2010 Virginia Polytechnic Inst. & State University and Virginia State University
Combined Research and Extension Plan of Work

Status: Accepted
Date Accepted: 06/03/09

I. Plan Overview

1. Brief Summary about Plan Of Work

Virginia Cooperative Extension (VCE), a partnership between Virginia Polytechnic Institute and State University (VT) and VirginiaStateUniversity (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. Recognizing that knowledge is power, VCE serves people where they live and work. 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.

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 focused and 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.

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 planning and 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 identification of strategic issues through an annual situation analysis, accomplished with the help of local advisory groups including Extension Leadership Councils and a booklet of emerging trends and issues identified by Extension faculty. Situation analysis is a process of collaboratively determining what problems exist at local, regional, and state levels, and then deciding which ones are issues of major public concern. This analysis becomes the background and rationale for deciding which problems and issues will be addressed and reported on by VAES, VSUARS, and VCE .

VAES, VSUARS, AND VCE GOALS: Strategic goals form the foundation for research and educational program development. Goals are determined with the involvement of advisory groups. This year's goal areas included: 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. The VSUARS in particular provides knowledge and technology to small-scale and limited-resource farmers and rural communities to enable them to produce abundant and safe food, while enhancing their economic well-being and quality of life. The primary research goal overall for Virginia is to develop relevant basic and applied research data to form the basis for Extension programming. A wide range of long and short term research projects are undertaken to provide a continuous flow of new or more fully developed knowledge to provide science-based information to enhance the quality of life for citizens. 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.

REPORTING REQUIREMENTS: All Extension faculty (agents, specialists, and administrators) and program assistants submit individual program reports. Also, county/city employees supervised by VCE and 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/CSREES, and entered into CRIS. Researchers prepare annual progress and termination reports reviewed by the VAES director before being submitted to CRIS. In addition, all research and Extension faculty are required to submit an annual report through eFARS. This locally developed system documents teaching, research, and Extension accomplishments and impacts for individual, unit, college, and organizational review.Updates to eFARS in 2007 better aligned planning and reporting with the ten planned programs presented in this report.

PLANNED PROGRAMS FOR 2010-14

The integrated research and Extension plan of work for 2009-13 focuses on the following 10 planned programs:

1) Agricultural and Food Biosecurity; 2) Agricultural Systems; 3) Animals and Animal Products; 4) Biotechnology and Genomics;

5) Economics and Commerce; 6) Families, Youth, and Communities; 7) Food, Nutrition, and Health; 8) Natural Resources and Environment; 9) Pest Management; 10) Plants and Plant Products.

The planned scope, assumptions, goals, FTEs, activities, methods, audiences, patents, peer reviewed publications, outputs, outcomes, external factors, and evaluation plans for each planned program are provided later in this document.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2010	338.3	20.0	209.9	13.5
2011	332.3	20.0	214.9	13.5
2012	332.3	20.0	218.9	13.5
2013	332.3	20.0	218.9	13.5
2014	332.3	21.7	218.9	13.5

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Combined External and Internal University External Non-University Panel
- Expert Peer Review

2. Brief Explanation

This year, a merit review was initiated with Tennessee and Maryland. Planning and reporting experts reacted to the Virginia planning and reporting efforts. The review recognized areas of excellence, and areas for improvement. Suggestions were incorporated into this year's planning and reporting.

RESEARCH REVIEW

Research under the Hatch, McIntire-Stennis, and Animal Health and Disease Acts is conducted in the College of Agriculture and Life Sciences, College of Natural Resources, and Virginia-Maryland Regional College of Veterinary medicine that constitute the Virginia Agricultural Experiment Station (VAES). Proposal selection criteria include: 1) research relevance to the goals of the department and college; 2) needs of the people the research would serve; 3) priorities established by task forces, work groups, or commodity research committees; 4)objectives and procedures are clearly stated; 5) proposed duration is realistic; 6) appropriate or desirable cooperators; 7) impacts for Virginia (and elsewhere) or anticipated economic importance and 8) project leader competence.

The project leader submits the revised proposal to the department/unit head, with a letter delineating the changes made from reviewers recommendations and/or rebuttal for any recommendations not accepted. The project leader enters CRS Forms AD-416 and AD-417 on the CRIS website-http://cwf.uvm.edu/dris/ and sends a copy of the proposal electronically to the VAES office.

Any applicant at VSU Agricultural Research Station (ARS)completes and submits a Request for Approval to Submit Proposals Form to the Director of Research who reviews the pre-proposal and notifies the applicant about his decision whether the proposal can be developed fully or not.

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. The proposal must address the needs of the state and the United States, the degree of relevance of the proposal 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 pay particular attention to scientific and technical merit, opportunities for cooperation with other individuals and units within the University and the Virginia clientele.

Expert reviewers: 1) review all proposals for scientific and technical merits, 2) ensure all proposals fulfill the land-grant mission and priorities of the University, 3) ascertain that what is being proposed lies within the full range of expertise and capability of the investigators and the University, and 4) assist applicants with acceptable proposals for locating outside peer reviewers to further review 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 rewrite it to incorporate the relevant suggestions.

EXTENSION REVIEW

The review process for Extension covers all programs conducted by VCE through ten planned program teams (PPT). The PPTs made up of Extension specialists and agents, review programs at least annually to maintain, modify, create, and report on programs to meet needs indentified through external and internal stakeholder input.

VCE addresses a broad range of issues facing the Commonwealth through focused educational programming. This is accomplished and reported through VCE's ten PPTs and State Program Leaders who serve as partners for each PPT. A web-based planning and reporting system organized by the ten PPTs documents program outputs and outcomes. Problems and issues identified through situation analysis are communicated throughout VCE and educational program plans are developed by the interdisciplinary PPTs. Program proposals identify programming outputs, outcomes, and an evaluation plan to be conducted by the PPTs. The program proposals are reviewed by VCE programming leadership.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

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 thirteen Agricultural Research and Extension Centers (ARECs) across the state. The twelve academic departments within the College of Agriculture and Life Sciences each maintain stakeholder groups and the College of Agriculture and Life Sciences has an advisory group of producers, commodity groups, and agribusiness leaders that provide important feedback to VAES. In turn, VAES provides research-based input for the VCE programming process through faculty research, Extension specialists, and administratively through AREC directors and statewide Extension program leaders.

Virginia Cooperative Extension connects with the grassroots of the state through partnerships with Extension Leadership Councils (ELCs). At the local level, this partnership represents the diversity of each county, city, and town. Representation includes VCE program representatives from 4-H/Youth Development, Family and Consumer Sciences, Agriculture and Natural Resources and Community Viability, community leaders, and other organized community partners. Extension staff and Leadership Council members work as equal partners to determine needs, establish program priorities, plan and implement educational programs, identity 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 connections are made 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 (or designees) of FCS and 4-H leadership councils, the VCE Director (VT), the VCE Administrator (VSU), designated VCE staff from both VT and VSU, the 1862 director of the agricultural experiment stations, and the 1890 director of research. The VCELC provides a formal mechanism for VSU and VT to receive stakeholder input for Extension and research programs.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

The stakeholder input process used by research and Extension includes opportunities to collect relevant issues and problems from under-served and under-represented populations. Campus-based faculty are sensitive to these populations and specifically include input from a broad representation of stakeholder groups to enhance their ability to include under-served and under-represented audiences and their needs. Field faculty are being challenged to grow and document efforts to address the needs of under-served and under-represented populations. In some cases, programs are specifically designed to address the needs of under-served and under-represented audiences. For example, parenting and bankruptcy education programs specifically target under-served and under-represented populations. Faculty are sensitive to this work and develop projects and programs incorporating input and needs from under-served and under-represented audiences. In addition, all Extension agents are required to record how they plan to serve underserved and underrepresented audiences in their personal action plans for each major program at the beginning of each program year. Finally, research and Extension work at VSU is specifically targeted at reaching underserved and low-resource audiences.

3. How will the planned programs describe the expected outcomes and impacts?

All planned program teams developed specific outcomes they expect faculty will address over a period of five years. These outcomes range from short-term (knowledge, attitude, skills and aspiration changes), to medium-term (practice or behavior changes), to long-term (broader impacts and situation change for individuals, communities, and systems). For each planned program, these outcomes will be monitored, evaluated, and documented each year through an evaluation plan.Planned program team leaders meet at least twice a year to discuss outcomes and impact. Many of the teams meet throughout the year to plan, implement, measure, and report on outcomes and impacts. The VCE intranet contains documents, powerpoints, and other tools to assist teams with this work. http://www.ext.vt.edu/vce/reports/

4. How will the planned programs result in improved program effectiveness and/or efficiency?

Virginia's integrated research and Extension planned programs have a historic and strong connection that increases the effectiveness and scope of both efforts. The results of the research agenda provide the basis for relevant and effective Extension programs. The outcomes of Extension programs inform the research agenda. This integrated approach embodies the Land Grant philosophy and results in improved effectiveness and efficiency of research and Extension educational programs for the benefit of the citizens of Virginia. Some researchers and Extension faculty have begun to develop logic models that connect their work. The researcher explicates knowledge discovery and development and then connects with the Extension faculty through knowledge dissemination to change learning, behavior, and conditions.

IV. Stakeholder Input

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

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

Brief explanation.

A variety of actions continue to be used to seek stakeholder input including issues forums, focus groups, community surveys, key informant interviews, and listening sessions. http://www.ext.vt.edu/vce/support/process/situation.html

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

1. Method to identify individuals and groups

- Open Listening Sessions
- Use External Focus Groups
- Use Surveys
- Use Advisory Committees
- 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 grassroots 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 entities that 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 (or designees) of VCE state program leadership councils for FCS, and 4-H, the VCE Director (VT), the VCE Administrator (VSU), designated VCE staff from VT and VSU, the 1862 director of the agricultural experiment stations, the 1890 director of research, and the director of governmental relations at VT. Extension provides a formal mechanism for VSU and VT to receive stakeholder input for Extension and research programs.

2(B). A brief statement of the process that will be 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

- 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
- Other (focus groups, key informant interviews, public issues forums, listening sessions)
- Meeting with traditional Stakeholder groups

Brief explanation

A variety of methods will be used to collect stakeholder input and can include issues forums, focus groups, community surveys, key informant interviews, and listening sessions.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- In the Action Plans
- To Set Priorities
- Other (staff professional development)
- In the Budget Process

Brief explanation.

Input from stakeholder groups is considered in identifying current and emerging issues, setting priorities for programs, developing implementation plans, and staff professional development offerings.This ultimately influences the budgeting process.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

Agricultural and Food Biosecurity

2. Brief summary about Planned Program

An effective agricultural and plant biosecurity Extension and research strategy encompasses potential chemical and biological threats involving livestock and poultry, plants, and almost any food and food source. Maintaining efficient and safe agricultural and plant production systems in Virginia requires attention to invasive and non-invasive threats that could result in damage to animal and plant production, processing, distribution to consumers, and consumption. This program must have the flexibility to adapt to changing threat profiles of intentional or non-intentional causes. The programs in this plan involve faculty on crosscutting projects from multidisciplinary areas to provide guidance on policy issues for state and federal regulatory agencies and to deliver biosecurity educational components to a diverse audience.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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%	15%	15%	0%
307	Animal Production Management Systems	15%	15%	15%	0%
311	Animal Diseases	10%	10%	10%	0%
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	10%	10%	10%	0%
315	Animal Welfare, Well-Being and Protection	10%	10%	10%	0%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.	10%	10%	10%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	15%	15%	15%	0%
903	Communication, Education, and Information Delivery	15%	15%	15%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Live animals, processed animal products, other foods, and food products may be intentionally contaminated for malicious, criminal, and/or terrorist objectives. Preventive management practices, identification, monitoring, control, and reporting of contamination is essential to prevent or restrict morbidity and mortality from such an event. Recent attention by animal production industries, government agencies, scientists, media, and consumers highlights the importance of being able to prevent and track outbreaks from intentional or non intentional sources. Preventive biosecurity practices are critical to decreasing the spread of infectious disease that would otherwise result in decreased efficiency of animal production and wide spread, rapid outbreaks such as that of Avian Influenza (AI) in Virginia in 2002 that resulted in destruction of over 4.6 million commercial poultry at an economic cost of more than $130 million. While AI did not present human health or food safety concerns and was unrelated to the highly pathogenic avian flu in Asia, it can be devastating economically to farmers, poultry companies, and businesses that provide goods and services to the industry. Animal producers from small farms to integrated operations must be aware of risk factors and be able to implement feasible management practices and animal identification programs to control threats that may impair animal or human health. Likewise, food producers and processors need to be equipped with the ability to identify preventive measures to minimize the risk that products under their control will be subject to intentional contamination. It is ultimately the protection of humans from biological and chemical risks from exposure to animals, plants, and their products that will result in benefits to consumers, growers, independent producers, and companies in Virginia and nationwide.

2. Scope of the Program

- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- In-State Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Producers, processors, and handlers recognize the importance of animal, food, and plant biosecurity at a level greater than any time in the history of the U.S. Therefore, target audiences are receptive to training in risk management. Increased knowledge of potential hazards, management strategies, and preventative measures improves the safety and biosecurity of animals and foods nationwide. Increased awareness and implementation of animal tracking programs helps confine and control potential risks. The increased awareness of Asian soybean rust and related applications of fungicide will help ensure a safe and plentiful food supply.

2. Ultimate goal(s) of this Program

The goals of this program are: 1) improve food biosecurity and hazard management to increase the safety of foods currently at risk for intentional contamination, 2) reduce the risk of intentional or non-intentional disease spread between groups of livestock and poultry, 3) increase the ability to track and confine livestock and poultry operations and animal movement, and 4) prevent the spread of Asian soybean rust in Virginia.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	4.5	1.0	4.9	0.0
2011	4.5	1.0	4.9	0.0
2012	4.5	1.0	4.9	0.0
2013	4.5	1.0	4.9	0.0
2014	4.5	1.0	4.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct research studies, conduct presentations, workshops, meetings, trainings, conduct biosecurity audits, develop publications, curriculum, resources, partner with other states to develop multistate cooperation, provide consultation, leadership, facilitation, and partner with the livestock, poultry, food, and soybean industries.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Group Discussion • Workshop • Education Class • Demonstrations	• Newsletters • TV Media Programs • Web sites

- One-on-One Intervention

3. Description of targeted audience

Food processors, food producers, food handlers, consumers, livestock and poultry producers, integrated poultry operation personnel and management,Extension educators, and policy makers.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	1000	1500	50	100
2011	1000	1500	50	100
2012	1000	1500	50	100
2013	1000	1500	50	100
2014	1000	1500	50	100

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	7	2	9
2011	7	2	9
2012	7	2	9
2013	7	2	9
2014	7	2	9

V(H). State Defined Outputs

1. Output Target

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

  2010 :12 **2011 :**12 **2012 :**12 **2013 :**12 **2014 :**12

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

  2010 :5 **2011 :**5 **2012 :**5 **2013 :**5 **2014 :**5

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

  2010 :30 **2011 :**30 **2012 :**30 **2013 :**30 **2014 :**30

- Number of websites

2010	2011	2012	2013	2014
2	2	2	2	2

- Number of research studies conducted

2010	2011	2012	2013	2014
3	3	3	3	3

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 : 1000	**2011 :** 1000	**2012 :** 1000	**2013 :** 1000	**2014 :** 1000

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 315 - Animal Welfare, Well-Being and Protection

Outcome #2

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 : 200	**2011 :** 200	**2012 :** 200	**2013 :** 200	**2014 :** 200

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 315 - Animal Welfare, Well-Being and Protection

Outcome #3

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 : 70	**2011 :** 60	**2012 :** 50	**2013 :** 50	**2014 :** 50

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #4

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :200	**2011 :** 200	**2012 :** 200	**2013** :200	**2014 :**200

3. Associated Institute Type(s)

- •1862 Extension
- •1890 Extension
- •1862 Research

4. Associated Knowledge Area(s)

- 136 - Conservation of Biological Diversity
- 903 - Communication, Education, and Information Delivery

Outcome #5

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :150	**2011 :** 150	**2012 :** 150	**2013** :150	**2014 :**150

3. Associated Institute Type(s)

- •1862 Extension
- •1862 Research

4. Associated Knowledge Area(s)

- 136 - Conservation of Biological Diversity
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Competing Public priorities
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

Description

A large number of factors may influence the outcomes in the Agriculture and Food Biosecurity Program. Factors such as global disease situations, terrorist threat, government regulations, public perceptions, global economies, personnel changes, and industry economic situations can have short and long-term impacts on the outcomes. Interest in biosecurity programs is relatively high, however federal money to fund these programs, political changes, and competing priorities can decrease or increase the amount of attention to and funding of these projects.

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

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- Time series (multiple points before and after program)

Description

Poultry operation audits

2. Data Collection Methods

- On-Site
- Observation
- Mail

Description

Surveys of participants in Extension programs and research projects
Observation of poultry production sites for best practices

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

Agricultural Systems

2. Brief summary about Planned Program

Crop and livestock production may be optimized if the agricultural components are studied and managed as a system rather than as discrete operations. The interactions among system components often respond differently to management decisions than do the individual components. Treating production operations holistically offers greater management flexibility, provides more environmentally and economically sound options, and creates safer and healthier conditions for workers and farm animals. Virginia Cooperative Extension and Agricultural Experiment Station faculty provide leadership in research, education, and Extension programming associated with agricultural systems. Integrated, sustainable approaches, such as organic farming, precision agriculture, integrated pest management, nutrient management, and other soil and water conservation-oriented best management practices, will be incorporated into agronomic and vegetable crop and livestock production systems appropriate for both large and small producers.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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 Production 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%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The viability of both large and small producers of crop and livestock food, fiber, and energy products is limited by economic and environmental factors. Such constraints can be alleviated through research and educational programs that address production efficiency, environmental controls, and business management. Increasing the production efficiency can increase profit to producers and decrease costs to consumers. Reducing environmental (soil, water, and air) degradation will benefit producers and society and improved business management will increase profitability and, thus, viability of producers. Integrated research and educational programs for both educators and producers on the technical (including nutrient management and soil testing, integrated pest management, tillage, cover cropping and other soil conservation practices, crop rotations, selection of appropriate plant cultivars, and other crop management practices) and business (including budgets, marketing, etc.) aspects of organic and sustainable production systems, precision agriculture, and environmental best management practices will enable farmers to produce food, fiber, and energy profitably while minimizing environmental degradation and optimizing consumer health. Personnel employed by the VCE and the VAES possess the expertise and experience to conduct research and research-based education programs to achieve these goals.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension
- Multistate Extension
- Multistate Research
- Multistate Integrated Research and Extension
- In-State Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Implementing efficient economically-feasible and environmentally sound integrated crop and/or livestock systems requires additional research. Extension of both established and developing knowledge of production systems that include pest (weeds, insects, disease) control and soil (cover cropping, tillage, organic matter management, nutrient management), crop (selection of appropriate species and cultivars, planting timing, row spacing, and geometries, crop rotations, etc.), and livestock (dietary management, grazing rotations, fencing, etc.), and business management (purchase/use of external inputs, marketing of outputs, value-added products, cost-return ratios, etc.) management. Many organizations (e.g., Virginia Association for Biological Farming, Virginia commodity boards, Chesapeake Bay Foundation) and local (soil and water conservation districts), state (Virginia Departments of: Agriculture and Consumer Services, Conservation and Recreation, Environmental Quality, and Health), and federal agencies (Natural Resource Conservation Service) providers of education, cost-share funding, marketing assistance, or permits and inspections of potentially environmentally-impacting practices.

VCE and VAES provide multidisciplinary expertise to address research and education needs employing an integrated approach. On-going established collaborations between VCE/VAES and other research and Extension faculty throughout the mid Atlantic region enable Virginia to draw upon expertise for cooperation where gaps exist. VCE and VAES personnel work directly with farmers and staff from various organizations and agencies to impart knowledge and implement change among agricultural producers through a multiplier effect. Funding to implement these research and educational programs comes from state organizations (e.g., commodity boards), state agencies (e.g., Water Quality Improvement Funds and other conservation-promoting cost share funds), federal agencies (e.g., USDA), local and regional governments (e.g., sanitation districts), and regional organizations (e.g., Chesapeake Bay Foundation, National Fish and Wildlife Foundation).

2. Ultimate goal(s) of this Program

Profitability of large and small farms in Virginia will increase and the quality of soil, water, and air associated with crop and livestock systems will improve. The goal is that farm profitability will increase by 7% annually.Agricultural best practices should reduce sediment and nutrient levels in the watershed by 5%. Improved cropping practices and fertilization practices will increase the efficiency of use of applied nutrients by 5% over the period outlined within this plan.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	50.0	6.2	56.2	0.0
2011	48.0	6.2	56.2	0.0
2012	48.0	6.2	56.2	0.0
2013	48.0	6.2	56.2	0.0
2014	48.0	6.2	56.2	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

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. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Education Class • Group Discussion • Demonstrations • One-on-One Intervention • Workshop	• Web sites • TV Media Programs • Newsletters • Public Service Announcement

3. Description of targeted audience

Commercial producers, 4-H youth, Master Gardeners, state and federal agency personnel, Extension educators, policy makers, consumers and supermarket chain store buyers.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	60000	90000	12000	3000
2011	60000	90000	12000	3000
2012	60000	90000	12000	3000
2013	60000	90000	12000	3000
2014	60000	90000	12000	3000

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	20	15	35
2011	25	15	40
2012	25	15	40
2013	25	15	40
2014	25	15	40

V(H). State Defined Outputs

1. Output Target

- Number of educator training workshops

2010 25 **2011** 25 **2012** 25 **2013** 25 **2014** 25

- Number of field research experiments

2010 35 **2011** 35 **2012** 35 **2013** 40 **2014** 40

- Number of on-farm demonstrations

2010 25 **2011** 25 **2012** 25 **2013** 25 **2014** 25

- Number of producer training workshops

2010 220 **2011** 230 **2012** 240 **2013** 250 **2014** 250

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

2010 400 **2011** 400 **2012** 400 **2013** 400 **2014** 400

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

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

2. Outcome Type : Change in Condition Outcome Measure

2010 : 4	**2011 :** 5	**2012 :** 7	**2013 :** 7	**2014 :** 7

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics

Outcome #2

1. Outcome Target

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. Outcome Type : Change in Condition Outcome Measure

2010 : 4500000	**2011 :** 5000000	**2012 :** 6000000	**2013 :** 6500000	**2014 :** 6500000

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 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
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :360000	**2011 :** 380000	**2012 :** 400000	**2013** :500000	**2014 :**500000

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 131 - Alternative Uses of Land
- 205 - Plant 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 #4

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :120000	**2011 :** 150000	**2012 :** 180000	**2013** :210000	**2014 :**240000

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 205 - Plant Management Systems
- 601 - Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :220900	**2011 :** 250000	**2012 :** 280000	**2013** :310000	**2014 :**340000

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems

Outcome #6

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 : 50000	**2011 :** 60000	**2012 :** 70000	**2013 :** 75000	**2014 :** 75000

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 205 - Plant Management Systems
- 601 - Economics of Agricultural Production and Farm Management

Outcome #7

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 200	**2011 :** 220	**2012 :** 240	**2013 :** 300	**2014 :** 300

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics

Outcome #8

1. Outcome Target

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. Outcome Type : Change in Condition Outcome Measure

2010 2500000 **2011 :** 3000000 **2012 :** 3250000 **2013** 3250000 **2014 :** 3250000

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 205 - Plant Management Systems
- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Programmatic Challenges
- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes
- Appropriations changes
- Competing Public priorities
- Government Regulations
- Economy

Description

The gross income derived from farming could be affected by natural disasters, changes in the economy, government regulations and public policy changes. Disasters damage infrastructure and facilities while economic and governance changes influence profitablility of production systems. The number of certified organic farms and acres of certified organic farmland and the number of acres of land subject to nutrient management plans/best management practices/conservation plans could be affected by government regulations and changes in the economy. If more emphasis is placed on organic production by a greater number of people, demand for these products and profitability of these operations will increase. If greater emphasis is placed on water and environmental quality then even more widespread implementation of these practices will be encouraged.

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

1. Evaluation Studies Planned

- Before-After (before and after program)
- Case Study
- Other (VDAC Statistics)
- During (during program)

Description

Participants in conferences, workshops and field days will evaluate all of the planned educational programs. Case studies will be conducted among selected vegetable growers, livestock farmers, and grain farmers who have established certified organic farming enterprises to measure their production success and their economic success. The data collected from

Agriculture Statistics will provide information about number of organic farms, number of certified organic acres, and gross income of certified organic products sold.

The annual number of educators and farmers trained in best management practices will be collected and tabulated. The annual amount of land subject to nutrient management and other best management practices will be collected from the Virginia Department of Conservation and Recreation and tabulated.

2. Data Collection Methods

- Case Study
- Other (Chesapeake Bay model)
- Sampling
- Observation
- Journals
- On-Site

Description

The primary evaluation studies for the organic farming program will be implementation of written evaluations at educational programs, case studies, and analysis of the Virginia Census of Agriculture provided by the Department of Agriculture Statistics.

Counting and tabulation of nutrient management planners trained will be used to evaluate short-term benefits. Annual data from the Virginia Department of Conservation and Recreation will be collected and tabulated to assess the medium- (i.e., amount of acreage subject to best management plans) and long-term benefits (reduction in water quality contaminants).

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

Animals and Animal Products

2. Brief summary about Planned Program

The history of animal production goes back to the earliest settlers at Jamestown and has evolved to a highly diverse industry including beef cattle, dairy, equine, swine, small ruminants, poultry, and aquaculture. Animal production occurs on a high percentage of Virginia farms with impact upon every region of the state, and makes a significant contribution to the economy of Virginia accounting for 70% of the gross revenue generated in the agricultural sector. Additionally, the value added by related processing and service industries and the economic impact of the businesses that support the various animal enterprises is considerable. As a result, research and Extension efforts to improve quantity, quality, profitability, and sustainability of animal production systems have played a significant role in Virginia agriculture for more than a century.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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%	5%
302	Nutrient Utilization in Animals	15%	15%	15%	5%
303	Genetic Improvement of Animals	10%	10%	10%	5%
305	Animal Physiological Processes	10%	10%	10%	5%
307	Animal Production Management Systems	20%	20%	20%	35%
308	Improved Animal Products (Before Harvest)	10%	10%	10%	20%
311	Animal Diseases	15%	15%	15%	20%
315	Animal Welfare, Well-Being and Protection	5%	5%	5%	5%
	Total	100%	100%	100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Animal production is an important stimulus to rural economies throughout the Commonwealth. There is substantial pressure on animal industries to provide consumers with safe, high quality products at competitive prices. Furthermore, farm level producers are challenged to produce products of a quality which meet the needs of the marketplace while adding value to the enterprise. Increasing cost efficiencies in animal agriculture nationally have forced successful producers to intensify management to reduce per-unit costs or to adopt low input, extensive production systems. Animals must be produced and maintained in a manner which provides for the well-being of the animal, minimizes environmental effects, and makes wise use of limited resources. Environmental issues are an increasing concern. Animal production systems must evolve to meet increasingly competitive economic circumstances and environmental challenges. Additionally, the quality of life is enhanced for many Virginians through the proper management and maintenance of rural landscapes hosting animal production. The health of rural economies depends on successful implementation of improved management strategies, and exploration of new technologies for future adoption. This backdrop of change, competition, and responsibility to future generations drives this program.

2. Scope of the Program

- Multistate Research
- In-State Research
- In-State Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The Planned program assumes availability of expertise in key scientific areas of animal physiology and nutrition, reproduction and genetics, animal health, environmental issues, food quality, and animal management systems. Such expertise is essential to apply best practices to animal production issues in these areas. Adequate resources to expand the body of knowledge pertinent to the needs of Virginia animal production is assumed. Such resources include existing state owned research herds and flocks, research laboratories, an ample supply of highly trained, motivated, visionary researchers and associated staff. Further, it is assumed that economic circumstances will be favorable enough to motivate clientele to change and implement new procedures. Virginia animal production systems have survived the competitive agricultural climate for the entire history of the country. It is expected today's producers will continue to adopt best practices well tested scientifically and explained fully and clearly by trusted and well informed Extension personnel.

2. Ultimate goal(s) of this Program

Our goal is to encourage continued improvement of existing animal production systems and/or development of new animal production systems that produce ample supplies of high quality products in an evironmentally and socially responsible manner while supporting quality lifestyles. By doing so, animal agriculture in Virginia will remain competitive, profitable, and sustainable while producing products and services that meet consumer expectations.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	28.8	4.0	33.2	4.0
2011	26.8	4.0	35.2	4.0
2012	26.8	4.0	36.2	4.0
2013	26.8	4.0	36.2	4.0
2014	26.8	4.0	36.2	4.0

V(F). Planned Program (Activity)

1. Activity for the Program

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. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Demonstrations • Group Discussion • Workshop • Education Class • One-on-One Intervention	• TV Media Programs • Web sites • Public Service Announcement • Newsletters

3. Description of targeted audience

The target audience includes animal owners, youth, Extension educators, allied industry personnel, consumers, policy makers, and academic colleagues.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	85000	150000	30000	7000
2011	85000	150000	30000	7000
2012	85000	150000	30000	7000
2013	85000	150000	30000	7000
2014	85000	150000	30000	7000

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

Expected Patent Applications

2010 : 0 **2011 :** 0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	10	5	15
2011	10	5	15
2012	10	5	15
2013	10	5	15
2014	10	5	15

V(H). State Defined Outputs

1. Output Target

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

  2010 : 600 **2011 :** 600 **2012 :** 600 **2013 :** 600 **2014 :** 600

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

  2010 : 750 **2011 :** 750 **2012 :** 750 **2013 :** 750 **2014 :** 750

- Number of web sites, applications, modules

  2010 : 40 **2011 :** 40 **2012 :** 40 **2013 :** 40 **2014 :** 40

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

Percent increase in beef cattle marketed through value-added programs

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
10	10	10	10	10

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 303 - Genetic Improvement of Animals
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #2

1. Outcome Target

Number of additional beef producers trained and certified for quality assurance/best management practices

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
125	125	125	125	125

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 303 - Genetic Improvement of Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 315 - Animal Welfare, Well-Being and Protection

Outcome #3

1. Outcome Target

Percent of participating farms reducing phosphorus over previous year in dairy animal waste

2. Outcome Type : Change in Condition Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
10	10	10	10	10

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems

Outcome #4

1. Outcome Target

Number of dairy herds improving milk quality by culturing quarter milk samples and implementing mastitis control procedures.

2. Outcome Type : Change in Condition Outcome Measure

2010 :20	**2011 :** 20	**2012 :** 20	**2013** :20	**2014 :**20

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #5

1. Outcome Target

Number of swine producers receiving continuing education credit for waste management permit requirements

2. Outcome Type : Change in Action Outcome Measure

2010 :25	**2011 :** 25	**2012 :** 25	**2013** :25	**2014 :**25

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals

Outcome #6

1. Outcome Target

Number of youth adopting best practices related to animal agriculture through youth animal projects and events

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :27000	**2011 :** 27000	**2012 :** 27000	**2013** :27000	**2014 :**27000

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems

- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 315 - Animal Welfare, Well-Being and Protection

Outcome #7

1. Outcome Target

Percent increase in sheep population in Southwest Virginia as a result of favorable lamb marketing arrangements

2. Outcome Type : Change in Condition Outcome Measure

2010 :5 **2011 :**5 **2012 :**5 **2013 :**5 **2014 :**5

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 303 - Genetic Improvement of Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)

Outcome #8

1. Outcome Target

Number of program participants acquiring knowledge on best management practices related to equine.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :500 **2011 :**500 **2012 :**500 **2013 :**500 **2014 :**500

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems

Outcome #9

1. Outcome Target

Percent increase in freshwater shrimp production by Virginia farmers utilizing best management practices

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :5 **2011 :**5 **2012 :**5 **2013 :**5 **2014 :**5

3. Associated Institute Type(s)

•1890 Extension

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #10

1. Outcome Target

Percent increase in sales of pond raised fish due to adoption of best management practices.

2. Outcome Type : Change in Action Outcome Measure

2010 : 5	**2011 :** 5	**2012 :** 5	**2013 :** 5	**2014 :** 5

3. Associated Institute Type(s)

•1890 Extension

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)

Outcome #11

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 5	**2011 :** 5	**2012 :** 5	**2013 :** 5	**2014 :** 5

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1890 Research

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems
- 311 - Animal Diseases

Outcome #12

1. Outcome Target

Number of individuals who gain knowledge to improve small ruminant production.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 100	**2011 :** 100	**2012 :** 100	**2013 :** 100	**2014 :** 100

3. Associated Institute Type(s)

•1890 Extension
•1890 Research

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Populations changes (immigration,new cultural groupings,etc.)
- Government Regulations
- Economy
- Public Policy changes
- Other (land values near urban areas)

Description

Factors beyond anticipation of this planning process such as weather, global economies, government regulations, and public perceptions impact animal agriculture both short and long-term and may affect outcomes. These factors may have immediate impact as they significantly influence items such as production economics, industry infrastructure, marketing systems, and consumer demand. Good economic conditions encourage consumption of value added products.In Virginia, increasing land values in traditional animal production areas around cities and growing towns are a significant challenge.The recent increase in ethanol production and anticipated future growth of this alternative fuel source will likely have major impacts on livestock production practices in Virginia.Scope of such impacts is unknown, but anticipated direction has influenced this planned program.

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

1. Evaluation Studies Planned

- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparison between locales where the program operates and sites without program intervention
- Time series (multiple points before and after program)

Description

A long-term phosphorus project involves a series of tests of phosphorus in diets of dairy cows. The program includes evaluations of how to reduce surplus phosphorus. Plans are to involve about 200 dairy herds in the Chesapeake Bay watershed.

2. Data Collection Methods

- Mail
- Tests
- Sampling
- Observation
- On-Site

Description

The participating herds submit forage samples for phosphorus (and other nutrient) analysis. Technicians visit the farm to verify the rations being fed to dairy cows as well as production.The quantity of phosphorus fed is compared to phosphorus requirements of the cows for given levels of production.Management practices to reduce excess phosphorus feeding are shared with feeding to within an allowable range of expected requirements.

V(A). Planned Program (Summary)

Program #4

1. Name of the Planned Program

Biotechnology and Genomics

2. Brief summary about Planned Program

Advances in molecular genetics continually transforms our understanding of life sciences and, consequently, the methods utilized to produce food and treat illness. Many pre-college curricula now incorporate concepts in genetics, genomics, and biotechnology. Individuals must make biotechnology related decisions on a regular basis, from what foods to eat to what heath care to utilize. As biological molecules, cells, and organisms become easier to manipulate and produce, individuals will increasingly need to choose whether and how they use these "products" of life science. Thus, the public needs opportunities, resources, and skills to consider the applications and implications of biotechnologies and scientists need continued and expanded mechanisms for communicating current research to non-technical audiences.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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	20%	0%	20%	20%
202	Plant Genetic Resources and Biodiversity	20%	0%	20%	20%
206	Basic Plant Biology	20%	0%	20%	20%
212	Pathogens and Nematodes Affecting Plants	20%	0%	20%	20%
722	Zoonotic Diseases and Parasites Affecting Humans	20%	0%	20%	20%
	Total	100%	0%	100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Feeds comprise a major cost of livestock, poultry and aquaculture production. The development of feeds is a drawn out process of trials, measuring the suitability of feeds using measures such as growth and feed efficiency. New technical developments will allow measurement of animal response to feeds at the morphological, physiological, and gene expression levels, thereby greatly enhancing the development of feeds promoting the survival, growth, and well-being of food animals of

agricultural and aquacultural importance. Many of the genes that play important roles in growth and reproduction in livestock and poultry species are unknown. The recent sequencing of the chicken, pig, and cattle genomes provides the raw data for the identification of many of these genes using genomics and bioinformatics approaches. By knowing the function of these genes, basic physiological mechanisms can be better understood, which will lead to improved production of food animals. Developments in molecular genetics, population genetic and phylogenetic inference, and conservation theory support definition of evolutionarily significant units, providing a basis for rational and defensible decision making for management of imperiled species. Forest plantations will prove more productive when tree genomes and ecological conditions are managed to promote efficient tree growth. High throughput screening is essential in biotechnology applications to crop improvement. Gene discovery is one of the most important objectives in genomics research in agricultural biotechnology. The recent availability of enormous DNA sequence information coupled with the latest developments in engineering applications to biological instrumentation (lasers, robotics), have created a golden opportunity to address limitations of both high throughput screening and gene discovery programs. This opportunity has further come to light with the development of DNA chip or DNA microarray technology. This state of the art technology is a powerful and revolutionary analytical method enabling us to study global gene expression of tens of thousands of genes simultaneously rather than the one gene at a time approach. Learning about biotechnology will give high school students the opportunity to better understand and critically evaluate the issues that are arising as a result of these new agricultural, medical, and environmental technologies. Equally important is the preparation of a future workforce. As of 2003, there were 1,473 biotechnology companies creating agricultural, medical, environmental, and computational products in the U.S., employing 198,000 people (Biotechnology Industry Organization, 2005). The industry reached a market capitalization of $311 billion by spring of 2005. In addition, biotechnology is one of the most research intensive industries in the world, spending $17.9 billion on research and development in 2003. The demands of our changing economy and workplace require a workforce with a deeper understanding of biotechnology and scientific research.

2. Scope of the Program

- Multistate Research
- In-State Extension
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Funding will remain constant or increase. Bioinformatics, genomics, and biotechnology approaches can be implemented broadly across disciplines such as plants, animals, microbes, the environment, and human health. Important to the future application of these approaches and knowledge is a basic understanding of the technologies, benefits, and risks. High school students in Virginia and across the country will continue to take a year-long biology course. End-of-course testing will continue to include assessments of student knowledge about genetics and scientific inquiry.

2. Ultimate goal(s) of this Program

To discover, develop, and disseminate knowledge promoting the sustainability of living natural resources and agricultural systems, particularly as impacted by bioinformatics, genomics and biotechnological approaches. To expand understanding of the applications and implications of genetics, genomics, and biotechnology.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	1.0	0.0	1.1	1.0
2011	1.0	0.0	1.1	1.0
2012	1.0	0.0	1.1	1.0
2013	1.0	0.0	1.1	1.0
2014	1.0	0.0	1.1	1.0

V(F). Planned Program (Activity)

1. Activity for the Program

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. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Other 1 (Research projects and findings) • Other 2 (Research partnerships)	• Other 1 (research findings dissemination)

3. Description of targeted audience

Research scientists, high school teachers

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	200	1500	50	0
2011	225	1500	50	0
2012	250	1500	50	0
2013	275	1500	50	0
2014	300	1500	50	0

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

Expected Patent Applications

2010 :2 **2011 :**2 **2012 :** 2 **2013 :**2 **2014 :**2

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	50	0	50
2011	50	0	50
2012	50	0	50
2013	50	0	50
2014	50	0	50

V(H). State Defined Outputs

1. Output Target

- Number of research projects in program areas

2010 20 **2011** 25 **2012** :30 **2013** 35 **2014** 35

- Number of peer reviewed research papers published

2010 45 **2011** 50 **2012** :55 **2013** 60 **2014** 65

- Number of presentations

2010 50 **2011** 55 **2012** :60 **2013** 65 **2014** 70

- Number of non-peer-reviewed publications

2010 25 **2011** 30 **2012** :35 **2013** 40 **2014** 45

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

Advancements in scientific knowledge as demonstrated by research articles published in peer-reviewed journals.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :50	**2011 :** 50	**2012 :** 50	**2013** :50	**2014 :**50

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 206 - Basic Plant Biology
- 212 - Pathogens and Nematodes Affecting Plants
- 722 - Zoonotic Diseases and Parasites Affecting Humans

Outcome #2

1. Outcome Target

Advances in understanding of biotechnology and genomics by high school students as demonstrated by partnerships with high schools.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :6	**2011 :** 6	**2012 :** 6	**2013** :6	**2014 :**6

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms

Outcome #3

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :50	**2011 :** 50	**2012 :** 50	**2013** :50	**2014 :**50

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 206 - Basic Plant Biology

- 212 - Pathogens and Nematodes Affecting Plants
- 722 - Zoonotic Diseases and Parasites Affecting Humans

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Public Policy changes
- Government Regulations
- Economy
- Competing Public priorities
- Appropriations changes
- Natural Disasters (drought,weather extremes,etc.)

Description

Any of these external factors may affect outputs and outcomes of research programs in place at Virginia Tech. For example, drought can impact ability to collect field data. The economy, public policy, government regulations and program priorities all impact amount of research funding available.

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

1. Evaluation Studies Planned

- After Only (post program)
- Other (research)

Description

Research results will be evaluated by peer-reviewed journals prior to publication.

2. Data Collection Methods

- Other (Research)

Description

Compile the number of peer-reviewed publications and presentations resulting from research projects.

V(A). Planned Program (Summary)

Program #5

1. Name of the Planned Program

Economics and Commerce

2. Brief summary about Planned Program

The well-being of Virginians is dependent on both their individual and family economic status. In addition, for Virginia farmers and small business owners, the impacts of changing markets and environmental issues affect not only their business but also their family well-being.

For individuals and families, identify theft, bankruptcy, and greater personal responsibility for retirement are real problems. Identity theft complaints represented 37% of the 686,683 Federal Trade Commission complaints filed in 2005. Over 41,000 Chapter 7 bankruptcy petitions, were filed in 2004. Individuals have greater responsibility for their own retirement planning, as companies do away with defined benefit pension plans and institute 401(k), 403(b), and 457 plans. Baby boomers are retiring in record numbers. The Virginia state legislature recognized the need for financial education with the passage of Senate Bill 950 in 2005 that requires financial literacy and economic concepts be integrated into the Standards of Learning in grades K - 12.

Virginia agriculture and small business are undergoing dramatic change as business integration accelerates, traditional markets disappear, and trade, commodity, and environmental policies provide both new constraints on, and opportunities for business profits. Virginia businesses find themselves forced to manage new sources of business risk, and find that known risks are more volatile than ever before.

On the agricultural side, abundant commodity supplies and intense competition with other U.S. regions and international competitors have forced prices to unprofitable levels and increased farm business risk. Passage of the 2002 Farm Bill created its own set of constraints and opportunities by supporting farmers, but making them more dependent on commodity payments for financial survival. Increasing environmental concerns force farm operators to consider the effects of farming practices beyond their farm gate. Both large and small farmers face economic challenges that affect their businesses. Many small farmers are exploring high value, local, or niche markets for their products, while large farmers are leveraging assets, adopting technology, and exploring alternative end use markets. Cooperatives and other institutions are playing an increasing role in management decision making. Agricultural producers are attempting to capture a larger share of the consumer food dollar by forming marketing cooperatives, while vertically integrated business arrangements have become ever more widespread in livestock and grain production.

For small businesses, rapidly changing consumer demands, high costs of labor and health care, and increased imports of lower costs goods all contribute increased business risk and a cost price squeeze, resulting in reduced profitability. Small businesses are looking for products and services to fill niches that both meet consumers' needs and provide for a profitable business plan.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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	5%	5%	10%	0%
602	Business Management, Finance, and Taxation	10%	10%	10%	0%
603	Market Economics	5%	5%	10%	0%
604	Marketing and Distribution Practices	10%	10%	10%	0%
605	Natural Resource and Environmental Economics	5%	5%	10%	0%
607	Consumer Economics	18%	15%	10%	0%
608	Community Resource Planning and Development	10%	0%	10%	0%
610	Domestic Policy Analysis	15%	0%	10%	0%
801	Individual and Family Resource Management	17%	50%	10%	0%
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%	0%	10%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Improved financial security of individuals, families, agricultural, and small businesses is critical for the long-term economic health of Virginia. Individuals and families, who have set financial goals and understand the importance of planning for future events ease the burden on government assistance. Understanding business, financial, and risk management are the underlying principles for obtaining long-term financial security for individual entrepreneurs. Profitable and successful farms and small businesses are the cornerstone of robust families and the communities in which they live.

2. Scope of the Program

- Multistate Research
- Integrated Research and Extension
- Multistate Extension
- In-State Research
- In-State Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Lack of, management skills and knowledge of basic economic and financial management and analysis skills, are obstacles to individual and family economic well-being. Farmers and small business owners are struggling to remain profitable. A stated priority is to research issues and opportunities available to these business people and then train and assist them to gain skills to adapt to these critical issues. The combination of research and Extension activities will enable Virginia's farms, small businesses, and individuals and families to have financial security.

2. Ultimate goal(s) of this Program

To improve the financial and economic well-being of Virginians and Virginia farm and business managers through targeted research and educational programs.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	28.0	1.5	17.9	0.0
2011	27.0	1.5	17.9	0.0
2012	27.0	1.5	17.9	0.0
2013	27.0	1.5	17.9	0.0
2014	27.0	1.5	17.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Research and educational programs will be conducted to support the needs of Virginians and Virginia farm and small business managers. Research in personal finance issues and evaluation of programming will be conducted to improve financial literacy. Financial literacy curriculum will be developed using proven delivery methods. 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. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• One-on-One Intervention • Demonstrations • Group Discussion • Education Class • Workshop	• Public Service Announcement • Newsletters • Web sites

3. Description of targeted 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(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	40000	400000	20000	15000
2011	40000	400000	20000	15000
2012	40000	400000	20000	15000
2013	40000	400000	20000	15000
2014	40000	400000	20000	15000

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	10	5	15
2011	10	5	15
2012	10	5	15
2013	10	5	15
2014	10	5	15

V(H). State Defined Outputs

1. Output Target

- Number of education programs planned in public policy education

  2010 :20 **2011 :**20 **2012 :**20 **2013 :**20 **2014 :**20

- Number of farmers creating succession/transition plans for their farm business

  2010 :50 **2011 :**50 **2012 :**50 **2013 :**50 **2014 :**50

- 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.

  2010 :3000 **2011 :**3000 **2012 :**3000 **2013 :**3000 **2014 :**3000

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

2010 50 **2011** 50 **2012** 50 **2013** 50 **2014** 50

- 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.

2010 15 **2011** 15 **2012** 20 **2013** 20 **2014** 20

- 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.

2010 3000 **2011** 3000 **2012** 3000 **2013** 3000 **2014** 3000

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

2010 500 **2011** 500 **2012** 500 **2013** 500 **2014** 500

- Number of education programs conducted in farm and agribusiness management and risk management

2010 20 **2011** 20 **2012** 20 **2013** 20 **2014** 20

- Number of education programs conducted in marketing and direct marketing

2010 20 **2011** 20 **2012** 20 **2013** 20 **2014** 20

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

Increase the number of land owners who implement transition plans.

2. Outcome Type : Change in Action Outcome Measure

2010 :60	**2011 :** 60	**2012 :** 60	**2013** :60	**2014 :**60

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 605 - Natural Resource and Environmental Economics
- 610 - Domestic Policy Analysis
- 801 - Individual and Family Resource Management

Outcome #2

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :60	**2011 :** 60	**2012 :** 60	**2013** :60	**2014 :**60

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 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 Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :80	**2011 :** 80	**2012 :** 80	**2013** :80	**2014 :**80

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 603 - Market Economics
- 607 - Consumer Economics
- 801 - Individual and Family Resource Management
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #4

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 40 **2011 :** 40 **2012 :** 40 **2013** 40 **2014 :** 40

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 608 - Community Resource Planning and Development

Outcome #5

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 20 **2011 :** 20 **2012 :** 20 **2013** 20 **2014 :** 20

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 608 - Community Resource Planning and Development

Outcome #6

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :500	**2011 :** 500	**2012 :** 500	**2013** :500	**2014 :**500

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #7

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :3000	**2011 :** 3000	**2012 :** 3000	**2013** :3000	**2014 :**3000

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension

4. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 801 - Individual and Family Resource Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

All items listed above directly affect agriculture, families, communities, and all forms of businesses (i.e., droughts, floods, and changes in government policy can lead to dramatic shifts in the structure of an industry). These changes may be short-lived (flood) or may cause structural changes to an industry (e.g., loss of peanut and tobacco programs).

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

1. Evaluation Studies Planned

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

Description

Educational programs will be formally evaluated with a post program questionaire. As funds permit additional formal evaluations will be conducted to demonstrate the degree of adoption of behavior change.

2. Data Collection Methods

- Sampling
- On-Site
- Mail
- Observation
- Tests

Description

V(A). Planned Program (Summary)

Program #6

1. Name of the Planned Program

Families, Youth, and Communities

2. Brief summary about Planned Program

The three VCE program areas of 4-H, FCS, and Community Viability comprise the Families, Youth, and Communities planned program. These three program areas provide the infrastructure which drivesVCE's ability to address teh family as a system. Strong families are the foundation of strong comunities. Thus, the essential ingredients are combined to leverage capacity to affect and lead condition change. The program is designed to help youth and adults in Virginia confront the multitude of issues that affect their well-being and create a greater capacity for self, family, and community awareness, action, and interaction. Through interaction and increased capacity, a greater sense of community interdependence is realized. Ultimately through these accomplishments family, youth, and communities will create lasting changes and improve their lives.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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	20%	20%	0%	0%
802	Human Development and Family Well-Being	30%	30%	0%	0%
806	Youth Development	50%	50%	0%	0%
	Total	100%	100%	0%	0%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

All children, families, and communities can grow and develop to realize their full potential. These groups are confronted with a multitude of issues that affect their well-being such as child and school-aged care, at-risk youth behaviors, strained family relationships, aging populations, poverty, and community leadership. Concerns about how Virginia's youth, families, and communities are functioning, adjusting, and adapting to these issues have economic impacts for the Commonwealth and are backed by VCE's community situation analysis results. Further, Extension programs for children, youth, adults, and families have shown positive influences on the quality of community life. It is VCE's, VT's, and VSU's responsibility to continue to apply research, educate, and provide outreach services to insure best practices that create healthy families, youth, and communities.

2. Scope of the Program

- Multistate Extension
- In-State Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

People have a desire and have made a commitment to improve their lives and their communities; people need a knowledge base, appropriate tools, adequate resources, support, and ongoing evaluation and feedback to improve their lives and their communities; and people need connection with others, opportunities to practice new skills and positive interactions with role models and mentors in a nurturing environment to contribute to community sustainability. Educational programs must be under girded by a solid research base. Finally, through engaging volunteers and program stakeholders, programs can serve as catalysts for change.

2. Ultimate goal(s) of this Program

To improve youth, family, and community functioning through the use of collaborative, integrative, educational programming and research in the areas of parenting, child development, child care, youth development, and community development.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	104.0	3.5	0.0	0.0
2011	103.0	3.5	0.0	0.0
2012	103.0	3.5	0.0	0.0
2013	103.0	3.5	0.0	0.0
2014	103.0	4.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities include entrepreneurial education, asset-based economic development, leadership, civic engagement, 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, home school education, child care provider education, parent education, online education and distance learning, and specialized trainings and workshops to qualify instructors and to educate trainers.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Other 2 (service learning projects) • Other 1 (Camping, ed. program & events) • Workshop • Group Discussion • Education Class	• Other 2 (materials and resources) • Newsletters • Public Service Announcement • Other 1 (e-mail, phone, newspaper) • Web sites

3. Description of targeted audience

Youth between the ages of 5 -19, parents, grandparents, 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(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	227900	245200	453800	488200
2011	227900	245200	453800	488200
2012	227900	245200	453800	488200
2013	227900	245200	453800	488200
2014	227900	245200	453800	488200

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	5	5
2011	0	5	5
2012	0	5	5
2013	0	5	5
2014	0	5	5

V(H). State Defined Outputs

1. Output Target

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

  2010 :3500 **2011 :**3550 **2012 :**3550 **2013 :**3600 **2014 :**3700

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

  2010 :55 **2011 :**60 **2012 :**60 **2013 :**65 **2014 :**65

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

  2010 :140000 **2011 :**145000 **2012 :**145000 **2013 :**150000 **2014 :**150000

- Number of citizens receiving entrepreneurial education.

  2010 :900 **2011 :**950 **2012 :**950 **2013 :**1000 **2014 :**1000

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

2010	5000	2011	5500	2012	5500	2013	6000	2014	6000

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

2010	2200	2011	2700	2012	2700	2013	3200	2014	3200

- Number of programs offered regarding community food systems.

2010	10	2011	12	2012	12	2013	12	2014	12

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

2010	3	2011	4	2012	4	2013	5	2014	5

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

2010	10	2011	12	2012	12	2013	12	2014	12

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :200	**2011 :** 300	**2012 :** 300	**2013 :**400	**2014 :**400

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #2

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :350	**2011 :** 400	**2012 :** 400	**2013 :**450	**2014 :**450

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #3

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :1000	**2011 :** 1300	**2012 :** 1300	**2013 :**1600	**2014 :**1600

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #4

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :400	**2011 :** 500	**2012 :** 500	**2013 :**600	**2014 :**600

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #5

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 14000	**2011 :** 15000	**2012 :** 15000	**2013 :** 15000	**2014 :** 15000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #6

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 4000	**2011 :** 5000	**2012 :** 5000	**2013 :** 6000	**2014 :** 6000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #7

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 3000	**2011 :** 4000	**2012 :** 4000	**2013 :** 5000	**2014 :** 5000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #8

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 34000	**2011 :** 35000	**2012 :** 35000	**2013 :** 36000	**2014 :** 36000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #9

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 1000	**2011 :** 1200	**2012 :** 1200	**2013 :** 1400	**2014 :** 1400

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #10

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 700	**2011 :** 700	**2012 :** 800	**2013 :** 800	**2014 :** 800

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #11

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 2000	**2011 :** 2200	**2012 :** 2200	**2013 :** 2400	**2014 :** 2400

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #12

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 25000	**2011 :** 27000	**2012 :** 27000	**2013 :** 29000	**2014 :** 29000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #13

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 70	**2011 :** 70	**2012 :** 70	**2013 :** 70	**2014 :** 70

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #14

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 60	**2011 :** 60	**2012 :** 60	**2013 :** 60	**2014 :** 60

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

Outcome #15

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 40	**2011 :** 40	**2012 :** 40	**2013 :** 40	**2014 :** 40

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

Outcome #16

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :25	**2011 :** 25	**2012 :** 25	**2013** :25	**2014 :**25

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

Outcome #17

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :60	**2011 :** 60	**2012 :** 60	**2013** :60	**2014 :**60

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

Outcome #18

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :40	**2011 :** 40	**2012 :** 40	**2013** :40	**2014 :**40

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

Outcome #19

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 40	**2011 :** 40	**2012 :** 40	**2013** 40	**2014 :** 40

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

Outcome #20

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 60	**2011 :** 60	**2012 :** 60	**2013** 60	**2014 :** 60

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

Outcome #21

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 60	**2011 :** 60	**2012 :** 60	**2013** 60	**2014 :** 60

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

Outcome #22

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 3	**2011 :** 3	**2012 :** 3	**2013** 3	**2014 :** 3

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

Outcome #23

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 60 **2011 :** 60 **2012 :** 60 **2013 :** 60 **2014 :** 60

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Public priorities
- Appropriations changes
- Government Regulations
- Populations changes (immigration,new cultural groupings,etc.)
- Public Policy changes
- Economy

Description

All items listed above directly affect agriculture, families, communities, and all forms of businesses, i.e., droughts, floods, poor economy, and changes in government policy can lead to dramatic shifts in the structure of an industry, and hinder the ability of families to participate in educational programming efforts.

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

1. Evaluation Studies Planned

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

Description

Evaluation of a broad array of programs, such as those represented by 4-H, Community Viability, and Family and Consumer Sciences require a multitude of varying procedures. In general, Extension educators are responsible for determining the evaluation procedure that best fits their program, time, and money resources. For example, the Family and Consumer Sciences agents are preparing uniform evaluation surveys for parenting education programs and early childhood professional development trainings.

2. Data Collection Methods

- Observation
- Sampling
- Mail
- Case Study
- Other (Electronic surveys, focus groups)
- On-Site
- Structured
- Portfolio Reviews

Description

Pre and post test surveys of program participants, case studies of program participants, post only and retrospective post surveys will be conducted with program participants and the parents of some program participants.Focus groups will be conducted with program participants. Follow-up surveys will also be conducted with program participants.Partners will also be surveyed regarding some of the process and outcome-related measures.

V(A). Planned Program (Summary)

Program #7

1. Name of the Planned Program

Food, Nutrition, and Health

2. Brief summary about Planned Program

Recent data show that 17% of the nation's youth and 66% of adults are overweight, with Virginia demonstrating the fastest growth rate of obesity in the entire country. Overweight and obesity increase the risk for several health conditions as well as chronic diseases, such as heart disease and diabetes. In Virginia alone, these two diseases account for over $4 billion in health care costs. Furthermore, it has been reported that families of low socioeconomic status suffer disproportionately from poor health. They experience a higher incidence of high blood pressure, cholesterol, stroke, obesity, and diabetes. Obesity contributes to chronic disease in children including diabetes, asthma, sleep apnea and gall bladder disease.In Virginia, there are over 240,000 people who participate in the food stamp program with the potential for many more to receive this assistance.Presently, there are two nutrition education programs that address impoverished citizens:The Expanded Food and Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Program (SNAP-ED), formerly food stamp education program.Foodborne illness is another health concern facing Virginia citizens and food processors.

Foodborne illnesses accounts for an estimated 76 million illnesses each year in the United States with potentially deadly consequences (particularly for immuno-compromised individuals and the elderly). Further, with over 500 food processing firms headquartered in Virginia, an eight billion dollar industry, it is critical for companies to prevent food production and food processing deficiencies to be competitive and ensure safe products for consumers.

Effective research initiatives and educational strategies are warranted to reduce the rate of childhood overweight, prevent chronic disease, and promote safe food handling practices (both at home and in food processing facilities). Virginia Cooperative Extension aims to develop, implement, and evaluate integrated research-based community programs to improve dietary habits, increase physical activity and promote positive body image. Research into the social contributions of improved health status will also be conducted, including developing a more complete understanding of obesity from its root causes to its association with disease. Extension and research initiatives will also take place to improve safe food handling practices in restaurants and food processing facilities (based on current Hazard Analysis Critical Control Point -HACCPstandards), and to investigate strategies to prevent microbial contamination of the food supply as well as methods to remove contamination when it occurs. Delivery methods will be driven by local needs and socio-demographic characteristics of respective communities, including: classes, workshops, trainings, one-on-one interventions, demonstrations, PSA's, newsletters, and websites. Future efforts will build on existing collaborations and programs pertaining to childhood and adult nutrition, health, fitness and overall wellness, chronic disease prevention, and food safety with outcomes reflecting the goals and objectives of these programs. Evaluation studies include a wide range of methods, depending on local needs and resources.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	10%	10%	10%	10%
502	New and Improved Food Products	10%	10%	10%	10%
702	Requirements and Function of Nutrients and Other Food Components	20%	20%	20%	20%
703	Nutrition Education and Behavior	20%	20%	20%	20%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.	15%	15%	15%	15%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	15%	15%	15%	15%
724	Healthy Lifestyle	10%	10%	10%	10%
	Total	100%	100%	100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Childhood Nutrition and Fitness - Recent data show that 17% of the nation's youth are overweight. Overweight is a multi-factorial condition attributed to an energy imbalance, created by consuming too many calories through food and beverages and/or not using too many calories (or being active enough). Numerous factors contribute to this energy balance, including consuming large portion sizes, eating out frequently at fast food restaurants, making poor dietary choices such as eating few fruits, vegetables, and whole grains and consuming high amounts of fat and sugar, and engaging in excessive sedentary activity such as television viewing. Childhood overweight has been linked to high blood pressure, high cholesterol, type 2 diabetes, adulthood overweight, low perceived quality of life, and social marginalization. It is critical to foster healthy behaviors at a young age to promote lifelong health and prevent disease.

Chronic Disease Prevention - Chronic diseases such as heart disease, stroke, cancer, and diabetes are among the most prevalent, costly, and preventable of all health problems. Seven of ten deaths each year in the U.S. are attributed to chronic disease. The prolonged illness and disability associated with these diseases also decreases the quality of life for millions of Americans and in Virginia alone cardiovascular disease and diabetes account for over $4 billion in health care costs. Much of this burden is preventable, since unhealthy eating and physical inactivity are major contributors to these diseases, along with other conditions, such as high blood pressure, high cholesterol, and overweight.

Food Safety - Foodborne illness or food safety presents another major health concern among Virginian citizens. Foodborne disease is caused by ingesting contaminated foods or beverages. Many different disease-causing microbes or pathogens can contaminate foods. There are an estimated 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths each year associated with food microorganisms. From 2000 to 2003 Virginia reported 16 confirmed foodborne outbreaks per year. Long-term, chronic illness may also be attributed to foodborne contaminants, although the specific costs and impacts are

unknown. Most foodborne outbreaks are linked to improper food handling by retail outlets or consumers in their homes. Each year, food processors add approximately $8 billion to the value of agricultural food products processed in the Commonwealth. Over 500 food processing firms are headquartered and operate within the state. Virginia food producers and processors need to continuously improve their products and processes to remain competitive and maintain high safety standards. The HACCP system has been supported by the National Academy of Science, the U.S. Food and Drug Administration and USDA to prevent food production and processing deficiencies that could be potentially harmful to the consumer. HACCP helps the food processor assure final products meet all safety criteria. The intent of HACCP is to identify those points critical to food safety in the processing flow and adequately control them. It is important to train local, state, and federal food inspectors in the HACCP concept and current food safety issues.

2. Scope of the Program

- In-State Research
- Multistate Integrated Research and Extension
- Multistate Extension
- In-State Extension
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Childhood Nutrition and Fitness - Effective educational strategies to prevent childhood overweight are those that are age appropriate, address personal characteristics (food preferences, knowledge, attitudes, current behaviors), address parenting styles and family characteristics, and community, demographics, cultural, and social characteristics, include simple recommendations and messages for behavior change, embrace the whole family, create supportive and inclusive learning environments, incorporate hands-on, experiential-based activities in group settings, support positive body image, promote eating healthfully including choosing nutritious beverages, encourage physical activity, and model healthy choices by offering nutritious and healthy foods and beverages and opportunities to be active. Educational efforts will focus on prevention not treatment of childhood overweight and therefore will not be prescriptive.

Chronic Disease - Health promotion and chronic disease reduction is dependent on lifestyle practices that emphasize self-care, healthy eating, and regular physical activity. Disease prevention education must provide consumers with tools to assess their current behavior and make changes if needed. Intervention strategies such as the transtheoretical stages of change help consumers assess their risk, consider alternative behaviors, and take action. Small changes over time are more easily implemented and more likely to be continued than drastic changes in food or activity patterns. Existing curriculum appropriate for older adults can be implemented at senior centers and congregate meal sites. Partnerships joining Extension, the Virginia Department of Health, and other health care professionals can provide hands on learning in appropriate food selection and preparation practices to assist persons with diabetes in effectively managing their disease.

Food Safety - Virginia consumers and food processors need science-based information and education about efficient, safe processing, handling, and preservation of food to minimize the risk of foodborne illness. Educational programming must provide hands-on training to maximize retention of material. Food preparation and handling curriculum takes trainees through real world situations and helps them to work through problems associated with food preparation. Partnerships bewteen VCE and the Virginia Department of Health promote maximum coverage of consumers and food service employees across the state.

2. Ultimate goal(s) of this Program

To improve health as a result of better eating behaviors, increased physical activity, and fewer foodborne illinesses and outbreaks.

Childhood Nutrition and Fitness:

1. Children, youth, and adolescents will consume less fast food, sweetened beverages, and other discretionary calories, 2.

Children, youth, and adolescents will increase their intake of fruit, vegetables, whole grains, and dairy products to reach the recommended numbers of servings each day, 3. Children, youth, and adolescents will reduce sedentary behavior, 4. Children, youth, and adolescents increase physical activity, 5. Children, youth, and adolescents will improve their body image, 6. Parents, caregivers, and school faculty will encourage and model positive behaviors, and 7. Children at or above the 85th percentile body mass index for age and gender will decrease in Virginia.

Chronic Disease:

1. Adults will increase their intake of fruits, vegetables, whole grains, and dairy products to reach the recommended number of servings each day, 2. Adults increase their level of physical activity to 30 minutes of moderate exercise at least three days each week, 3. Adults participate in regular health screenings to support early diagnosis and intervention for chronic disease, 4. Older adults adopt appropriate diet and activity behaviors to increase years of independent living, and 5. Individuals with diabetes adopt food and self-care practices that lower risk of disease complications and disability.

Food Safety:

Consumer and Producer Initiative: 1. Consumers increase their knowledge of food safety practices in the home, 2. Food handlers improve food safety and handling practices in restaurants, 3. Food processors improve knowledge of HACCP practices and current safety standards for food processing, 4. Consumers have more access to locally processed, nutritious, and safe food at reasonable costs, 5. Fewer foodborne illnesses and outbreaks are reported in Virginia, and 6. Virginia reports increased sales of Virginia Processed Foods.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	38.0	2.0	32.8	3.0
2011	38.0	2.0	34.8	3.0
2012	38.0	2.0	36.8	3.0
2013	38.0	2.0	36.8	3.0
2014	38.0	2.0	36.8	3.0

V(F). Planned Program (Activity)

1. Activity for the Program

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. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Workshop • Group Discussion • Demonstrations • Other 1 (e-mail, telephone) • Education Class • One-on-One Intervention • Other 2 (health fairs, events,certificat)	• Public Service Announcement • Newsletters • Other 1 (TV, radio, newspaper) • TV Media Programs • Web sites

3. Description of targeted audience

Childhood Nutrition & Fitness: young children (2 - 5 years), school-aged children, adolescents, parents, caregivers, and school faculty of young children, youth, and adolescents and Extension educators.

Chronic Disease: 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.

Food Safety: 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(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	120000	100000	120000	5000
2011	120000	100000	120000	5000
2012	120000	100000	120000	5000
2013	120000	100000	120000	5000
2014	120000	100000	120000	5000

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	20	3	23
2011	20	3	23
2012	20	3	23
2013	20	3	23
2014	20	3	23

V(H). State Defined Outputs

1. Output Target

- 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

  2010 :1000 **2011** :1000 **2012** :1000 **2013** :1000 **2014** :1000

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

  2010 :120 **2011** :145 **2012** :175 **2013** :175 **2014** :175

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

  2010 2000 **2011** 2000 **2012** :2000 **2013** 2000 **2014** 2000

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

  2010 :57000 **2011** 58710 **2012** :58710 **2013** :60471 **2014** :60471

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

  2010 :0 **2011** 50 **2012** :50 **2013** :50 **2014** :50

- 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

  2010 :17300 **2011** :17300 **2012** :17819 **2013** :17819 **2014** :18354

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

  2010 2700 **2011** 2800 **2012** :2900 **2013** 2900 **2014** 2900

- 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

  2010 :4 **2011** :4 **2012** :4 **2013** :4 **2014** :4

- 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

  2010 :5 **2011** 5 **2012** :5 **2013** :5 **2014** :5

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

2010 4 **2011** 5 **2012** 6 **2013** 4 **2014** 4

- 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.

2010 230 **2011** 240 **2012** 250 **2013** 260 **2014** 260

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

2010 10 **2011** 10 **2012** 10 **2013** 10 **2014** 10

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

2010 6 **2011** 7 **2012** 7 **2013** 8 **2014** 8

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

2010 6 **2011** 7 **2012** 8 **2013** 8 **2014** 8

- 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.

2010 100 **2011** 100 **2012** 100 **2013** 100 **2014** 100

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 1000	**2011 :** 1120	**2012 :** 1120	**2013 :** 1220	**2014 :** 1220

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 : 150	**2011 :** 150	**2012 :** 175	**2013 :** 200	**2014 :** 200

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 : 6550	**2011 :** 7925	**2012 :** 9525	**2013 :** 9650	**2014 :** 9650

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 724 - Healthy Lifestyle

Outcome #4

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :90000	**2011 :** 90000	**2012 :** 92700	**2013** :95481	**2014 :**101296

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

Outcome #5

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :4	**2011 :** 4	**2012 :** 4	**2013** :4	**2014 :**4

3. Associated Institute Type(s)

- 1862 Research
- 1890 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #6

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :4	**2011 :** 4	**2012 :** 4	**2013** :4	**2014 :**4

3. Associated Institute Type(s)

- 1862 Research

4. Associated Knowledge Area(s)

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

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

If food production facilities and/or agriculture is damaged or disturbed by a natural disaster, less food is available to be processed and consumed. This not only has an impact on local economies and access to food, but how Extension educators respond to local needs. If a natural disaster took place in Virginia, Extension educators in affected localities would likely redirect the attention and programming to assist with disaster relief for safe food/water and consumer issues. Other factors that may influence outcomes include economic changes (eg. employment rates, disposable income and purchasing power of consumers for food, food security, purchasing patterns of consumers as they relate to Virginia foods), public policy changes (eg. taxation of "junk foods," restrictions in food advertising toward children, changes in nutrition integrity and physical education guidelines for schools, HACCP guidelines, new regulations imposed on raw food items sold on the Internet markets), and population changes (eg. immigration, new cultural groups, new food processing needs). If economic, demographic, social, and legal characteristics change at the local and state levels, Extension educators need to respond and tailor educational programs to these changes to be competitive with other public priorities and programmatic challenges. There is also "saturation," which may occur related to overweight and obesity given the amount of current press and attention on the topic. Finally, if appropriations decline for FCS programs, it is possible that there would be fewer FCS Extension agents influencing what could be accomplished in programs for general and specific audiences.

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

1. Evaluation Studies Planned

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

Description

The type of evaluation study will depend on the program and activity. For example, the Healthy Weights for Healthy Kids program will be evaluated through before-after studies and after only studies - whereas Dining with Diabetes will be evaluated using before-after, time series, and possibly case studies.

2. Data Collection Methods

- Mail
- Observation
- Sampling
- Telephone
- Other (pedometers, online surveys)
- Tests
- On-Site
- Journals

Description

The type of data collection method depends on the program and activity. For most food, nutrition, and health programs, data are gathered through on-site surveys with participants. Follow-up studies with a postcard or email help determine behavior changes that continued following the class .

V(A). Planned Program (Summary)

Program #8

1. Name of the Planned Program

Natural Resources and Environment

2. Brief summary about Planned Program

Virginia relies heavily on its rich natural resource base for both economic and recreational benefits. Virginia's soil, water, forest, and wildlife resources support manufacturing and recreational industries valued at over $25 billion annually. This planned program aims to improve the management of the state's soil and water resources, 15.4 million acres of forest land, 680,000 acres of freshwater lakes, and 5,000 miles of shoreline. The bulk of Virginia's natural resources are in private ownership. Therefore, in the absence of strict regulations, VCE is reliant upon financial incentives and education/technical assistance to help private owners make wise decisions on the management and use of natural resources. For example, though the state has ownership rights to the state's fish and wildlife populations, the habitat is owned and managed mostly by private individuals. Without the proper knowledge, private landowners may not make the best decisions on managing wildlife habitat. VCE is the only state agency charged solely with providing educational services to owners of Virginia's natural resources. While other agencies also provide some education, they are regulatory agencies and do not often gain the trust of the landowner which Extension provides. Additionally, personnel with other agencies are excellent partners in education, but often lack the training and resources to be strong educators. VCE can also assist state regulatory agencies develop technically-sound regulations and best management practices for protecting soil and water resources.For example, personnel from of the Virginia Department of Transportation require training in the environmentally sound management of the sizeable acreage under their control.Wastewater, water, and solid waste utilities must make sound environmental and economic decisions on the treatment and utilization of solid and liquid wastes that they process and generate.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Natural Resources and Environment is a very broad planned program, with many inherent issues. For example, Virginia's forests provide a host of multiple benefits, some monetary like the sale of stumpage, and some intrinsic, such as clean water and an aesthetic environment. Yet, there are problems in the forest. Insects, disease, and fire all take their toll. Additionally, forests are being invaded by a host of exotic plant species, like the tree-of-heaven, Japanese honeysuckle, oriental bittersweet, and autumn-olive. Forest landowners need the latest research to best manage their lands, and Extension programs provide just that. In many cases landowners need basic information and assistance to prepare management plans, and locating sources of governmental financial assistance. Many farmers and forest owners are concerned about protecting their lands in the long term, and want unbiased information about conservation easements and other protection tools. Many activities on the land contribute to nonpoint source pollution of the state's waters, and Extension can assist with educational programs for a wide variety of issues and audiences. For example, land managers, waste applicators, land reclamation professionals, and farmers need

assistance with nutrient management plans to guide them in fertilizer applications, and in waste application treatments and utilization. In far southwest Virginia landowners and coal mine operators need assistance in correctly applying reclamation practices to insure both prudent bond release and a favorable environment after the reclamation process is completed. Public utilities are tasked with processing solid and liquid wastes and must understand proper land management practices to prevent impairment of soil and water resources, and state regulatory personnel require technical guidance to develop sound environmental regulation.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension
- In-State Extension
- Multistate Extension
- Multistate Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Many assumptions are implicit in this planned program. For example, most of the natural resources in Virginia are privately owned, and this will probably continue. While Virginia has some environmental regulations, it is not known as a heavily regulated state. Governmental financial incentives and education/technical assistance guide farmers and landowners in land management decisions. Extension is in the strongest position to provide this education. It is assumed that through education, farmers and landowners will make prudent decisions, and adopt new technologies. It is also assumed that internet use in the home will increase in the future, as more of our educational materials are web-based. Furthermore, it is assumed that publicly owned utility operators and state regulatory agencies will make wise decisions that affect the public through increased educational efforts.

2. Ultimate goal(s) of this Program

To provide for improved environmental quality, while also providing for economic vitality of families and communities.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	25.0	1.3	36.4	1.0
2011	25.0	1.3	36.4	1.0
2012	25.0	1.3	36.4	1.0
2013	25.0	1.3	36.4	1.0
2014	25.0	2.0	36.4	1.0

V(F). Planned Program (Activity)

1. Activity for the Program

Primary outputs from 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, web sites, discussion boards.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Workshop • Group Discussion • Other 2 (Satellite delivery) • Other 1 (Web-based applications) • Demonstrations • One-on-One Intervention • Education Class	• TV Media Programs • Newsletters • Web sites

3. Description of targeted 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(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	60000	191800	30000	55300
2011	60000	191800	30000	55300
2012	60000	191800	30000	55300
2013	60000	191800	30000	55300
2014	60000	191800	30000	55300

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	15	7	22
2011	15	7	22
2012	15	7	22
2013	15	7	22
2014	15	7	22

V(H). State Defined Outputs

1. Output Target

- Number of educational programs offered

2010	2011	2012	2013	2014
900	900	900	900	900

- Number of educational materials and curriculas developed

2010	2011	2012	2013	2014
40	40	40	40	40

- Number of applied research projects

2010	2011	2012	2013	2014
70	70	70	70	70

- Acres of land exposed to educational programming efforts.

2010	2011	2012	2013	2014
150000	150000	150000	150000	150000

- Identifiable impacts reported by agents/specialists

2010	2011	2012	2013	2014
40	40	40	50	50

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :250	**2011 :** 250	**2012 :** 250	**2013** :250	**2014 :**250

3. Associated Institute Type(s)

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

4. Associated Knowledge Area(s)

- 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
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Target

Improved natural resource industries that contribute to community viability.

2. Outcome Type : Change in Action Outcome Measure

2010 :10	**2011 :** 10	**2012 :** 10	**2013** :10	**2014 :**10

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry

Outcome #3

1. Outcome Target

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

2. Outcome Type : Change in Condition Outcome Measure

2010 :50000	**2011 :** 50000	**2012 :** 50000	**2013** :50000	**2014 :**50000

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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 Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :800	**2011 :** 900	**2012 :** 1000	**2013** :1300	**2014 :**1400

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

Outcome #5

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :25	**2011 :** 25	**2012 :** 25	**2013** :25	**2014 :**25

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

Outcome #6

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
10000	10000	10000	10000	10000

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 133 - Pollution Prevention and Mitigation

Outcome #7

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
100	100	100	100	100

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #8

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
5000	5000	5000	5000	5000

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

Outcome #9

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 : 500	**2011 :** 500	**2012 :** 500	**2013 :** 500	**2014 :** 500

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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 Target

Increased public awareness of biodiversity and ecosystem services.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 100	**2011 :** 100	**2012 :** 100	**2013 :** 100	**2014 :** 100

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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

Outcome #11

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :1000 **2011 :** 100 **2012 :** 100 **2013 :**100 **2014 :**100

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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

Outcome #12

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :250 **2011 :** 250 **2012 :** 250 **2013 :**250 **2014 :**250

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 131 - Alternative Uses of Land
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #13

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 : 300	**2011 :** 300	**2012 :** 300	**2013 :** 300	**2014 :** 300

3. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 131 - Alternative Uses of Land
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #14

1. Outcome Target

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

2. Outcome Type : Change in Condition Outcome Measure

2010 : 10000	**2011 :** 10000	**2012 :** 10000	**2013 :** 10000	**2014 :** 10000

3. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 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(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Many external factors affect both the outcomes and the ability to support educational programs behind the outcomes. Natural disasters can not only siphon off funds, but create new issues related to natural resources and the environment. For example, hurricane blowdown can flood the market with low cost wood, and create fuel buildup and insect and disease problems. Floods and droughts have unique problems, and both greatly affect natural resources issues. Certainly, funding for Extension programs, particularly state funds control the ability to develop and deliver new programs. Finally, new laws and regulations may both create new issues and opportunities, and also cause other issues to fade away. In most cases new regulations result in a need for more education for those affected by the regulations.

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

1. Evaluation Studies Planned

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

Description

Evaluation of a broad array of programs, such as those represented by the Natural Resources and Environment planned program, require a multitude of varying procedures. In general, Extension educators are responsible for determining their evaluation procedure that best fits their program, time, and fiscal resources. For example, in 2006 and 2007 the Virginia Forest Landowner Education Program conducted a complete evaluation covering the past eight years of the program. An extensive survey of program participants is planned, and research will compare adoption rates with a test population that did not participate in the program. Adoption models will be developed for a host of forestry practices associated with differing shortcourses.

2. Data Collection Methods

- Whole population
- Structured
- Case Study
- Observation
- Unstructured
- Portfolio Reviews
- Tests
- Journals
- Mail
- Sampling
- Telephone
- On-Site

Description

V(A). Planned Program (Summary)

Program #9

1. Name of the Planned Program

Pest Management

2. Brief summary about Planned Program

Since its inception Virginia Cooperative Extension (VCE) has conducted a range of programs addressing human health, environmental, and economic issues related to the management of pest populations through a wide variety of science based technologies. Citizens demand safe, pest and disease free homes, schools, recreational areas, and a safe and affordable food supply and a wholesome environment with minimal risks.

Infestations of insects, diseases, weeds, and nematodes result in significant crop and commodity losses every year. Growers, foresters, nurserymen, homeowners, and commercial applicators apply large amounts of pesticides to control these pests. Practices such as spraying broad-spectrum pesticides on a frequent or calendar schedule can threaten farm worker health, and affect water quality and the integrity of ecosystems. Management practices used for pests of structures, schools, and other public settings also constitute a major health concern. Virginia's pest management program strives to address this wide variety of pest problems with programs that reduce commodity losses to pests and the reliance on chemical pest controls.

Citizens use pesticides frequently as the method of choice for managing pests due to cost, effectiveness, availability, and convenience. Pesticides have contributed impressively to present day agricultural productivity but have also triggered issues and concerns such as pest resistance, water contamination, and public exposure. The appropriate and safe use of pesticides is a vital part of pest management education.

Pesticide safety education in Virginia includes multidisciplinary training and certification of pesticide applicators to enable them to comply with state and federal pesticide laws and regulations. VCE conducts statewide educational programs to protect the environment and public health from improper pesticide use through applicator and public education. The primary target audience includes certified and non-certified pesticide applicators of all kinds, farm workers, and the general public. Most of the program activity involves training support for approximately 21,000 pesticide applicators who seek training to comply with federal and state pesticide laws.

Protection of livestock, poultry, and plants must include preventative measures to decrease the risk of non-invasive and invasive risks and tracking measures for implementation in the event of a threat. This program includes research and educational approaches to decrease risk and increase containment opportunities for implementation in livestock and poultry production systems and crops in the event of biological threats or infectious disease outbreaks. Biosecurity measures related to food and food sources are based on threats to food production practices, food supply, and food marketing. VCE is positioned to fill these educational needs and is the primary pest management educator through the efforts of its agents and specialists. This program reaches every Virginia locality through organized educational programs, demonstrations, consultations, publications, audio/visual media, and Internet resources.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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%	0%	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%	0%	100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Infestations of insects, diseases, weeds, and nematodes result in significant crop and commodity losses every year. Pesticide misuse can have a significant impact on successful pest control, public safety, and the environment. Pest management and pesticide safety education are essential and viable solutions to addressing these issues. Education on integrated pest management (IPM) and pesticide safety saves thousands of dollars in resources and fines for both government and the public by reducing the number of potential violations due to ignorance of the law and promotes the best management practices key to compliance and effective pest management.

A significant number of Virginia clientele have incorporated IPM practices into annual routines. However, there are still many pests and crops for which specific strategies have not been developed, and many existing strategies not fully adopted. In soybeans, the onset of new invasive species (Asian soybean rust, soybean aphid) has increased grower awareness of the importance of pest alerts and field monitoring. There is great potential for improvements in management practices. Pesticide applicators apply fewer pesticides, with more care and with a wider awareness for safety. Many potentially harmful pesticides are replaced with alternatives, both chemical and non-chemical.

Pesticide use has been the focus of much public debate and controversy. The public's perception of pesticides changed American agriculture and daily lives. Complex environmental, health and safety regulations are in place, however citizens are less likely to be impacted by hazardous pesticides in food, water, environment, and the workplace. Excessive and complex regulations make it harder for growers and businesses to compete in a world market and to remain profitable. Sound science and public education are needed to allow society to function in a balanced, productive, and healthy manner.

From the plant perspective of invasive species, the ornamental industry (nursery and landscape) sells and plants hundreds of non-native invasive species (NIS) for landscape use. A small percentage of these species are invasive with environmental impacts that range from minor to major. The impact is species and region dependent. Some invasive NIS cause significant environmental damage by reducing biodiversity, and some become problematic agricultural weeds. Both can result in costly control measures. Thus, the ornamental horticultural industry and gardening public need to be educated on the fundamentals of invasive NIS and have access to a data base which shows which NIS are invasive, regions in which plants are most likely to be invasive, and species which can be used as alternatives. Stakeholders are nursery/landscape personnel, gardening public, natural area mangers, environmental groups, legislators, and the general citizenry. A sizable amount of literature, scientific and non scientific, exists but is not well targeted at industry personnel and gardening public, the two main perpetuators of the invasive NIS problem. The most effective strategy to reduce the invasive NIS problem is to educate the industry personnel and gardening public so that they will make informed decisions on which plants to sell and plant.

2. Scope of the Program

- Integrated Research and Extension
- In-State Research
- Multistate Integrated Research and Extension
- In-State Extension
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

New pest management programs will be developed through the initiative and grantsmanship of faculty in pest management disciplines (entomology, weed science, plant pathology). The program will emphasize effective methods of information delivery such as grower meetings, in-service training for Extension agents, on-farm plots and demonstrations, publications, and news articles.

IPM programs will emphasize soybean, cotton, peanut, potato, forages, turf, apples, and insects at schools. To improve electronic delivery, the Virginia IPM web page will be completely revised to become a one-stop shopping site for pests of agriculture, community and natural areas. It will include new pages on soybean rust surveillance and management, urban IPM, and links to the Plant Diagnostic Clinic, Virginia Tech Pesticide Program, biological control references, and the new email-delivered Virginia Ag Pest Advisory which provides weekly updates on pests of cotton, peanut, soybean, wheat, and vegetables.

A number of agriculture and natural resources Extension agents will also support the IPM program with activities targeting local clientele. Typically more than 100 volunteers contribute more than 1,000 hours in this program annually.

Pesticide safety education will continue to be critical in keeping the public knowledgeable on protecting themselves from pesticides and maintaining a viable agricultural system. Funding will continue to be available from the Virginia Pesticide Control Board, the Virginia Department of Agriculture and Consumer Services, the USDA, and the USEPA. An established PSE professional development network will continue to offer opportunities in states, regions, and nationally for trainer education and sustainability of the program curriculum.

2. Ultimate goal(s) of this Program

VCE and its stakeholders will sustain their partnerships to support a viable and active education program to reduce enforcement costs, maintain viable pest management options to protect agriculture, specialty areas, public health, and the environment, and to protect the public and occupational health and the environment from the misuse of pesticides. The pest management program will have positive impact on cost benefit ratios, human health, and the environment.

The goal is to introduce the most efficient pest management procedures to encourage a greater adoption rate. Adoption of IPM practices and pesticide safety education will reduce the amount of pesticide released into the environment and reduce worker exposure. Overall cost benefits must consider what, if any, additional costs are associated with implementing the IPM alternative (scouting costs, time, etc.).

Other goals are to teach stakeholders to use and rely on the web-based delivery system for information to acquire a habit of referencing web-based materials. This should result in more preemptive pest management practices and targeted recommendations for a broad range of pests in the future. Timely access to decision-making information should prevent needless or inappropriate applications of pesticides, product selection, application timing, and application when a pest problem is encountered. Adoption of improved pest monitoring practices, especially in newer rotation systems where new or unusual pest species may be encountered will be a priority.

Another goal is to initiate a cultural change in how pest control is approached in schools. The training program will be directed at the elimination of "preventive" pesticide applications, and the replacement of these applications with pest monitoring, prevention, and documentation. In other words, scout for pests but apply no pesticide unless there is a documented pest problem, then use only the least toxic, most effective methods available.

Pesticide applicators will meet the competency requirements of state and federal pesticide laws to be certified private and commercial applicators in the Commonwealth. Non-certified pesticide users, the public, news media, and decision-makers will gain knowledge and skills necessary to understand where pesticides fit within society, to use pesticides (if they choose to use them) safely and legally, to avoid exposure to pesticides during occupational and non-occupational activities, and to make sound decisions when choosing proper pest controls.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	29.0	0.0	19.9	1.5
2011	29.0	0.0	19.9	1.5
2012	29.0	0.0	19.9	1.5
2013	29.0	0.0	19.9	1.5
2014	29.0	0.0	19.9	1.5

V(F). Planned Program (Activity)

1. Activity for the Program

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, conduct pesticide disposal events and related activities, conduct on-line courses and hands-on activities, conduct research experiments and surveys, asian soybean rust/roybean aphid website, ag pest advisory, and phone assisted hotlines.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Demonstrations • One-on-One Intervention • Education Class • Workshop • Other 1 (Web based training courses) • Group Discussion	• TV Media Programs • Other 1 (VCE Pest Management Guides) • Other 2 (Publications and manuals) • Web sites • Public Service Announcement • Newsletters

3. Description of targeted 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(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	56000	56000	1300	1000
2011	56000	56000	1300	1000
2012	56000	56000	1300	1000
2013	56000	56000	1300	1000
2014	56000	56000	1300	1000

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	25	10	35
2011	25	10	35
2012	25	10	35
2013	20	10	30
2014	15	5	20

V(H). State Defined Outputs

1. Output Target

- 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

2010 :125 **2011** :125 **2012** :125 **2013** :125 **2014** :125

- Number of private applicators trained for certification

2010 :750 **2011** :750 **2012** :750 **2013** :750 **2014** :750

- Number of commercial applicators trained for certification

2010 :750 **2011** :750 **2012** :750 **2013** :750 **2014** :750

- Number of private applicators trained for recertification

2010 :2000 **2011** :2000 **2012** :2000 **2013** :2000 **2014** :2000

- Number of commercial applicators trained for recertification

2010 :1000 **2011** :1000 **2012** :1000 **2013** :1000 **2014** :1000

- Number of non-certified applicators trained

2010 :2000 **2011** :2000 **2012** :2000 **2013** :2000 **2014** :2000

- Number of stakeholders enrolled in the IPM Stakeholder Network

2010 :100 **2011** :100 **2012** :100 **2013** :100 **2014** :100

- Number of trainers and regulatory officials trained

2010 :300 **2011** :300 **2012** :300 **2013** :300 **2014** :300

- Educational media website hits communicated through the Pesticide Safety Education website

2010 :1000000 **2011** :1000000 **2012** :1000000 **2013** :1000000 **2014** :1000000

- 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.

2010 :250 **2011** :250 **2012** :250 **2013** :250 **2014** :250

- Number of presentations on IPM related topics.

2010 500 **2011** 500 **2012** 500 **2013** 500 **2014** 500

- Number of volunteer hours dedicated to pest management programming

2010 8000 **2011** 8000 **2012** 8000 **2013** 8000 **2014** 8000

- Number of extended learners with four or more hours of contact related to pest management

2010 10000 **2011** 10000 **2012** 10000 **2013** 8000 **2014** 5000

- Amount of revenue generated in dollars for pest management Extension and research programming

2010 1000000 **2011** 1000000 **2012** 1000000 **2013** 500000 **2014** 500000

- 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.

2010 600 **2011** 600 **2012** 600 **2013** 600 **2014** 600

- Number of samples evaluated by current and improved plant diagnostic methods

2010 1200 **2011** 1200 **2012** 1200 **2013** 1200 **2014** 1200

V(I). State Defined Outcome

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

Outcome #1

1. Outcome Target

Number of individuals gaining knowledge of IPM through training course completion and/or examination

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :2000	**2011 :** 2000	**2012 :** 2000	**2013** :2000	**2014 :**2000

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety

Outcome #2

1. Outcome Target

Number of applicators who gain knowledge in pesticide safety through certification training and pass the state certification exam(s)

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :1000	**2011 :** 1000	**2012 :** 1000	**2013** :1000	**2014 :**1000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 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 Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #3

1. Outcome Target

Number of applicators who gain additional knowledge in pesticide safety through re-certification training and sufficient credit to maintain their certification

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :4000	**2011 :** 4000	**2012 :** 4000	**2013** :4000	**2014 :**4000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 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 Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #4

1. Outcome Target

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. Outcome Type : Change in Knowledge Outcome Measure

2010 :950	**2011 :** 950	**2012 :** 950	**2013** :950	**2014 :**950

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 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 Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #5

1. Outcome Target

Number of trainers who gain knowledge in pesticide safety and pesticide curriculum and program training in established train-the-trainer workshops

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 100	**2011 :** 100	**2012 :** 100	**2013 :** 100	**2014 :** 100

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 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 Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #6

1. Outcome Target

Number of pesticide drift violations prosecuted by VDACS remains at 10 or below.

2. Outcome Type : Change in Condition Outcome Measure

2010 : 10	**2011 :** 10	**2012 :** 10	**2013 :** 10	**2014 :** 10

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 216 - Integrated Pest Management Systems
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #7

1. Outcome Target

Threshold number of personal protective equipment violations prosecuted by VDACS

2. Outcome Type : Change in Condition Outcome Measure

2010 : 20	**2011 :** 20	**2012 :** 20	**2013 :** 20	**2014 :** 20

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 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
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #8

1. Outcome Target

Through educational programming and collaborative efforts, support the collection and proper disposal of unwanted pesticides in Virginia localities.

2. Outcome Type : Change in Action Outcome Measure

2010 :20 **2011 :** 20 **2012 :** 20 **2013 :**20 **2014 :**20

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 403 - Waste Disposal, Recycling, and Reuse
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #9

1. Outcome Target

Number of localities participating in a pesticide container recycling program.

2. Outcome Type : Change in Action Outcome Measure

2010 :10 **2011 :** 10 **2012 :** 10 **2013 :**10 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 403 - Waste Disposal, Recycling, and Reuse
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #10

1. Outcome Target

Number of participants gaining knowledge about invasive NIS

2. Outcome Type : Change in Knowledge Outcome Measure

2010 250	**2011 :** 275	**2012 :** 300	**2013** 300	**2014 :** 300

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #11

1. Outcome Target

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. Outcome Type : Change in Action Outcome Measure

2010 25	**2011 :** 25	**2012 :** 25	**2013** 25	**2014 :** 25

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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
- 723 - Hazards to Human Health and Safety

Outcome #12

1. Outcome Target

Increase in the number of facilities that are impacted in a positive way by IPM program activities.

2. Outcome Type : Change in Action Outcome Measure

2010 25	**2011 :** 25	**2012 :** 25	**2013** 25	**2014 :** 25

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #13

1. Outcome Target

Number of new strategies developed for pest control

2. Outcome Type : Change in Knowledge Outcome Measure

2010 2 **2011 :** 2 **2012 :** 2 **2013** 2 **2014 :** 2

3. Associated Institute Type(s)

•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Programmatic Challenges
- Appropriations changes
- Public Policy changes
- Populations changes (immigration,new cultural groupings,etc.)
- Competing Public priorities
- Other (Stakeholder cooperation, violati)
- Government Regulations

Description

Although a wide variety of commodities and/or sites are encompassed in the pest management program, the factors which may affect outcomes are either those which constrain program delivery or those which constrain client adoption of practices. Factors which may affect program delivery include economy, appropriation changes, public policy changes, competing public priorities, and competing programmatic challenges. Factors which may affect client adoption include natural disasters, economy, public policy changes, government regulations, and fluctuations in commodity and/or pesticide prices.

The external factors that could affect the outcome of this program include changes in public policy, changes in government regulations, cuts in appropriations for the program, competition in public policies and programs, changes in demographics, and the cooperation of stakeholders. In the past, changing laws and public policy have driven the program content and the availability of funding. Other major challenges have been the cooperation of stakeholders. This has particularly affected the ability to establish stakeholder needs for pest management priorities and pesticide policy. A recent challenge has been the change in demographics in Virginia. There is an increased demand to offer pest management education resources in Spanish. Employers have a desire to employ non-English speaking workers as pesticide applicators. Although it is reasonable to ask for multi-lingual safety training, many employers seek to certify these employees to use pesticides. The prohibitive, besides the lack of resources to change the training materials and examinations, is that all pesticide products labeled for use in Virginia (and most states) are written in English only. Another challenge is the plans by the USEPA to convert all pesticide labels to comply with their global harmonization policy. When this changes, all training will be altered to correspond to the changes in pesticide labeling. This will create a major shift in the user community and education will be a key to avoiding problems with comprehension of these new labels.

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

1. Evaluation Studies Planned

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

Description

Evaluation studies planned include determining the benefits of internet delivery of IPM information. Web statistics will also give an indication of the value of information on the website, visitor numbers, and future needs.

Data collection methods will vary by local program and variation and innovation in methods used to determine program impact are encouraged. Program successes will be evaluated using clientele surveys, input from key stakeholder groups, and monitoring hotlines and web sites. Schools will be contacted 6 to 12 months after IPM training.

Major tools available to the program through state pesticide regulatory partners are the results of pesticide certification exams (pass/fail data) and pesticide enforcement violation data. Monitoring the violations reported by the state pesticide regulatory agency provides for addressing needs based on changes and trends in those violations. The violations will be used to determine impact of the educational effort and where efforts need to be stepped up or new innovations need to be made to change behavior.

Violation data will be used as a threshold to measure outcomes. This program's work will contribute to holding these violations below threshold levels. Other tools will include program evaluations with questions measuring changes in attitudes and future behavior, pre- and post-tests and user surveys and stakeholder focus groups will be used to establish needs and improve program quality. These tools will be used to evaluate the impacts and outcomes of the program.

2. Data Collection Methods

- On-Site
- Tests
- Observation
- Mail
- Sampling
- Whole population
- Unstructured
- Other (State regulatory agencies data)

Description

V(A). Planned Program (Summary)

Program #10

1. Name of the Planned Program

Plants and Plant Products

2. Brief summary about Planned Program

Agriculture in Virginia has long been dominated by livestock based industries (66% of gross farm receipts in 2004) which rely on agronomic crops and forages to such an extent that Virginia is a grain deficit state, and imports large quantities of plant products from other areas. Agronomic and horticultural crops currently account for 18% and 15% of, gross farm receipts, and together have a value of $900 million at the farm gate. In recent years, dramatic population increases in northern and eastern Virginia have resulted in substantial growth in the turf, ornamental, and landscape industries, with managed turf areas alone estimated at over 1.7 million acres. Urbanization and population growth has resulted in loss of prime farmland, dramatic increases in land values, and a growing number of lifestyle farmers, gardeners, and others interested in home horticulture. This same population growth offers new opportunities and demands for plants, bio-based products and related educational programs involving topics such as landscape and ornamental plants, sod, bread quality grains, biofuels, organic products, herbs, wine grapes, and other high quality, locally produced plant products. At the same time, loss of farm programs for peanut and tobacco have greatly altered cropping system practices and reduced farm profitability. Environmental pressures may soon force dramatic changes in the animal industry, with consequences on associated plant industries of the state. Many rural areas of the state are facing economic stagnation or decline, but have substantial areas of land suitable for plant or plant-animal production systems. In short, all areas of the state have significant opportunities and challenges to develop new or improved plant based systems that are competitive, profitable, and environmentally friendly.

This program deals with plants and their uses, and will focus on plants used for commercial and ornamental horticulture, turf, agronomic crops, and grasslands. Plants provide food, animal feed, fiber, medicines, natural products such as oils and latex, and renewable feed stocks for bioenergy production. Plants enliven and sustain environments, provide ornamentals and turf for recreation and aesthetic pleasure, and ecosystem services such as soil protection, nutrient cycling, and wildlife habitat.

To provide plants and plant products for a productive economy and high quality of life, research efforts must focus on improving, evaluating, and tailoring plants for specific uses, finding new ways to use them, and develop production and processing technologies that minimize environmental impacts while increasing producer competitiveness and profitability. Extension efforts will focus on participatory learning, adaptation, and adoption of new technologies and practices by targeted clientele. Three areas are targeted in this program: 1) improvement of plants through plant breeding, genetics, and genomics, 2) new and improved uses of plants and plant products (bio-based products), and 3) production, processing, and marketing practices which increase profitability, ensure quality, and are environmentally friendly.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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%	10%
201	Plant Genome, Genetics, and Genetic Mechanisms	10%	10%	10%	10%
202	Plant Genetic Resources and Biodiversity	15%	15%	15%	15%
205	Plant Management Systems	25%	25%	25%	25%
216	Integrated Pest Management Systems	5%	5%	5%	5%
403	Waste Disposal, Recycling, and Reuse	5%	5%	5%	5%
511	New and Improved Non-Food Products and Processes	10%	10%	10%	10%
601	Economics of Agricultural Production and Farm Management	10%	10%	10%	10%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%	10%	10%	10%
	Total	100%	100%	100%	100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Virginia's commercial plant producers are facing increases in land values, costs of production, and environmental regulation. Diseases such as head blight and soybean rust threaten to reduce productivity and high value end uses. Undesirable plant components such as alkaloids, tannins, and indigestible carbohydrates are reducing animal performance and limiting usefulness of plants for human consumption. Soils receiving manure from concentrated animal feeding operations are accumulating excess phosphorus levels, and beginning to threaten soil and water quality. Feed grains with reduced phytate-phosphorus, a form which passes through monogastric animals undigested into the manure, are needed to address this imbalance, as are pasture plants with high phosphorus uptake which can be used to extract excess soil nutrients. U.S. dependence on foreign oil and rising prices are stimulating interest in biomass production for synthesis of biofuels. Opportunities to use plants as a vehicle for manufacture of enzymes, pharmaceuticals, and other essential products require more secure production systems, more efficient extraction, fermentation, and processing methods. Development and growth in new home construction is stimulating interest in ornamentals and home gardening.

While most efficient producers can currently compete in the global commodity market, profitability must continue to increase. In some cases, this will involve increases in productivity through plant breeding and genomics, and through using better adapted varieties. Plants with specific high quality traits or components will be developed for new markets. New or underutilized plants

with market potential will be evaluated and production systems developed. In other cases, more profitable alternatives such as ornamental and horticultural crops, organic production systems, bio-based products must be explored. The program will also address the growing demands and educational needs of lifestyle farms, homeowners, and small businesses. In all cases, development and adoption of environmentally friendly, sustainable production practices will be stressed.

2. Scope of the Program

- Multistate Extension
- Multistate Integrated Research and Extension
- In-State Research
- Multistate Research
- Integrated Research and Extension
- In-State Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

It is assumed that world-wide production of essential food, feed grains, and forages will continue to increase at moderate rates to meet world demand. Recent fluctuations in oil prices have stimulated renewed interest in biofuel crops, improved grain prices, and shifted production in favor of corn and small grains for ethanol. It remains to be seen if these prices will be sustained long term, and what the effects will be on farm profitability, food costs, and degradation of essential environmental services. To ensure long term sustainability, efforts are focused on significant increases in productivity, quality, and price. Population growth and environmental degradation will continue for the life of this plan, and agricultural and associated non-agricultural land uses will play a vital role in mitigating these problems. Agriculture will remain a major contributor to the state's economy and food security, and will support open space, deliver scenic beauty for tourism, and provide essential and desirable ecosystem services. These drivers will continue to force reductions in land area devoted to production, and will require remaining productive lands towards growth of higher value plants and plant products. Commercial plant producers desire to be profitable, efficient and good stewards of the environment. Plant producers with no profit motive, such as homeowners and local government agencies, can be motivated to change behavior and attitudes toward good gardening/production practices with economically viable alternatives and well designed educational programs. With the basic science, people, and tools in place to begin the discovery process, new developments and effective educational programs are critical for medium and long term success.

2. Ultimate goal(s) of this Program

By focusing on plant improvement, genetic modification, and discovery of new uses for underutilized plant resources coupled with new or improved environmentally friendly ways of producing, handling, processing and refining, the program will deliver higher value plant and plant products and educational programs to plant producers that meet or exceed end-user requirements, protect environmental quality, and ensure agricultural profitability and a safe, secure food supply.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	30.0	0.5	7.5	3.0
2011	30.0	0.5	8.5	3.0
2012	30.0	0.5	9.5	3.0
2013	30.0	0.5	9.5	3.0
2014	30.0	1.0	9.5	3.0

V(F). Planned Program (Activity)

1. Activity for the Program

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. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Workshop • Group Discussion • Education Class • Demonstrations	• Web sites • TV Media Programs • Newsletters • Public Service Announcement • Other 2 (Podcasts) • Other 1 (Extension publications)

3. Description of targeted 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(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	130000	236300	30000	6500
2011	130000	236300	30000	6500
2012	130000	236300	30000	6500
2013	130000	236300	30000	6500
2014	130000	236300	30000	6500

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

Expected Patent Applications

2010 :2 **2011 :**0 **2012 :** 1 **2013 :** 1 **2014 :** 1

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	26	10	36
2011	28	14	42
2012	30	15	45
2013	35	15	50
2014	38	15	53

V(H). State Defined Outputs

1. Output Target

- Number of educational presentations conducted

2010	2011	2012	2013	2014
600	600	600	600	600

- Number of volunteers

2010	2011	2012	2013	2014
5000	5000	5400	5500	5600

- Number of research studies completed on biofuels or novel biobased products

2010	2011	2012	2013	2014
12	13	15	20	20

- Number of research publications on biofuels or novel bio-based products

2010	2011	2012	2013	2014
8	8	10	9	8

- Number of research citations

2010	2011	2012	2013	2014
100	120	120	125	130

- Number of outreach citations

2010	2011	2012	2013	2014
5	10	10	10	10

V(I). State Defined Outcome

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.

Outcome #1

1. Outcome Target

Number of commercial producers educated about new plants, cultivated varieties, production techniques or BMPs

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
11000	11113	11247	11397	11500

3. Associated Institute Type(s)

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

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Target

Number of commercial producers adopting new plants, cultivated varieties, production techniques, or BMPs

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
700	800	900	1000	1100

3. Associated Institute Type(s)

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

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 202 - Plant Genetic Resources and Biodiversity
- 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

Outcome #3

1. Outcome Target

Number of noncommercial gardeners/producers educated about new techniques or BMPs

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :300000	**2011 :** 310000	**2012 :** 320000	**2013** :330000	**2014 :**340000

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 511 - New and Improved Non-Food Products and Processes

Outcome #4

1. Outcome Target

Number of noncommercial gardeners adopting new techniques or BMPs

2. Outcome Type : Change in Action Outcome Measure

2010 :2000	**2011 :** 2100	**2012 :** 2200	**2013** :2300	**2014 :**2400

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 202 - Plant Genetic Resources and Biodiversity
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 511 - New and Improved Non-Food Products and Processes

Outcome #5

1. Outcome Target

Number of new cultivated varieties released

2. Outcome Type : Change in Action Outcome Measure

2010 :5	**2011 :** 5	**2012 :** 5	**2013** :5	**2014 :**5

3. Associated Institute Type(s)

•1862 Extension
•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #6

1. Outcome Target

Increased number of acres dedicated to vegetable and berry specialty crops to enhance agricultural profitability.

2. Outcome Type : Change in Condition Outcome Measure

2010 28838 **2011 :** 29088 **2012 :** 29338 **2013** 29588 **2014 :** 29838

3. Associated Institute Type(s)

•1862 Extension
•1890 Extension
•1862 Research
•1890 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 202 - Plant Genetic Resources and Biodiversity
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Changes in global food production capacity, energy costs, and epidemic diseases could all have unpredictable effects. All external factors affecting personal discretionary spending will affect the implementation of environmentally sound gardening practices and the number of gardeners. Natural disasters may affect producers directly but also will affect homeowner and commercial landscaping which also impacts producers. The general economy, public policy and governmental regulations impact production and sales of horticultural products. Appropriations and competing programmatic challenges affect the dedication of personnel and programs to the described programs. Population changes affect supply and demand for horticultural products.

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

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)
- Case Study
- Before-After (before and after program)

Description

Program evaluations are conducted for knowledge based programs before and after the program. Behavior or attitude-based programs are evaluated post program on intentions or on follow-up surveys to evaluate implementation. Case studies are used to evaluate implementation of programs.

2. Data Collection Methods

- Observation
- Sampling
- Tests
- Case Study
- Mail
- On-Site
- Structured

Description

On-site surveys or tests will be used to evaluate knowledge gained or changes in participant attitudes. Follow-up mail surveys are used to determine changes in behavior or implementation of new practices.