amounts of apple pollen in the early cells often changed to mostly redbud pollen as later cells were constructed. The majority of pollen overall was from redbud. Thus, the presence of redbud adjacent to orchards could significantly reduce apple pollination. There appears to be a phenological relationship between emergence of female O. lignaria and redbud bloom in the Mid-Atlantic region.
Use of O. lignaria will reduce reliance on the honey bee, enhance pollinator diversity, allow

smaller orchards to be more self-sufficient, and provide opportunities for commercial development of this bee. Because this bee is commonly found throughout temperate areas of the Eastern United States, management of locally adopted native bees could provide pollination security for most eastern orchards, and reduce the increasing costs of obtaining pollination services.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☑ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☐ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☐ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 723 - Hazards to Human Health and Safety
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #15

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Urban pest management programming

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2009, VSU received federal funding to implement the first Integrated Pest Management (IPM)

project within the City of Petersburg, Virginia. The City of Petersburg's 2020 Vision Plan sets high standards to ensure a clean, safe and attractive city, with a requirement for residents to assist in efforts. Additionally, Petersburg's Mayor and City Manager highlight clean and safe housing as a top priority and wish to address these issues through environmentally safe practices. Traditional pest management approaches have predictable costs; however, inherent problems such as lack of monitoring strategies, efficacy evaluations, and resulting ?call-backs? for pests outside contract guidelines contribute to conditions that pose health risks to residents and staff (Hynes et. al, 2007). Cockroach and rodent infestations contribute to respiratory problems (Auman-Bauer, 2008), while repeated pesticide applications are a factor in pest resistance.

What has been done

To assist Petersburg in reaching these goals, VSU and VT partnered with the Petersburg Redevelopment and Housing Authority to identify critical IPM issues within public housing facilities and conduct training to educate housing managers and residents to implement IPM pest management strategies. VSU and VT partnered with the City of Petersburg Extension Agent to implement the IPM program within four of Petersburg's public housing communities; identified and hired a licensed pest contractor to execute the required elements of the IPM Program and work with VT Plant Disease Clinic to process resident samples; and gathered data and used statistical models to track and evaluate health and economic outcomes.

Results

In 2010 the IPM Coordinator developed IPM Administrative Guidelines to provide a structured plan and process for the Housing Authority. Seventeen (17) Housing Management Staff received IPM training that was facilitated by Dr. Dini Miller, IPM Extension Specialist. Additionally, housekeeping training was provided to (40) residents by the Petersburg Extension Office. Materials were provided and project strategies discussed. The project plan of work and cost assessment was compiled and the IPM bid proposal from contractor, Perma Treat, was approved by HUD on behalf of the Housing Authority. Plans are to begin the initial phase of the IPM implementation plan in March 2011 for the four sites identified during the initial process. Data will be collected and analyzed.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☐ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☑ 723 - Hazards to Human Health and Safety
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

Outcome #16

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Plant diagnostic laboratory analysis results in reduction in pesticide use by agriculture producers

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	29

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A variety of crop and animal commodities contribute to Virginia?s farm sales, which were reported at $2.9 billion (National Agricultural Statistics Service, 2007). Virginia commercial crop producers require accurate diagnosis of their crops? disease and abiotic problems (e.g. chemical injury, environmental stress, cultural problems) in order to implement appropriate crop management tactics, avoid crop loss and poor crop quality, and increase profitability. Accurate plant diagnosis is the foundation on which an integrated pest management program is developed and aligns with the College of Agriculture and Life Sciences' Agricultural and Environment Sustainability initiative.

What has been done
The Virginia Tech Plant Disease Clinic (PDC) is a service lab to Virginia Cooperative Extension (VCE) agents, providing diagnosis of plant disease and abiotic problems for Virginia clientele whose samples are submitted through their local VCE agent. For each sample diagnosed an electronic diagnostic report is prepared. When relevant, PDC report recommendations include alternative control tactics (non-chemical) to avoid or minimize the problem identified. In cases where it is too late to apply a pesticide, a pesticide is not likely to yield an economic benefit or where alternative control tactics alone would be effective growers are advised not to apply a pesticide. In cases where pesticides are warranted, the report includes information on appropriate pesticide(s) and application times for effective disease control. Thus, pesticide use is implemented when it will be most effective and avoided in cases where it would be not be beneficial.

Results

According to commercial producer respondents to a 2009 post-season survey, the PDC has provided diagnostic services for a broad range of Virginia?s agricultural commodities, including fresh market vegetables and herbs, nursery and greenhouse crops, field crops, Christmas trees, wine grapes, tree and small fruits, and forage crops. Commercial producers using the PDC services primarily consist of those using conventional production methods; however, those using sustainable and organic production methods accounted for 16% and 9% of PDC commercial clientele, respectively. Approximately half of the commercial producer survey respondents reported experiencing a change in knowledge about their plant problem after receiving the PDC diagnostic report and most (75%) were not treating the crop with a pesticide prior to receiving the report. A majority of commercial producer PDC clients reported an increased knowledge of alternative control tactics to avoid or control plant problems after receiving their diagnostic report and nearly all of those also reported either implementing or plans to implement the alternative tactics in the future. Forty-one percent of survey respondents reported that a PDC diagnostic report indicated that there was little to no economic benefit in applying a pesticide for the problem and those respondents overwhelmingly indicated that they anticipate not using pesticides for the problem in the future. Seventy-one percent of the producer respondents indicated that PDC diagnostic recommendations result in an economic benefit to their operation and 29% reported a reduction in their use of pesticides. Producers overwhelmingly indicated that the PDC diagnostic recommendations increased the quality of their crop, profitability, knowledge of control options and knowledge of pest and abiotic problems in their operation. About half of the respondents indicated that the PDC diagnostic recommendations allow them to develop a more strategic pest management approach.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 211 - Insects, Mites, and Other Arthropods Affecting Plants
- ☐ 212 - Pathogens and Nematodes Affecting Plants
- ☐ 213 - Weeds Affecting Plants
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from
- ☐ 723 - Hazards to Human Health and Safety
- ☐ 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☐ Economy
- ☑ Appropriations changes
- ☐ Public Policy changes
- ☐ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

State government appropriation cuts have resulted in fewer extension faculty to deliver educational programming in pest management.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☑ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☑ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☑ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 15

1. Name of the Planned Program

Global Food Security and Hunger - Plants and Plant Products

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	15%	10%	10%	33%
201	Plant Genome, Genetics, and Genetic Mechanisms	10%	15%	15%	0%
202	Plant Genetic Resources	10%	10%	10%	0%
205	Plant Management Systems	10%	10%	10%	67%
216	Integrated Pest Management Systems	15%	15%	15%	0%
403	Waste Disposal, Recycling, and Reuse	10%	10%	10%	0%
511	New and Improved Non-Food Products and Processes	10%	10%	10%	0%
601	Economics of Agricultural Production and Farm Management	10%	10%	10%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%	10%	10%	0%
	Total	100%	100%	100%	100%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.5	7.5	3.0
Actual	26.1	0.8	27.6	3.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
805232	84564	563495	904686
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
913441	93217	1899546	1011119
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2240286	22000	6923706	86355

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct research experiments on genetic improvement and manipulation of plants, bioprocessing, production systems, and BMP effectiveness. Contribute presentations and scholarly publications to regional, national, and international scientific organizations. Engage with clientele to adapt research products to the production environment. Conduct multi-county and in-depth educational programs and short courses on new plants and plant products, their management, food safety issues, and associated BMPs. Collaborate with other state specialists to develop regional publications in these areas. Maintain demonstration plots of cultural practices, techniques and germplasm adaptability of selected crops. Publish (listserv, web, and mailing) newsletters to provide practical information on pest management, cultural practices, and other research-based aspects of plant management.

2. Brief description of the target audience

The target audience includes Extension educators, commercial producers, policy makers, small businesses, pesticide applicators, homeowners and other plant and food product consumers. Youth, their parents and limited income consumers are targeted through 4-H horticulture programs and community gardening efforts.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	130000	236300	30000	6500
Actual	143258	313355	34708	1191

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010
Plan: 2
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	10	26	
Actual	6	28	34

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational presentations conducted

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	600	867

Output #2

Output Measure

- Number of volunteers

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	5000	24090

Output #3

Output Measure

- Number of research studies completed on biofuels or novel biobased products

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	12	4

Output #4

Output Measure

- Number of research publications on biofuels or novel bio-based products

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	8	9

Output #5

Output Measure

- Number of research citations

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	100	130

Output #6

Output Measure

- Number of outreach citations

☑ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	5	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of commercial producers educated about new plants, cultivated varieties, production techniques or BMPs
2	Number of commercial producers adopting new plants, cultivated varieties, production techniques, or BMPs
3	Number of noncommercial gardeners/producers educated about new techniques or BMPs
4	Number of noncommercial gardeners adopting new techniques or BMPs
5	Number of new cultivated varieties released
6	Increased number of acres dedicated to vegetable and berry specialty crops to enhance agricultural profitability.
7	Promoting Raspberry Production Among Small Farmers in Virginia

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of commercial producers educated about new plants, cultivated varieties, production techniques or BMPs

2. Associated Institution Types

☑ 1862 Extension
☑ 1890 Extension
☑ 1862 Research
☑ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	11000	11000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Weed management is one of the most costly expenditures in nursery production and in landscape maintenance. Weeds are commonly managed through preemergence and postemergence herbicide application. Proper use of these chemical control options is needed for environmental stewardship, including minimizing any adverse impact on the Chesapeake Bay. Nonchemical control options needs to be integrated into management strategies used by producers and landscapers.

What has been done
Through horticulture weed research program, evaluations have been made of the integration of nonchemical and chemical control strategies for doveweed reed, one of the newest invasive plant species in container nursery production. Control measures have been evaluated for chamberbitter, phyllanthus, and mulberryweed, three of the newest invasive weeds to infest nursery and landscape plantings in Virginia. Control strategies for yellow nutsedge, an aggressive weed in container and field nursery production as well as landscape maintenance was investigated. Results were published in one refereed journal article, five papers presented at professional meetings, and in 9 research reports. A research report containg five articles on the findings were distributed to the attendees at the 2010 Virginia Turfgrass field day.

Results

Over 2,000 individuals were trained on the use of nonchemical and chemical control options. Attendees learned the benefits of nonchemical weed control options, resulting in fewer pesticide applications to lawns, landscape bed, and in production areas. Practitioners utilizing the results from my integrated research and extension program will increase the effective use of nonchemical weed control measures. This will result in a decrease in unecessary pesticide applications.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☑ 205 - Plant Management Systems
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of commercial producers adopting new plants, cultivated varieties, production techniques, or BMPs

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	700	700

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Ambrosia beetles are pests of ornamental, fruit, and nut trees throughout the central and eastern US, and can cause significant damage particularly in nurseries. Infested trees often die from early spring attack.

What has been done
Nursery operations in Goochland, Accomac, Northampton, Isle of Wight counties and cities of Chesapeake and Suffolk that had experienced losses in past years participated in a pest monitoring and trapping evaluation program.

Results
None of the nurseries that used the monitoring results to properly time insecticide applications sustained any losses from ambrosia beetles.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☑ 205 - Plant Management Systems
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

<u>Outcome #3</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of noncommercial gardeners/producers educated about new techniques or BMPs

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	300000	300000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Over 1,000 Master Gardener (MG) volunteers provide research-based horticulture and environmental educational programs through Virginia Cooperative Extension (VCE) in the 19 county Northern District (ND). According to a 2007 University of Minnesota MG study of potential public benefits, the identified top three were improving the natural environment, reduction of the spread of hazardous plants, insects and disease, and an increase in the effectiveness of community public service organizations. In Prince William County, Public Works?

Watershed Management Branch and the VCE-Prince William?s Environment and Natural Resources program determined the most important environmental issue is protecting water quality. Educational programs administered through the local Virginia Cooperative Extension office help the locality maintain their VPDES permit.

What has been done
In 2010, Prince William County MG volunteers and staff educated 1247 residents through 63 classes held free to the public. Some of the class topics included the Basics of Gardening Series, the Sustainable Vegetable Gardening Series, Pruning, Teaching Garden Yours, Summer Quest at local libraries, two classes on stormwater management, six Saturday in the Garden programs, and five classes on lawn care.

Results
As a result of these programs, 84% of attendees returning surveys reported the intent to adopt recommended water quality practices provided in the lectures on post surveys. Surveys sent out to the same attendees three months after these programs indicate that 90% of environmental education participants had adopted the recommended best management practices provided in the lecture they attended.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☐ 205 - Plant Management Systems
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of noncommercial gardeners adopting new techniques or BMPs

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2000	2500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Henrico County Extension Office is situated in a county with an estimated population of 296,419 according to the 2009 US Census Bureau. Reaching a population of this size could be a daunting task. The Henrico Master Gardeners are an important resource for educational outreach and are essential in day-to-day interactions with Henrico citizens who call needing solutions. With the focus on water quality and the environment, it is essential that Henrico citizens are provided with up-to-date, research-based information on topics such as insect and disease management, wildlife issues, and turf and landscape care. Very often pesticides and fertilizers can be misapplied or applied at incorrect rates by well-meaning homeowners.

What has been done
The Henrico Master Gardeners provide outreach through a number of venues. Master Gardeners have interactions with Henrico residents through the Horticulture Helpline manned by Henrico Master Gardener volunteers. They provide valuable information to Henrico citizens who visit one of the plant clinics manned by Master Gardener Volunteers in locations within the county. They provide pertinent and timely information to clients at information booths at events in Henrico County and surrounding areas. Henrico Master Gardeners educated citizens who attended their Educational Sessions in conjunction with the Lewis Ginter Plant Sale. The Henrico Master Gardener Speakers Bureau share knowledge through talks to local groups. The Henrico Master Gardeners provided information while serving as docents in the Gillette House Garden.

Results

Master Gardeners volunteered 1,326.75 hours on the helpline during 2010 resulting in 800 direct and indirect contacts. Master Gardeners processed or diagnosed 27 samples through the Henrico Extension Diagnostic Lab.

On a survey of helpline callers, 93% of respondents noted that they received a prompt response to their question. 65% of respondents noted that they used the information or advice provided by the Master Gardener. 51% of respondents said that they have changed something that they do as a result of information or advice they received. Some of the behaviors respondents noted they would change include using the proper pesticide, reading pesticide directions before application and learning the proper way to plant and grow a garden. Overall, 97% of respondents are likely to contact the Master Gardener helpline with other questions in the future. Master Gardeners presented a total of 22 educational presentations to approximately 631 attendees from community and civic groups in Henrico County in 2010. 95% of participants noted that they were provided with new information they can use, while 92% noted that they will likely change something they do as a result of the information presented; and, 94% would recommend the same speaker to another group.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☑ 205 - Plant Management Systems
- ☑ 216 - Integrated Pest Management Systems
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Number of new cultivated varieties released

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research

☑ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	5	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The PVQE is a key step towards development and release of Virginia-type peanut for Virginia, North Carolina, and South Carolina. In the PVQE small- and large- plot tests, our research group comparatively evaluate performance of all commercial varieties presently grown and 30 to 40 advanced breeding lines developed at North Carolina State University and Virginia Tech. These peanut genotypes are compared under optimum growth conditions and management practices for yield potential, grade and quality characteristics. As a result of this activity, one or two of the best performing peanut lines are released as new varieties every year. Research shows that location and year have a significant effect on lines? performance; therefore, replicated test plots are conducted at multiple locations and for at least three years before cultivar release. The PVQE is a multi-state project funded by the Virginia Tech, North Carolina State University, V-C Peanut Association, and the SC Peanut Growers; it addresses the CALS mission to increase profitability and environmental sustainability through development of better adapted and better yielding peanut varieties for V ? C region.

What has been done
Because its effectiveness in development of Virginia-type peanut varieties, the PVQE project has been around for over 35 years. Because of its importance, the PVQE was extended in the past few years to include South Carolina through collaboration with researchers and extension agents at Clemson University. Results of the PVQE project are equally used by breeders, researchers, growers, shellers and peanut processors, and constitute a base for education of county agents, growers and industry on varietal selection. Educational activities include various field days and presentations at professional and non-professional meetings every year. Over the years, a number of peanut varieties were released by Virginia Tech through this program. They are widely grown in V ? C region: NC-V 11, Wilson, VA ? 98R and, more recently, CHAMPS. This way, not only that financial contribution of the project?s participants is secured, but additional dividends are annually collected for the university, Tidewater AREC, and the PVQE & Crop Physiology program.

Results
Field trials in Virginia, North Carolina, and South Carolina were planted this year at six locations. Each trial had 36 genotypes of peanut replicated 3 times. Results show a couple of VT lines with good yield potential and crop value that could be released as varieties in the future. These varieties are uniform at all locations for yield, value and grade factors, and use environmental conditions efficiently. Because they could secure up to $200/acre more for the farmer then older varieties, agricultural profitability can be achieved through this program. The 2010 results of the

PVQE trials are well received every year by over 200 participants. Based on these results, decisions on what varieties to be planted in the following year and what new varieties to be released are formulated. In 2010, two new peanut cultivars were selected for release, one from VT and one from NSCU breeding program. VT 9506083-3 is a VT line with a high percent of extra large kernels and very suitable for gourmet and green boiling peanut markets. VT 9506083-3 was released as 'Titan'. Certified seed will be produced by the Virginia Seed Foundation.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☑ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☐ 205 - Plant Management Systems
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☑ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Increased number of acres dedicated to vegetable and berry specialty crops to enhance agricultural profitability.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☑ 1862 Research
- ☑ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ○ Change in Action Outcome Measure
- ◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	28838	45000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In response to rising consumer demand for locally/regionally grown products, horticultural production in the Shenandoah Valley continues to experience marked growth in both direct and wholesale markets. Keeping up with that demand is challenging and means finding ways to increase total volume and expand into new niche markets, while remaining profitable. From the extension perspective, developing educational programming that addresses all aspects of horticultural production from actual production methods to season extension to harvest/post-harvest handling, as well as sound marketing strategies is crucial, as is recognizing that growers represent various levels of experience from beginning farmers to both small- and larger-scale growers.

What has been done

To establish a stronger extension presence in horticulture in the Valley, the first step has been to build and foster partnerships with local/regional stakeholders such as the Produce Auction, direct market growers, and other local food system proponents. Through informal interviews and feedback, educational needs and gaps have been identified, and working strategies formulated to find the best ways to meet those needs and gaps. On-going evaluation of program activities and input from growers has provided opportunities to tailor education to reflect changing priorities. Over the last three years a number of workshops and farm tours have been held related to vegetable production, season extension, direct marketing, and food safety issues for existing farmers. To address the needs of aspiring and emerging farmers, a beginner grower assessment tool is currently being developed. The tool will provide the framework for an upcoming emerging farmers workshop, and will also be integrated into curriculum being developed for new farmers statewide as part of a beginner farmer and rancher coalition.

Results

Through this outreach, a greater extension presence has been developed in the Valley, and to date, close to 800 farmers and extension educators have attended educational events, several of which were repeat attendees. Participants have stated these events have encouraged them to try new innovations, such as high tunnels, greenhouse technologies, and plastic mulches; to increase their production because of new strategies learned; to follow better IPM programs; to be more equipped to know the changing regulatory scene; to assess and develop whole farm business plans for their produce operations; and have offered an excellent opportunity to network with other growers and buyers. Further, the impact of these efforts have expanded beyond the region through the training of educators attending the events. Invaluable feedback regarding future education has been garnered which will guide continuing educational efforts to strengthen horticulture viability and profitability in the region and beyond.

4. Associated Knowledge Areas

- ☑ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☑ 202 - Plant Genetic Resources
- ☑ 205 - Plant Management Systems
- ☑ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☑ 601 - Economics of Agricultural Production and Farm Management
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Promoting Raspberry Production Among Small Farmers in Virginia

2. Associated Institution Types

☐ 1862 Extension
☑ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
○ Change in Action Outcome Measure
◉ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Over the past several years, demand for fresh berries has grown significantly due to increased consumer awareness of their health benefits. Today's consumers are looking for convenient and healthy berries that are available year round. In the United States, during 2001-2007, fresh blueberry consumption increased by 65%, fresh raspberry by nearly 300%, and fresh strawberry demand by 45%. This increase in consumer demand has kept prices strong and has encouraged farmers to expand production acreage.

What has been done
The Virginia State University Horticulture Program assisted in developing a Virginia berry industry. High tunnels have a market advantage by which farms can extend the growing season, selling products year-round. Through research and grant funding, a more complete production system for high tunnel raspberry production was developed in 2010, including variety selection, pruning, pests and disease management. An Extension Fact Sheet publication is being finalized to provide information for growers? use. In addition to a USDA grant obtained in 2009 to promote the production of raspberry among 20 Virginia growers, a second USDA funded grant for a total value of $180,000.00 was obtained to work with 10 additional growers in 2010.

Results
To date, 10 small farms have built high tunnels and planted berries. For the first time, five small growers in Virginia are producing and marketing high tunnel grown raspberries to local markets.

The total estimated volume of fresh raspberries for 2012 is 18,000 of ½ pint clamshell container with a combined value of $53,820 per year.

4. Associated Knowledge Areas

- ☐ 102 - Soil, Plant, Water, Nutrient Relationships
- ☐ 201 - Plant Genome, Genetics, and Genetic Mechanisms
- ☐ 202 - Plant Genetic Resources
- ☑ 205 - Plant Management Systems
- ☐ 216 - Integrated Pest Management Systems
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☐ Public Policy changes
- ☐ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

The current economic situation has effected new home building as well as upkeep of existing new homes. Both of these factors have a significant effect on the number of ornamental plants produced and sold. Also, there have been Virginia Tech Extension and Research personnel that has been lost to early buyouts; thus, there has been a reduction in service to the stakeholders.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)

- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☑ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 16

1. Name of the Planned Program

Sustainable Energy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
112	Watershed Protection and Management	10%	10%	10%	0%
124	Urban Forestry	10%	10%	10%	0%
132	Weather and Climate	10%	10%	10%	0%
206	Basic Plant Biology	10%	10%	10%	0%
402	Engineering Systems and Equipment	10%	10%	10%	0%
403	Waste Disposal, Recycling, and Reuse	10%	10%	10%	0%
511	New and Improved Non-Food Products and Processes	10%	10%	10%	0%
601	Economics of Agricultural Production and Farm Management	10%	10%	10%	0%
605	Natural Resource and Environmental Economics	10%	10%	10%	0%
610	Domestic Policy Analysis	10%	10%	10%	0%
	Total	100%	100%	100%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	1.6	0.0	1.6	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
47820	0	33464	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
54246	0	112808	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
133044	0	411178	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conducted research and extension programming that explored and provided education on issues related to renewable energy systems, energy efficiency, energy feedstock cultivation, efficient harvesting and storage of biomass, network analysis to optimize logistics and minimize delivery costs, and exploration of the consequences of specific policy initiatives. This program included laboratory research, development of pilot scale projects in the field, educating clientele on the merits of particular energy practices and conversion technologies, and engaging the private sector to spur the commercialization and economic development of innovative and efficient energy systems.

2. Brief description of the target audience

Commercial Producers
Land Owners
4-H Youth
K-12 Youth
State and Federal Agency Personnel
Extension Educators
Policy Makers
Farmers
Consumers
Ag Related Businesses
Energy Service Companies (ESCOs)

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	706	1244	1211	7

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010

Plan:

Actual: 4

Patents listed

1. Efficient and sustainable production of a high value bio-oil by rapid pyrolysis of olive mill wastewater sludge
2. Method for production of stable biomass pyrolysis oils
3. Multimedia fluidized bed pyrolysis production of biogasoil
4. Preparation of biomass based phenol/formaldehyde resins

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	11	11	22

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Train the Trainer and Inservice Energy Workshops

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	12

Output #2

Output Measure

- Number of On-farm Demonstrations

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	6

Output #3

Output Measure

- Bioenergy Featured Case Studies

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	4

Output #4

Output Measure

- Number of educational meetings, workshops, conferences, training sessions, and field days

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	39

Output #5

Output Measure

- Number of fact sheets, publications, newsletters, and other print resources

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	22

Output #6

Output Measure

- Number of web sites, applications, modules

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	0

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Advancing the viability of enzymatic biofuel cells as an alternative energy source
2	Implementing a Co-mingled Recycling Program Within Your School
3	The Bioenergy Engineering Education Program (BEEP)
4	Inventorying Residual Biomass to Identify Opportunities for New Revenue Streams in the Commonwealth
5	Efficiently hydrolysis of cellulose by constructing cellulosome in vitro or vivo.
6	Improved Energy Efficiency for Initial Size Reduction of Round Bales of Switchgrass
7	Round Bale Logistics System for Bioenergy Industry
8	The Tour De Trash Teaches Hampton Virginia's Citizen How Natural Resources Can Be Conserved Through Recycling for Global Impact
9	Exploring Reuse, Recycling, and Utilization Alternatives for Plastics Generated in Virginia's Green Industry.
10	"Waste Solutions Forum"
11	2010 Agriculture Environmental Initiatives
12	Poultry Energy
13	Biofuels Research
14	Biofuels production
15	"Power Generation: Facts and Fiction"
16	Flue-Cured Tobacco Curing Efficiency - Quantification of the Energy Usage and Cost Associated with Curing Tobacco.
17	Flue-Cured Tobacco Curing Efficiency - Evaluation of Alternative Fan Drive Systems.

18	Evaluation of a Prototype Solar-Assisted Tobacco Curing Barn
19	Flue-Cured Tobacco Curing Efficiency - Development of Novel Heat Exchanger Technology.
20	Saving Money by Saving Energy

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Advancing the viability of enzymatic biofuel cells as an alternative energy source

2. Associated Institution Types

☐ 1862 Extension
☐ 1890 Extension
☑ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Enzymatic biofuel cells are an emerging green energy source and holds a great promise in optimizing the fossil fuel based energy structure.

What has been done
My research targets at improving the energy density of current enzymatic biofuel cells and make it a commercially available biotechnology in the near future.

Results

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☑ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Implementing a Co-mingled Recycling Program Within Your School

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The amount of trash disposed of every day continues to rapidly increase. Food is packaged for easy, quick use; technology changes from day to day making items less useful or obsolete; the cost of trash disposal is on the rise and we are running out of places to safely dispose of our waste. A new way to recycle, co-mingling, is now a user friendly option. In the past, everything was separated and some items did not have a home except for the landfill. Co-mingling allows for

washed tin cans, aluminum cans, office paper, magazines, glossy print and plastics to be combined in on container and recycled. A joint effort has been established in Charlotte County between Extension, County Government, the school system and a grassroots organization to participate in a co-mingled recycling project with Extension being the main education component. It was recognized that our school system generates a large amount of waste which could be recycled thru the co-mingling process.

What has been done

A presentation and demonstration was presented by the ANR agent, at the request of Charlotte County's School Superintendant, to address her staff and all the counties principals about the County's co-mingled recycling program and how they could implement the program within their schools. A short history about the program and the importance of implementing a co-mingled program was presented, followed by a display and discussion of an actual bag of co-mingled items. From there, a brainstorming session was conducted to identify how this program could be implemented within the schools.

Results

A full scale co-mingled recycling program has been implemented within the school system. Each school has a green team who are staff members that promote and work with their coworkers on the project. Every classroom now has containers for co-mingled items and students are actually bringing items to recycle from home. There have been containers put out in common areas, gyms, ball fields and the cafeterias with signs explaining what goes in those containers and what does not. The amount of trash going to the landfill from the county's school system has been reduced by 27% compared to last year's numbers and by close to a 50% reduction when the program began."

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

The Bioenergy Engineering Education Program (BEEP)

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Whether due to worries of rising energy prices, climate change, or energy security issues, many citizens are concerned that our nation has become too dependent on foreign sources of petroleum and are troubled by the impacts that this dependence has created. In response to these issues, the federal government signed into law the Renewable Fuels, Consumer Protection, and Energy Efficiency Act of 2007. This act seeks to move the United States toward greater energy independence and security and promote the production of renewable fuels. Additionally, the commonwealth announced in the 2010 Virginia Energy Plan a target of making Virginia the energy capital of the east coast by increasing in-state production of energy by 20 percent over the next 10 years. These policies are indicative of a broader interest to sustainably increase our energy independence while spurring economic growth. The 2007 Energy Act received considerable attention in the winter of 2010 when oil topped $92 a barrel, gasoline was near $3/gallon, and livestock/poultry industries were challenged by record feed prices.

Policy makers, farmers, and citizens of Virginia are facing new economic development opportunities and making difficult decisions related to bioenergy project and policy development. However, it is often difficult for the citizenry to fully understand the complex terminology, and energy conversion processes, related to bioenergy. As a result, decision making and opinion forming often occurs with incomplete, misunderstood, or inaccurate information.

What has been done

Virginia Tech's Department of Biological Systems Engineering developed the Bioenergy Engineering Education Program (BEEP). The primary goal of this extension program is to increase participant's knowledge and awareness of the basics of bioenergy. Specifically, the program seeks to inform participants on the many different forms of bioenergy, discuss the feedstocks typically used for the generation of bioenergy, and explain how the bioenergy conversion technologies actually work. In 2010, several education field tours were conducted in response to the dairy crisis. Dairy farmers are seeking new innovative ways to remain viable and increase revenue streams. Many dairymen have expressed an interest in anaerobic digestion technology. In response to this, the BEEP program coordinated farm tours of several biogas digesters in Pennsylvania and within the Ontario Province of Canada.

Results

Over the course of 2010, the materials from the BEEP program were presented to different and diverse audiences through presentations and field tours. Last year the BEEP program focused primarily on anaerobic digestion and small scale biodiesel production. These sessions were targeted to community leaders, entrepreneurs, farmers, FFA, 4H, K-12, and interested citizens alike. The common thread was to give participants basic information on bioenergy and to enable them to make informed decisions on the opportunities created through these bioenergy technologies; often in a hands-on environment. As a direct result of these educational efforts, several Virginia dairy farmers are exploring anaerobic digestion for their farm in order to enhance their competitive advantage via the generation of renewable electrical and thermal energy and reduced bedding and fertilizer expenses. This represents the potential adoption of innovative bioenergy technology to help sustain dairies; which are vital component of Virginia's rural heritage and economy.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☑ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

<u>Outcome #4</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Inventorying Residual Biomass to Identify Opportunities for New Revenue Streams in the Commonwealth

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Whether due to worries of rising energy prices, climate change, or energy security issues, many citizens are concerned that our nation has become too dependent on foreign sources of petroleum and are troubled by the impacts that this dependence has created. In response to these issues, the federal government signed into law the Renewable Fuels, Consumer Protection, and Energy Efficiency Act of 2007. This act seeks to move the United States toward greater energy independence and security and promote the production of renewable fuels. Additionally, the commonwealth announced in the 2010 Virginia Energy Plan a target of making Virginia the energy capital of the east coast by increasing in-state production of energy by 20 percent over the next 10 years. These policies are indicative of a broader interest to sustainably increase our energy independence while mitigating climate change. Virginians are particularly interested in evaluating the use of residual biomass as an integral component to future renewable energy production. Agricultural operations in Virginia are facing substantial structural changes and challenges due to rapid urbanization, intensified competition, and increased environmental regulation. Finding a novel way to utilize the byproducts created from agriculture and other sources has the potential to convert waste streams into revenue streams. This potential can be realized through developing new value-added products such as biofuels, bioenergy, biopolymers, compost, functional foods, and pharmaceuticals. A variety of large-scale bioenergy projects are underway in Virginia. These range from co-firing woody biomass at large centralized power plants to anaerobic digesters supplying more than one megawatt of electricity to the grid. Projects of this nature are critical to Virginia achieving the goals set forth in the commonwealth's energy plan. However, there are also significant bioenergy project development opportunities at smaller scales, which in the aggregate can provide significant gains toward achieving the energy goals set forth by the commonwealth and while providing significant benefits to facility owners.

What has been done
Developing an economical way to convert undervalued byproducts into value-added products is a challenge faced by rural, scientific and industrial communities. Doing this requires a comprehensive inventory of the byproducts because the economic viability of the conversion process is significantly influenced by the availability of the byproducts, and by the cost of transportation and logistical management of those materials. Virginia Cooperative Extension is

leading efforts to maintain a residual biomass inventory for the commonwealth.

Results

The statewide assessment work is completed and results from this survey have been incorporated into a report. To date, our expanded network has led to multiple inquiries soliciting details of the residual biomass project. These requests have been made by watershed management planners seeking a comprehensive dataset to assess the distribution of residual biomass (and nutrients) within a particular area, entrepreneurs considering siting new businesses near abundant residual biomass sources, and researches assessing the feasibility of bioenergy projects in certain regions of the state. These early inquiries bode well for the utility of the collected data, specifically with regard to renewable energy, waste diversion, and the mitigation of greenhouse gases. Information from this assessment work was first released in 2010 as a text report. Work is underway to maintain, expand and update certain aspects of this database and create a queryable online geographic information system. This new format should enhance opportunities for Extension clientele to fully utilize the compiled information for the intended purposes of economic development, renewable energy systems and waste mitigation.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☑ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #5

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Efficiently hydrolysis of cellulose by constructing cellulosome in vitro or vivo.

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension

☑ 1862 Research

☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure

◯ Change in Action Outcome Measure

◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Lignocellulosic biomass is the most abundant renewable bioresource. The utilization of a small fraction of collectable low-cost cellulosic materials, including crop residues (e.g., corn stover), as well as dedicated bioenergy grass and wood, would produce a significant amount of sustainable transportation biofuels so that this effort would decrease reliance on crude oil, enhance energy security, and decrease net greenhouse gas emissions. But cost-effective sugar release from recalcitrant lignocellulose remains challenging . During biomass saccharification, low mass-specific activity cellulase results in a large use of cellulase. For example, the weight ratio of cellulose to cellulase to cellulose is at least one order of magnitude higher than that of amylase to starch to amylase . Therefore, increasing specific activity of cellulase would reduce enzyme use so to enhance the overall economy of biomass-based biorefineries. Mass-specific activity of cellulase can be enhanced by several aspects: improvement in individual components by directed evolution and rational design , reconstitution of non-complexed cellulase cocktail , and construction of cellulase complex (cellulosome) .

What has been done

Enzymatic cellulose hydrolysis requires synergetic action among endoglucanase (EG, EC 3.2.1.4), cellobiohydrolase (CBH) (EC 3.2.1.91), and beta-glucosidase (EC 3.2.1.21). In the Trichoderma cellulase system, the dominant components are EG I (Cel7B) & III (Cel5A), cellobiohydrolase I (Cel7A) and cellobiohydrolase II (Cel6A), suggesting that these three components play a vital central role in hydrolyzing cellulose 15. Among them, EGs cut accessible beta-1,4-glucosidic bonds randomly, CBH I acts on reducing ends while CBH II acts on non-reducing ends 15. It is thought that the respective cellulase component in bacterial cellulase system are glycoside hydrolase family 5 endoglucanase Cel5, family 48 cellobiohydrolase (Cel48) acting on reducing ends, and family 9 processive endoglucanase (Cel9) acting on non-reducing ends 16.

Results

Anaerobic bacteria often produce complexed cellulases -- cellulosomes, whose catalytic units are linked by a non-hydrolytic scaffoldin. Inspired by natural cellulosomes that exhibited faster hydrolysis rate than mixtures of non-complexed cellulase components, Bayer and his coworkers have proposed to construct designer cellulosomes with tailored subunit components through high-affinity binding between cohesin and dockerin 19. A number of building blocks, including

cohesins, dockerins, catalytic modules (including cellulases and hemicellulases), cellulose binding modules (CBMs) and linkers, have been reassembled into various designer cellulosomes in vitro . Trifunctional chimeric cellulosomes containing bacterial cellulases from Clostridium cellulolyticum family 9 endoglucanase and family 48 exoglucanase as well as C. thermocellum xylanas Z (XynZ) were found to exhibit six-fold more efficient in hydrolyzing pretreated wheat straw than bifunctional complexes containing the cellulases only . The similar synergistic cooperation was also observed for a designed cellulosome containing T. fusa xylanases and cellulase Cel5A in hydrolyzing hatched wheat straw . Non-cellulosomal cellulases have been constructed by using bacterial cellulases from C. thermocellum 14, free enzymes from Thermobifida fusca and a fungus cellulase Neocallimastix patriciarum. But most of these designer cellulosome papers focused on the assembly of different cellulosomes and demonstrated enhanced synergy, few studies attempted to investigate the effects of different substrate characteristics and ratios of substrate/enzyme on the synergy degree of cellulosome. It is vital and interesting to study in-depth relationship among different action mode cellulase components, linked by scaffoldin or not, and cellulose characteristics.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☑ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Improved Energy Efficiency for Initial Size Reduction of Round Bales of Switchgrass

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research

☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A tub grinder requires about 30 hp-h per ton processed.

What has been done
The goal of the unroller chopper project is an initial size reduction using 18 hp-h/ton, or less.

Results
Equipment development continues in pursuit of this goal. The immediate benefactress of this technology will be a company like Piedmont Bioproducts who is developing technology to convert biomass into bio-crude. Others benefiting is any company using biomass for direct combustion.

4. Associated Knowledge Areas

☐ 112 - Watershed Protection and Management
☐ 124 - Urban Forestry
☐ 132 - Weather and Climate
☐ 206 - Basic Plant Biology
☑ 402 - Engineering Systems and Equipment
☐ 403 - Waste Disposal, Recycling, and Reuse
☐ 511 - New and Improved Non-Food Products and Processes
☐ 601 - Economics of Agricultural Production and Farm Management
☐ 605 - Natural Resource and Environmental Economics
☐ 610 - Domestic Policy Analysis

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Round Bale Logistics System for Bioenergy Industry

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
POET, the largest corn ethanol manufacturer in the US has 110,000 round bales of corn stover in on-farm storage within a 30-mi radius of Emmitsburg, IA. This feedstock will supply operations at their pilot plant built to verify the conversion technology they have chosen. The corn stover will be delivered by the farmgate contractors. The POET logistics team knows this model will not be cost effective when they increase operations to commercial scale.

What has been done
A beginning working relationship has been established between POET and the Biomass Logistics Consortium. The Consortium recognizes POET as a potential major customer for the rack system technology.

Results

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate

- ☐ 206 - Basic Plant Biology
- ☑ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

The Tour De Trash Teaches Hampton Virginia's Citizen How Natural Resources Can Be Conserved Through Recycling for Global Impact

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Climate change according to the Environmental Protection Agency (EPA) is an increase in global temperatures and change in rainfall patterns, snow and ice cover, and sea level due to increased amounts of heat-trapping greenhouse gases (GHG) in the atmosphere. Industrial processes (such as the production of cement, steel, aluminum), agriculture, forestry, waste management, and other human activities are major sources of GHG emissions in the United States. The manufacturing, distribution, and use of products, as well as management of the resulting waste, all result in GHG emissions. Sources of reduction, pollution prevention, and recycling programs are an important part of reducing or eliminating GHG emissions (EPA, 2008).

The City of Hampton has a need to reduce its tonnage of waste collected from households and industrial complexes to prevent the need for outsourcing its waste and therefore reducing the

potential cost of waste management for the citizen's according to the Hampton 2010 Comprehensive Plan. The reduction of waste as connected to the emissions of greenhouse gasses are of global impact.

Cultural and Global Awareness were listed as the second highest priority under the 2009 update of the situation analysis. The need for increased global awareness was the main concern brought forth to key stakeholders including the Hampton's ELC, in the "Go Green Hampton" campaign endorsed by the Hampton City Council in 2008.

What has been done

The Tour De Trash was designed as part of the Waste Watchers Committee of the Hampton Clean City Commission. The six hour school bus tour visits eight different sites. Each site teaches how different wastes can be recycled to reduce the use of natural resources in their production. At the Hampton Yard Waste Transfer Site the attendees learn how they can dispose of their yard waste for recycling. At the Bethel Landfill they learn how a landfill is created layer by layer and how the Hampton site uses the methane produced to create electricity. At the VPPSA Composting Facility the attendees see how Hampton, York County, and Poquoson recycle their yard waste on site into composted mulch and soil for the public. The Hampton's Steam Plant is a waste to energy site in which the attendees learn how waste is burned for steam and processed into energy with advanced filtering to eliminate toxic gas released from combustion. The Hampton Golf Course teaches the attendee's how land can be recycled and reused, that was once a landfill. At Branscome Construction they learn how asphalt and concrete can be re-used in construction and how the oils emitted can be used for fuel to run the process. The ARC Recycling Facility shows attendees how disabled citizen's can deconstruct computers and other electronic equipment to recycle virtually all the parts. At the TFC Recyclables Transfer Site they learn how recyclables are separated and bailed for transfer to business for use in manufacturing.

Results

Through six separate tours 182 Adults and Children were able to demonstrate that they learned 15 different facts about how to reduce, reuse, and recycle waste to reduce the strain on raw materials. The attendees gained added knowledge and skills, to physically reduce the amount of waste that enters the landfill, which will extend the life of the landfill. The added skills and values learned from the tour increased the attendees ability to reduce their carbon foot print and add value to their view of natural resources in their immediate community and globally.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics

☐ 610 - Domestic Policy Analysis

Outcome #9

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Exploring Reuse, Recycling, and Utilization Alternatives for Plastics Generated in Virginia's Green Industry.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Virginia nursery and greenhouse industry is one of the fastest growing sectors of agricultural production in the Commonwealth. One of the many challenges faced by this industry involves the disposal of plastics. Plastics are used in plant containers, flats, and as films in greenhouses. The U.S. EPA indicates that only about 4% of all plastics were recycled in 2003. Generally, a higher percentage of plastic bottles are recycled than other types of post consumer plastic materials. In 2008, when oil prices soared well over $130 a barrel there was a strong market to recycle plastics. Soon thereafter, oil prices plummeted, the global economy stalled, and the dynamics of the plastic recycling market changed. Regardless of the market price, adequate utilization options must be identified for exhausted agricultural plastics.

What has been done
Virginia Cooperative Extension is exploring the details of the plastic recycling market, and other alternative uses of agricultural plastics. Information concerning plastic reuse and disposal was published at the Biological Systems Engineering Agricultural Byproduct Extension website. This information provides details on the post-consumer plastic recycling market, energy prices, plastic brokers, best practices developed in New York and Pennsylvania, and a local recycling center mapper (Earth 911), along with information related to waste diversion efforts in Virginia.

Results

A variety of plastics are used in the green industry and seeking practical and sustainable options for these byproducts will help strengthen this important agricultural sector. However, a long-term sustained programming effort will be required to produce significant results as many hurdles exist to the recycling of agricultural plastics, let alone the currently unfavorable market forces. In spite of these challenges, this new extension program is beginning to form and the first pilot waste plastic diversion events began in 2010 in the Richmond region. As the program matures and additional recycling utilization options are identified we will continue to incorporate Virginia Master Gardener volunteers to enhance the robustness of program delivery.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #10

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

"Waste Solutions Forum"

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Projects focus on bioenergy, nutrient management, water quality and farm profitability.

What has been done
Dairy Science professor Dr. Katharine Knowlton initiated a multidisciplinary stakeholder organization (the ?Waste Solutions Forum?) to identify and implement comprehensive and innovative solutions to managing excess animal manure and poultry litter.

Results
Partner organizations have obtained more than $8 million in funding for research, outreach, and pilot projects since 2005. Partners include agricultural groups, conservation organizations, 5 state agencies, local government, and faculty from CALS and COE.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #11

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

2010 Agriculture Environmental Initiatives

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As agriculture variable production costs grow each year, agriculture producers are faced with selecting ways to reduce their expenses. Many farmers each year are faced with farm waste disposal costs. These costs are overlooked by most economists during the planning of a farm budget. For many farmers, this waste builds up and becomes a disposal problem and a potential financial burden on the farm. The most common disposal concern is the removal and disposal of old ag farm tires. The disposal methods will vary from locality to locality depending on local resources and the availability to recycle, collect or dispose of the used ag tires. This is also the case for old ag waste oil, plastics, and farm chemicals, but usually on a smaller volume basis. Many counties are even implementing new waste ordinances to reduce large quantities of refuge to avoid visual nuisance, environmental damage and reduced property values.

What has been done
During 2010 the ANR Agent developed and implemented several programs to dispose of or recycle several different agriculture waste products such as used farm tires, oil, plastic and chemicals. VCE and the local SWCD have partnered with the county to set up disposal programs during the year for county farmers/agriculture producers.

Results
During 2010, the Agent successfully collected 3500 gallons of old agricultural equipment waste oil, 4000 pesticide plastic containers, 1600 used ag tires, and 4000 lbs of old horticulture chemicals. This
disposal saved the participants over $3500 related to tires, $500 for oil, and $10,000 for chemical disposal. The program also saved the local citizens the cost of transportation of waste to other localities to dispose of unwanted items. Some additional benefits of these disposal and recycling efforts are helping property values, reducing environmental hazards and working to promote a positive image of the agriculture community.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #12

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Poultry Energy

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The growing concern over the phosphorus and nitrate pollution infiltrating the Chesapeake Bay has put growing pressure on the Dept. of Environmental Quality and consequently the Department of Conservation and Recreation to increase the regulations regarding the land application of poultry litter. Poultry production is the largest source of agricultural revenue in Cumberland County. Regulations that impact litter application through nutrient management plans, directly affect the livelihood of the poultry producers.

What has been done

A group of poultry producers with the help of Va. Farm Bureau, and with the support of the County and Va. Cooperative Extension formed a committee to explore the feasibility of building an anaerobic digester to convert poultry litter into methane to power a generator to produce electrical power. The by-products would be a high quality liquid and dry fertilizer and compost. In addition, carbon credits would be produced which could be sold on the international market.

Results

A $37,000 feasibility grant was obtained from the US Dept. of Agriculture to design and engineer plans for the project. A feasibility study and business model was performed. Legal counsel was obtained for incorporation. Grant funding was obtained which enabled land purchase and construction to begin. The County through the Industrial Development Authority backed the project which allowed additional grant funding to be obtained. Currently, grant funding is being sought to further fund construction.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☑ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #13

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Biofuels Research

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension

- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Efforts are underway to change the fuel sources used to run our society. Biofuels can be one component of the future fuels. Biomass conversion rates are below theoretical due to inefficiencies in biomass processing. We are attempting to improve conversion efficiencies by developing tools that better assess fate of sugar in bioprocessing schemes.

What has been done
Response: Methods have been developed to monitor the soluble carbohydrate component of fermentation streams.

Results
A manuscript has been published in an American Chemical Society journal (J. Agric. Food Chem.) describing the methods of characterization."

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #14

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Biofuels production

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Biofuels research and development is becoming a major national effort.

What has been done
We have developed the fractional catalytic pyrolysis process that produces stable bio-oils that can be co-processed into bio-gasoline.

Results
The scale-up and commercialization of this process will create new jobs both rural Virginia and nationwide.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology

- ☑ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #15

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

"Power Generation: Facts and Fiction"

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Old Dominion Electric Cooperative (ODEC) has proposed building a 1500 megawatt coal fired power plant in Surry County. Upon completion this plant would be one of the largest in the Eastern United States. The size of this plant and the use of coal has divided many local and regional citizens. It has also led to many rumors and un-scientific information to be spread.

What has been done
Area Citizens have made numerous calls about what this project would actually mean to Surry and the surrounding area. After much discussion with fellow agent Neil Clark of Southampton County we decided to host an informational meeting about coal production and how coal is used to produce electricity.
To provide this research-based information we held a panel discussion and had residents submit

questions on note cards. We felt this would limit outbursts from people opposed to the plant, and provide us the opportunity to have a much more positive meeting. Panel members included: Amy Fannon, Extension Agent in Wise County, who supervises Virginia Tech Powell River Mining Project. This project reclaims surface coal mines and converts them to agriculture or commercial uses; Gary Garrett, Who is Senior Technical Analyst at the Southern States Energy Board; David Smith, Director of Environmental Health and Safety, Old Dominion Electric Cooperative; Kyle Winter, Deputy Regional Director and Waste Programs Manager for the Virginia Department of Environmental Quality(DEQ).

Results
After the meeting those in attendance explained that they really appreciated the format and the information that was presented. They felt the panel was made up of experts in their field and not by people with a political agenda. Some in attendance also had a different outlook on the plant due to new technology that would greatly reduce emissions.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☑ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #16

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Flue-Cured Tobacco Curing Efficiency - Quantification of the Energy Usage and Cost Associated with Curing Tobacco.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research

☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The curing of tobacco accounts for at least 15 percent of the cost of producing flue-cured tobacco and will increase as energy costs continue to rise. Therefore, tobacco producers have become acutely aware of curing costs and are interested in ways of reducing this expense. Federal and state agencies have programs to provide tax credits, grants, and loans to fund energy conservation projects related to agriculture. Requirements for participation in these programs require an energy audit of the present facilities and documented energy conservation results of potential upgrades to these facilities. Although tobacco is a relatively high value crop and a consumer of substantial amounts of fossil fuels and electricity, there is not a large amount of information applicable such audits of a tobacco farm.

What has been done
On-farm energy monitoring systems have been placed on tobacco farms to quantify energy consumption and cooperating producers have provided data to calculate tobacco curing efficiencies. Additional projects have evaluated energy conservation options such as: the use of wet-bulb thermometers to manage ventilation of barns, alternative wet-bulb technology, automatic curing controls, alternative fan drive systems, barn insulation options, and novel heat exchanger designs.

Results
On-farm projects have provided the baseline data of tobacco curing efficiency to accurately describe current energy usage and provide comparative data for potential energy conservation upgrades. Such information will allow Virginia growers to be more competitive in grant and loan programs for energy conservation projects. The goal of this effort is to reduce the cost of tobacco production and to increase the profitability of Virginia tobacco producers.

4. Associated Knowledge Areas

☐ 112 - Watershed Protection and Management
☐ 124 - Urban Forestry
☐ 132 - Weather and Climate
☐ 206 - Basic Plant Biology

- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #17

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Flue-Cured Tobacco Curing Efficiency - Evaluation of Alternative Fan Drive Systems.

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The curing of flue-cured tobacco is an energy intensive process with the primary focus of energy conservation efforts directed toward reducing the fuel used to heat the barn. However, with increasing electricity rates, the need for electricity conservation has become apparent also. On average, electricity accounts for one-quarter of the cost of curing tobacco.

What has been done
A project was initiated in 2009 and expanded to additional on-farm sites in 2010 to evaluate alternative fan motor drive systems for one of the most common barns used in Virginia.

Results
One alternative fan drive system provided a reduction in electricity consumption worth $41 per cure. The total impact would be multiplied by the number of cures (usually 7 or 8) to obtain the savings over the entire curing season. A second, less expensive alternative reduced electricity

cost by $26 per cure.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #18

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Evaluation of a Prototype Solar-Assisted Tobacco Curing Barn

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Curing barn technology has changed relatively little in the half century since the introduction of bulk curing barns. Such barns rely almost exclusively on fossil fuels for heating.

What has been done
An on-farm research trial was initiated in 2009 to evaluate the first commercial prototype of a solar-assisted bulk curing barn. The barn is specially constructed to utilize passive solar heating of the air entering the barn and thus supplement the normal propane fueled heating system.

Results
Data for seven cures in the 2010 season demonstrated an average increase in curing efficiency of 2.1 lbs per gal. of propane. This represents a cost savings of 22.3% or 3 cents per pound of tobacco cured.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

Outcome #19

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Flue-Cured Tobacco Curing Efficiency - Development of Novel Heat Exchanger Technology.

2. Associated Institution Types

- ☐ 1862 Extension
- ☐ 1890 Extension
- ☑ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The curing of flue-cured tobacco is an energy intensive process and represents a substantial and ever increasing portion of the total cost of production. Curing barns utilize a heat exchanger to provide indirect-fired heating of the tobacco to prevent potentially harmful combustion by-products from entering the curing air space. A widely popular barn used by Virginia growers utilizes an inefficient heat exchanger design thus resulting in high fuel usage, resulting in excessive curing costs.

What has been done
A project was initiated in 2010 to evaluate a novel heat exchanger design for flue-cured tobacco bulk barns. This heat exchanger addresses multiple shortcomings of the existing unit beyond that of curing efficiency and energy conservation (i.e. curing properties, structural integrity and longevity, and annual maintenance).

Results
Data collected over eight cures demonstrated an average 30% reduction in fuel usage from 530 to 340 gal of propane per cure. Given propane a cost of $1.45 per gal, this equated to a savings of 7.4 cents per pound of tobacco. Although the model tested is specific to one particular type of barn, the heat exchanger can be readily adapted to fit other barns.

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☑ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☐ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

<u>Outcome #20</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Saving Money by Saving Energy

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the U.S. Department of Energy the typical U.S. family spends about $1,900 a year on home utility bills? Unfortunately, a large portion of that energy is wasted. Particularly during an economic downturn, families need to spend as wisely as possible in every area of their budgets.

What has been done
A workshop called, ""Save Energy, Save Money,"" enabled families to learn energy management best practices to save energy and reduce the amount they spend on utilities. Concepts taught included keeping equipment clean, insulating adequately, reducing hot water heater temperature, using compact fluorescent bulbs, and unplugging equipment when not in use, among others.

Results
Of the 242 participants, 145 completed the end-of-session evaluation form. Of these, 129 (89%) indicated that because of the program they know more about ways to save money by saving energy. Participants were asked to indicate things they planned to do differently as a result of the program. Before the program, only 24 (17%) of the participants had conducted a home energy audit; after the program 77 (53%) planned to conduct an audit. Before the program, only 53 (37%) of the participants turned off and unplugged equipment when not in use to avoid "phantom load"; while after the program 104 (72%) planned to do so. Before the program, only 76 (52%) of the participants had reduced the temperature of their hot water heater to 120 degrees; after the program, 105 (72%) planned to set their heater on 120. Before the program, only 55 (38%) used a programmable thermostat to regulate the temperature in their homes; after the program, 82 (57%) planned to do so. Overall, 94 participants (65%) indicated that they planned to improve in one or more of the seven areas of energy management because of the program. One participant wrote on the evaluation, "Very well presented. I have old appliances and will update them all."

4. Associated Knowledge Areas

- ☐ 112 - Watershed Protection and Management
- ☐ 124 - Urban Forestry
- ☐ 132 - Weather and Climate
- ☐ 206 - Basic Plant Biology
- ☐ 402 - Engineering Systems and Equipment
- ☐ 403 - Waste Disposal, Recycling, and Reuse
- ☐ 511 - New and Improved Non-Food Products and Processes
- ☐ 601 - Economics of Agricultural Production and Farm Management
- ☑ 605 - Natural Resource and Environmental Economics
- ☐ 610 - Domestic Policy Analysis

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☐ Economy
- ☐ Appropriations changes
- ☐ Public Policy changes
- ☐ Government Regulations
- ☐ Competing Public priorities
- ☐ Competing Programmatic Challenges
- ☐ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☐ Retrospective (post program)
- ☐ Before-After (before and after program)
- ☐ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants

- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 17

1. Name of the Planned Program

Youth Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%	100%	0%	0%
	Total	100%	100%	0%	0%

Add knowledge area

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	76.9	1.5	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
2372504	209760	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
2691325	132486	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
6600690	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Activities include 4-H camping programs (overnight and day), 4-H after-school programs, 4-H in-school programs, 4-H school enrichment programs, 4-H clubs (community and military), 4-H special interest programs, 4-H cloverbud groups, district 4-H trainings, local 4-H trainings, and specialized trainings and workshops to educate volunteers.

2. Brief description of the target audience

Youth between the ages of 5 -19, parents, grandparents, community organizations, community partners, community leaders and government officials, donors, K-12 educators, and volunteers.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	152776	223116	667933	449516

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2010

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	7	0	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of trainings, educational workshops, and on-line education sessions for VCE's targeted audiences.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	796

Output #2

Output Measure

- Number of fact sheets, publications and curricula on youth development, families, and communities.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	28

Output #3

Output Measure

- Number of members enrolled in-school, after-school, community clubs, special interest activities, 4-H military programs, and camps.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	106609

Output #4

Output Measure

- Number of youth engaged in leadership and personal development education.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	58075

Output #5

Output Measure

- Number of clubs where youth are involved in structured after school programming.

☐ Not reporting on this Output for this Annual Report

Year	Target	Actual
2010	{No Data Entered}	142

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	4-H Camping - Increase the number of 4-H youth, or parents of youth that report a positive change in responsibility and social development as a result of participation in a 4-H camp.
2	4-H Citizenship - Increase the number of 4-H youth participating as volunteers and through community service that demonstrate teamwork skills and community commitment.
3	4-H Animal Science - Increase the number of 4-H youth and adults participating in animal science programming that demonstrate increased knowledge of raising animals in a responsible, ethical, and economically viable manner.
4	4-H Communication and Expressive Arts - Increase the number of 4-H youth participating in communication and expressive arts programming that demonstrate increased self-efficacy in public speaking, presentations, visual arts, and performing arts.
5	4-H Foods, Nutrition and Health - Increase the number of 4-H youth participating in foods, nutrition, and health programs that demonstrate healthy living choices.
6	4-H Natural Resources and Environmental Education - Increase the number of 4-H youth participating in natural resources and environmental education programs that demonstrate environmentally responsible behavior.
7	4-H Plants, Soils and Entomology - Increase the number of 4-H youth participating in plant, soils, and entomology programming that learn the interconnectedness of organisms and their environment.
8	4-H Science, Engineering and Technology - Increase the number of 4-H youth that demonstrate sustained learning in scienceand technology programming.
9	4-H Careers and Consumer Education - Increase the number of 4-H youth that increase their awareness of potential career pathways through service learning programs and/or through the 4-H college fair.
10	4-H Leadership and Personal Development - Increase the number of 4-H youth that demonstrate leadership knowledge by participating in a leadership position on the club, county, state, or national level.
11	4-H Character Counts! - Increase the number of 4-H youth or parents of youth that indicate a positive change in behavior as a result of participating in 4-H Character Counts! programming.
12	4-H Adult Leaders - Increase the percent of adult 4-H volunteers participating in leadership and volunteer development trainings that indicate increased knowledge and skills in implementing 4-H programming as a result of participation.
13	Preparing Youth For Careers in Agriculture, Natural Resources and Environmental Science Education
14	Youth Natural Resources Forestry Programs
15	Kids Tech University Hosted at Virginia State University.

Add Cross-cutting Outcome/Impact Statement or Unintended or Previously Unknown Outcome Measure

Outcome #1

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Camping - Increase the number of 4-H youth, or parents of youth that report a positive change in responsibility and social development as a result of participation in a 4-H camp.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	14555

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Positive youth development focuses on building skills that youth need to be successful, contributing members of society. The Community Network for Youth Development identifies development of independence skills as an important step in youth learning to be productive, connected and to navigate the world. In an increasingly structured and supervised environment, youth need opportunities to practice independence skills including decision-making, problem-solving and planning.

What has been done
Independence is fostered through attending residential camping programs. Youth attending 4-H camp develop independence and responsibility by practicing decision making through daily programming activities, choosing schedules and making personal living choices. Problem-solving skills are enhanced through camp classes, living in a group environment and participating in group activities. Planning and social development skills are addressed as youth work with teen and adult volunteers to develop activities and plan their day.

Results
Post camp surveys indicate that campers ages 9-13 report increasing their independence as a result of attending 4-H camp. 68% of youth attending 4-H camp reported increases in independence skills and 56% of parents reported seeing increases in youth independence skills

when their child returned from camp.

4. Associated Knowledge Areas

☑ 806 - Youth Development

Outcome #2

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Citizenship - Increase the number of 4-H youth participating as volunteers and through community service that demonstrate teamwork skills and community commitment.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

○ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	6956

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Community Service is one of the 4-H targeted life skills. American troops overseas are a part of the larger community. The Freedom Pen Project is a (501c3) project which provides wood and pen kits to people who are interested in turning pens for troops overseas. It allows youth to learn service as well as to master skills associated with using a wood lathe. Life skills, including service must be learned. Feelings of self-worth and esteem are bolstered through successful creation of high quality products.

What has been done
The Freedom Pen Project was the woodworking class project for campers during the Lancaster, Mathews, Northumberland Junior Camp week. Woodcraft of Virginia Beach lent 6 lathes and tools, and supplied 150 pen kits. Four 50-minute sequential three day classes were offered. The Freedom Pen Project was open to campers during open-recreation times. Pens could be purchased for $6.00 apiece or could be donated to the Project.

Results

Campers, teens, camp staff and adults turned 138 pens: 65 pens (value $3,575) were donated to troops; 73 were purchased by turners for personal use or gifts. Several campers made more than one pen, keeping one and donating others. If more than one pen was made, repeated experience improved speed and quality of result. Youth learned to plan, make decisions, and evaluate quality. They enjoyed positive interactions with caring adult. Participation during the open-recreation time increased as interest and evidence of success grew among campers. Because of success, 12 lathes, a drill press and a radial arm saw were donated by one supervising adult volunteer to the center so all camp weeks could participate in the Freedom Pen Project.

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #3

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Animal Science - Increase the number of 4-H youth and adults participating in animal science programming that demonstrate increased knowledge of raising animals in a responsible, ethical, and economically viable manner.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	8977

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to research the average age of Virginia producers is nearing retirement age at 56.7 years old, which means that there is a strong need for younger people to become interested in agriculture. According to Allen and Harris in the article, What We Know About the Demographics of US Farm Operators, from 1992 to 2002 there was a 60% decrease in estimated young farmers. Research has observed that with fewer young people going into agriculture, the long term future of the agricultural industry is in question.

What has been done

The Virginia 4-H program offers youth opportunities to learn about animal science and all that it encompasses. During the programming year youth ages 5-19, participate in a variety of projects both in and out of school. During the programs, youth learn about various species of livestock, which included how to raise and care for them ethically, how to keep records and fiscal responsibility.

Results

Specifically in one county, over 300 youth participated in the Animal Science Program through involvement in animal science clubs and summer day camps. Ninety percent of participants reported increased animal husbandry skills through taking daily care of animals, training animals regularly, making decisions based on what is best for the animal, and keeping records on their animals. Furthermore, participation gave youth the opportunity to strengthen leadership skills, improve communication, decision making and teamwork skills, develop financial skills, practice responsibility, explore animal science career options, and learn about the agricultural world in which they live.

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #4

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Communication and Expressive Arts - Increase the number of 4-H youth participating in communication and expressive arts programming that demonstrate increased self-efficacy in public speaking, presentations, visual arts, and performing arts.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	21631

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Virginia's Standards of Learning emphasize the development of effective oral communication skills. One of the English Standards requires students to make and listen to oral presentations and reports. Elementary students are required to use subject-related information and vocabulary, organize information, and present clear directions to individuals and small groups.

What has been done

The Virginia 4-H Public Speaking, Presentations, and Science Fair contests are designed to develop communication skills. Participants are required to research a chosen topic, organize information for clarity, and deliver information to a group with poise and confidence. The skills required to complete the 4-H project are the same as those required to successfully meet the SOLs, making these projects ideal tools for both in-school and after-school 4-H programs.

Results

In one locality, 113 fourth graders participated in 4-H Presentations Contests demonstrating proper techniques. As a result, youth reported that they were better able to speak in front of a group (68%), gather information and supplies necessary for showing and telling how to do something (75%); organize thoughts into a presentation (72%); teach and show others (87%), and they reported feeling better about themselves because of what they had achieved (77%). Fifth grade students (182)reported that they felt more confident in their abilities to speak in front of a group (52%); had developed better organizational skills (43%); understood how giving a speech helped them to communicate better (52%); and they felt greater self-confidence (67%). 145 sixth graders participated in the 4-H Science Fair. Youth reported: understanding the scientific process (78%); gaining skills in self-motivation (75%); developing critical thinking skills (61%); honing skills in developing and giving an oral presentation (50%); and feeling good about their accomplishments (83%).

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #5

1. Outcome Measures

- ☐ Not Reporting on this Outcome Measure

4-H Foods, Nutrition and Health - Increase the number of 4-H youth participating in foods, nutrition, and health programs that demonstrate healthy living choices.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	71959

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Youth in Virginia are facing higher rates of obesity, diabetes and other health issues as well as a decline in physical activity. Researchers have cited a variety of causes of rising rates of poor health including longer amounts of "wired" time and less time spent out-of-doors in organized activities and free play. A national "no child left inside" movement focuses awareness on the importance of youth spending time outdoors. Participation in environmental education, outdoor living skills or ecology classes helps improve awareness of and appreciation for the natural world.

What has been done
One indicator of the National 4-H Council Healthy Living Mission Mandate is the number of individuals increasing knowledge of and/or skills in physical activity and reducing risk behaviors such as excessive screen time. Virginia 4-H Camps expose youth to a prolonged outdoor experience that includes significant levels of physical activity in an environment free of electronic distractions. Camp classes teaching concepts related to natural science and environmental studies are enhanced by the natural setting in which campers are living and working. In 2010, 9,876 youth participated in a five day residential Junior 4-H Camp in Virginia.

Results
Post camp surveys indicate that campers ages 9-13 report increasing their affinity for nature as a result of attending 4-H camp. 69 % of youth attending 4-H camp indicated an increased appreciation for nature as a result of their camp experience and 55% of their parents indicated seeing an increased appreciation for the natural world in their children after they attended 4-H Camp. This increased connection to the natural world improves youth chances of increasing physical activity outdoors and decreasing risky behaviors.

4. Associated Knowledge Areas

☑ 806 - Youth Development

Outcome #6

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Natural Resources and Environmental Education - Increase the number of 4-H youth participating in natural resources and environmental education programs that demonstrate environmentally responsible behavior.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	28964

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As technology becomes more integrated into everyday life, youth are becoming less active outdoors and spending more time with video games, computers, and cell phones. These youth are thus less knowledgeable of natural resources related information and how it affects their personal lives and the lives of those around them. The term "nature-deficit disorder" was coined by author Richard Louv in his book "Last Child in the Woods" to describe what happens to young people who become disconnected from their natural world. Louv links this lack of nature to some of the most disturbing childhood trends, such as the rises in obesity, attention disorders, and depression. The No Child Left Inside Act recognizes this as a problem on a National scale.

What has been done
The Virginia 4-H Natural Resources Weekend offers 36 hands-on workshops primarily conducted in outdoor settings that address topics related to natural resources such as wildlife and fisheries, forestry, soils, water quality, and outdoor recreation. Youth and adult participants alike have the opportunity to be active outdoors while learning research-based facts about the environment. This two-day event involves approximately 16 instructors including 4-H and Agriculture Extension Agents, Forestry and Natural Resources Extension Specialists, Department of Forestry and Department of Game and Inland Fisheries personnel, and 4-H Volunteers who educated over 100 youth and adults about natural resources.

Results
As a result of participation in the State 4-H Natural Resources Weekend, survey respondents indicated 119 new skills or knowledge learned from participation in the weekend event such as the problem of lead poisoning in eagles; telling animal traits through skull structure; certain aquatic species present in the water signifies the water is clean; water quality; winter tree ID; that over 1 million animals get run over every day; what to take on a hike; basics of wildlife mgmt; how to tell the sex of snakes; how to use GPS and map; soil has different parts. Participants described 4-H Natural Resources Weekend as "a tremendous amount of information"; "I would recommend this to others"; "I'm coming back and bringing my friends"; "this is a great event for all ages." Ninety-three percent of evaluation respondents indicated that they will return to Natural Resources Weekend next year.

4. Associated Knowledge Areas

☑ 806 - Youth Development

Outcome #7

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Plants, Soils and Entomology - Increase the number of 4-H youth participating in plant, soils, and entomology programming that learn the interconnectedness of organisms and their environment.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	13866

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Much of the land in Virginia is used for agricultural purposes, yet a large percentage of our youth have no concept of the responsibility, economics, and science used in producing their own food from a garden.

What has been done
To address this need, Virginia 4-H implemented a community gardens.
With the help of Master Gardeners, gardening classes were taught over a period of twelve weeks. Through these classes, youth aged 5-19 were taught soil composition, root structure, how to grow plants from seed, and how to utilize these plants, as well as additional skills in gardening. All classes were age-appropriate and focused on a range of environmental knowledge areas.

Results
Through this project, youth gained knowledge in gardening, as well as lessons in nutrition, and an understanding of the importance of community service. In addition, many low-income families were able to obtain fresh produce that they may not otherwise be able to afford.

4. Associated Knowledge Areas

☑ 806 - Youth Development

Outcome #8

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Science, Engineering and Technology - Increase the number of 4-H youth that demonstrate sustained learning in scienceand technology programming.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◉ Change in Knowledge Outcome Measure
◯ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	39554

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Rising Above the Gathering Storm document (2005) points out needs related to STEM (science, technology, engineering and math) education in America. One particular recommended action from that document(Committee on Science, 2005 #2)) has relevance to Kids' Tech University: "It is imperative that we bring together children, their parents, their teachers, and the science community for a comprehensive approach to science education." Sally Ride, at the convocation, Rising Above the Gathering Storm (April, 2008), commented that teachers rely heavily on textbooks and many students gradually lose interest in science. She goes on to say that parents don't often see it (STEM) important for their son or daughter so kids don't see it as important for themselves.

What has been done
Kids' Tech University (KTU), an annual program that represents a partnership between Virginia Bioinformatics and Virginia 4-H, includes children, parents, teachers (formal, informal and non-formal), and scientists/researchers in the STEM learning process of children, ages 9-12. A semester-long program, KTU enrolls 450 youth from across Virginia and from neighboring states, bringing children and their parents to the Virginia Tech campus for four (4) Saturdays where they interact with world-reknown scientists,university professors, teachers and other learners in both

story-telling/lecture sessions and at hands-on, experiential learning stations. Each event is accompanied by a two (2) day teacher workshop, where teachers have the opportunity, as a culminating event, to work along a guest researcher to deliver hands-on activities to children.

Results
Initial results indicate improved self-efficacy among children and teachers related to STEM, increased excitement about learning more on given STEM topics among children, improved skills in delivering STEM content among teachers. It is hypothesized that further research will show that the inclusion of all stakeholders (children, parents, teachers, and scientists) in the STEM learning process of children 9-12 will result in learners who are more engaged in the formal learning process and have a deeper understanding of the relevance of science in their lives. Registration, with 450 slots in the 2011 Kids' Tech University, was filled within a three-hour time frame.

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #9

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Careers and Consumer Education - Increase the number of 4-H youth that increase their awareness of potential career pathways through service learning programs and/or through the 4-H college fair.

2. Associated Institution Types

- ☑ 1862 Extension
- ☐ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	312

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 4-H Youth Development organization for decades has provided experiential learning projects and opportunities for youth ages 5-19. Virginia 4-H's ten curriculum areas in many cases have

prepared youth for careers in the actual areas for which they have completed 4-H projects. Between the ages of 14-18, Super's Developmental Theory (1970) related to career development indicates that youth are "developing and planning a tentative vocational goal." This goes hand-in-hand with decision-making theories in which youth make critical decisions about career choices. It is important prior to and especially at the time when youth are making career interest decisions that they have the appropriate information and experiences to make those decisions.

What has been done

Virginia Tech's 4-H Youth Development Program, in collaboration with the Center for Academic Enrichment Excellence (CAEE), and the Career View program implemented a Career/College Fair in conjunction with the annual State 4-H Congress in 2009 and 2010. The purpose of the fair was to expose 4-H participants to career and post-secondary education options. Twenty-seven higher education institutions across the Commonwealth and six Virginia Tech departments were represented at the fair. The Career/College Fair participants were exposed to a variety of academic programs, as well occupations youth might consider in the future.

Results

Many students who completed the Career Decision Survey indicated that 4-H helped them to learn about different careers. Results were based on statistical analysis and tests of difference. Results indicated that age and 4-H congress experiences helped youth to decide what their college major will be. 4-H youth also indicated that the 4-H club experiences helped youth decide what they would major as a college student with African-American and Caucasian youth. Also, 4-H club experiences helped youth decide what they would major in as potential college students with arts and leisure education and general 4-H projects. 4-H experiences helped youth decide what they would like to choose as a career with general 4-H projects and mechanical science, safety, and energy projects. The Career View session helped youth clarify their career goals particularly with youth participating in the community service, camp, and leisure education projects.

4. Associated Knowledge Areas

☑ 806 - Youth Development

<u>Outcome #10</u>

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Leadership and Personal Development - Increase the number of 4-H youth that demonstrate leadership knowledge by participating in a leadership position on the club, county, state, or national level.

2. Associated Institution Types

☑ 1862 Extension

☐ 1890 Extension

- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ○ Change in Knowledge Outcome Measure
- ◉ Change in Action Outcome Measure
- ○ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A critical element in positive youth development is empowering youth and allowing them to make a difference in their club, county, district and state. Youth development research suggests that developing citizenship, leadership and life skills can benefit youth and the communities in which they reside. This can be accomplished, in part, through opportunities afforded to youth to participate in leadership roles within the State 4-H Cabinet.

What has been done
The State 4-H Cabinet, consisting of officers, ambassadors, mentors, and advisors fill the highest positions attained in Virginia 4-H. Members plan and execute leadership trainings, workshops, teen weekends, State 4-H Congress, and a visit to the General Assembly. All of these efforts are done on behalf of the Virginia 4-H'ers they represent. Throughout the year, members are immersed in a variety of programs and opportunities that promote leadership, trust-building, team-building, public speaking, exploration, responsibility, problem solving, and an appreciation for diversity.

Results
Nineteen of the 25 members, participated in one of two focus group discussions held during the May 2010 State 4-H Cabinet "Shakedown" meeting. During these focus groups, members were asked a total of nine questions to determine their self-perceived leadership skills as a result of their participation with the State 4-H Cabinet. From these discussions it was noted that on a scale of 1-10, where one is not very well at all and ten is very well, members unanimously stated that their participation with the State 4-H Cabinet has prepared them very well in being a positive role model for other 4-H members. It was also noted that 100% of participants indicated that their involvement with the State 4-H Cabinet has helped them learn how to better communicate and relate to others. Overall, participants indicated that the leadership life skills that they have learned as a result of their involvement with the State 4-H Cabinet includes: Tolerance, Acceptance of diversity, Flexibility, Self-efficacy, Decision making, Public speaking, Accountability, Teamwork, Problem solving, Responsibility, Articulation, Citizenship, Time management, Self-confidence. Further, of the 25 members, 100% members engaged in and documented at least two outreach activities and 48% engaged in and documented four or more. 59% provided leadership and guidance to unit and/or district leadership events and 100% represented Virginia 4-H at state or national events.

4. Associated Knowledge Areas

☑ 806 - Youth Development

Outcome #11

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Character Counts! - Increase the number of 4-H youth or parents of youth that indicate a positive change in behavior as a result of participating in 4-H Character Counts! programming.

2. Associated Institution Types

☑ 1862 Extension
☐ 1890 Extension
☐ 1862 Research
☐ 1890 Research

3a. Outcome Type:

◯ Change in Knowledge Outcome Measure
◉ Change in Action Outcome Measure
◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	23552

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many youth are not learning or practicing good character. According to the 2010 Report Card on Ethics of American youth, of the 43,321 high school youth surveyed, half of them admitted bullying someone in the past year. Forty-seven percent said they were bullied, teased, or taunted in a way that seriously upset them in the past year, 33 percent said that violence is a big problem at their school, and 24 percent do not feel very safe at school. More than half (52 percent) admitted that within the past year they hit a person because they were angry. Ten percent of students said they took a weapon to school at least once in the past 12 months, and 16 percent admitted that they have been intoxicated while at school.

What has been done
The Virginia 4-H Character Counts! program developed by the Josephson Institute of Ethics, teaches trustworthiness, respect, responsibility, fairness, caring, and citizenship as the six pillars of character. Age-appropriate games, role playing, discussion, reflection, and examples make these character values understandable.

Results

In 2010, the Virginia Character Counts! program reached 23,552 youth (a 30% increase from last year), ages 5-19, through after school programs, day and overnight camping, 4-H clubs, and special interest programs. Through these efforts each child received a minimum of six hours of Character Counts! programming. Additionally, 497 adults across the Commonwealth have been actively engaged in implementing Character Counts!

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #12

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

4-H Adult Leaders - Increase the percent of adult 4-H volunteers participating in leadership and volunteer development trainings that indicate increased knowledge and skills in implementing 4-H programming as a result of participation.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	22947

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the financial situation becomes increasingly dismal, there are fewer paid staff to implement extension programs. A greater burden is placed on the volunteer force that supports 4-H and other programs. The bi-annual conferences held by the Virginia Association of Adult 4-H Volunteer Leaders fulfills many tasks. It is a recruitment tool to attract potential volunteers. It serves as a place to continue the training of current volunteers and agents and it is a time to reconnect to the purpose of volunteering with 4-H. Importantly, it increases the morale and enthusiasm of the volunteers and agents that participate.

What has been done
A committee of agents and volunteers from the Southeast district met and organized a two day

fall conference for 4-H volunteers from across the state of Virginia. Twelve workshops and three guest speakers were scheduled for volunteers and agents to attend. Scholarships were made available to enable and encourage volunteer and agent participation.

Results

At the conference eighty attendees from across Virginia increased their knowledge and skills by attending the workshops and listening to guest speakers. Through workshops such as "4-H 101" and 4-H All Stars, volunteer and agent participants increased their knowledge of program basics. Workshops such as "Building Effective Teams" gave them tools to run effective programs. Ideas for new programs were found in workshops such as CSI, Power of the Wind, and After School Science.

Evaluations were taken at the end of the conference. Of the 48 surveys returned a vast majority found the workshops to be very helpful or helpful. The survey was based on a scale of 1 to 5. When judging the workshops, there were 112 found to be excellent or very helpful, 25 as good or helpful and only 5 as fair. There were none listed as poor or not at all helpful. Comments included, "This was my first conference and I can't wait until the next one!". "Classes were great, every leader was motivated to educate us and provided many ideas to take back to our youth. Really enjoyed the tour, great tour guides, would definitely do it again!"

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #13

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Preparing Youth For Careers in Agriculture, Natural Resources and Environmental Science Education

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Science, engineering, technology and math (STEM) has become a national and state priority for 4-H youth programs through 2013. According to Dr. Roger Beachy, head of the National Institute of Food and Agriculture, it will be a challenge of 1890 land grant institutions to grow and nurture tomorrow's African American scientists to help solve the nation's complex agricultural problems. VSU 4-H Environmental Education youth programs focus on developing the future leaders in Science, Technology, Engineering, Agriculture and Mathematics (STEAM).

What has been done
In 2010, the 4-H Environmental Education program at VSU educated youth through a series of residential and day camps including 4-H Intermediate Congress and the Future of You Residential Camps, whereby youth lived in dormitories and participated in hands-on learning projects. Day camps were conducted with local urban school districts that included interactive educational visits on the farm, where youth participated in natural resources environmental projects and learning activities tied to Virginia's water quality and math Standards of Learning.

Results
Through residential and day camps, more than 250 youth gained critical thinking, communication and life skills and were directly exposed to agriculture careers in animal science, plant and soil science, and agriculture business. Additionally, youth learned about music theory, GPS technology, robotics, and herpetology, math conceptualization through aquaculture and horticulture applications and explored scientific career paths within a university environment.

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #14

1. Outcome Measures

- ☐ Not Reporting on this Outcome Measure

Youth Natural Resources Forestry Programs

2. Associated Institution Types

- ☐ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual

2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
VSU Natural Resource programs focus on improving the overall well-being of Virginia's Citizens. Specifically, the programs utilize interdisciplinary learning models to achieve measured outcomes to strengthen the capacity of minority and limited resource farmers to increase profits and improve life with alternative woodland enterprises and educate youth and adults about the importance of both urban and rural forest ecosystems and the value of agriculture and forest to the environment and personal health and well-being.

What has been done
The Natural Resource program at VSU educated youth and adults through a series of workshops and interdisciplinary classes through collaboration with local Extension offices and several local 4-H and Boys and Girls clubs across Southern Virginia. Youth are taught environmental education. Young adults (teens) were taught environmental education and explored scientific career paths through residential camps and various events held on VSU's campus as well as across Southern Virginia.

Results
Youth and adults participating in these programs gain critical thinking, as well as communication and life skills that improve the overall well-being of Virginia's Citizens.

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

Outcome #15

1. Outcome Measures

☐ Not Reporting on this Outcome Measure

Kids Tech University Hosted at Virginia State University.

2. Associated Institution Types

- ☑ 1862 Extension
- ☑ 1890 Extension
- ☐ 1862 Research
- ☐ 1890 Research

3a. Outcome Type:

- ◉ Change in Knowledge Outcome Measure
- ◯ Change in Action Outcome Measure
- ◯ Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Although the United States is currently the world's economic and military leader, we are falling dangerously behind other nations in developing a future workforce of scientists, engineers, and technology experts. At the core of this challenge is our nation's proficiency in science, engineering, math and technology. America faces a crisis in its ability to keep up with increasing demand for professionals trained in these fields. To ensure global competitiveness, it is necessary to prepare the next generation of science, engineering, math, and technology leaders.

What has been done
To address this challenge, Virginia Cooperative Extension partnered with the Virginia Bioinformatics Institute at Virginia Tech to host Kids Tech University on the campus of Virginia State University. Kids Tech University focuses on Science, Technology, Engineering and Mathematics (STEM), which has become the national and state priority of the 4-H Youth Development Program through 2013. The two-day event was held on October 30, 2010 and December 4, 2010. A teacher training component was also held on December 3, 2010.

Results
Kids Tech University puts engineers and scientists in front of children encouraging them to explore and get excited about science, engineering, technology, and mathematics. The primary goal is to engender excitement about science and technology by sharing genuine enthusiasm with real scientists. The two-day Kids Tech University at Virginia State University was attended by 120 students ages 9 to 12. On October 30, the students heard a lecture by world-renowned and award-winning researcher, Dr. Boris Kovatchev from the University of Virginia. Dr. Kovatchev lectured on the topic, "Why Doctors Need Math to Treat Diabetes."

On December 4, 2010, Dr. David M. Harwood delivered a lecture titled, "What Climate Secrets are Buried Deep Beneath the Antarctic Ice Sheet?" Dr. Harwood explained how to read clues hidden deep beneath the ice and investigate what this means for the future of our climate. Following the lectures on each day, the students engaged in hands-on exhibits that expanded the science, engineering, technology and mathematics topics. Some of the hands-on exhibits included a robot, a geological stratification model, fish for all climates, microscopic explorations, food science, and many more.

The Progress-Index newspaper provided a write-up of the event that can be viewed at: http://progress-index.com/news/vsu-kids-tech-university-draws-pre-teens-to-learn-about-science-1.1057170

4. Associated Knowledge Areas

- ☑ 806 - Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- ☐ Natural Disasters (drought, weather extremes, etc.)
- ☑ Economy
- ☑ Appropriations changes
- ☑ Public Policy changes
- ☑ Government Regulations
- ☑ Competing Public priorities
- ☑ Competing Programmatic Challenges
- ☑ Populations changes (immigration, new cultural groupings, etc.)
- ☐ Other

Brief Explanation

In 2010 there were vacancies in 4-H agent and specialist positions that were not filled. Some of those positions are still in the search process and others have been subject to the statewide hiring freeze due to local and state budget constraints. These vacancies impeded meeting some of the outputs and outcomes in this planned program for 2010. It should also be noted that there were limited opportunities for professional development, as budget cuts have not allowed for many statewide trainings. This has precluded a number of agents, particularly newer 4-H agents, to receive valuable curriculum-specific and other programmatic trainings.

V(I). Planned Program (Evaluation Studies and Data Collection)

(OPTIONAL SECTION)

1. Evaluation Studies Planned

- ☐ After Only (post program)
- ☑ Retrospective (post program)
- ☑ Before-After (before and after program)
- ☑ During (during program)
- ☐ Time series (multiple points before and after program)
- ☐ Case Study
- ☐ Comparisons between program participants (individuals, group, organizations) and non-participants
- ☐ Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- ☐ Comparison between locales where the program operates and sites without program intervention
- ☐ Other

Evaluation Results

Evaluation results are indicated for each state defined outcome.

Key Items of Evaluation