

2011 NY State Agricultural Experiment Station Research and Cornell University Research and Extension Combined Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Cornell University Executive Summary

At Cornell, Federal Formula Funds are administered strategically to foster integration of applied research and extension programming, and to seed efforts to address emerging issues in the State.

Cornell Cooperative Extension, the Cornell University Agricultural Experiment Station and the New York State Agricultural Experiment Station work collaboratively to determine common priorities and to direct funds to projects which specifically integrate research and extension work. The approach used here to commingle the work of the experiment stations and Cooperative Extension is unique and designed to serve the citizenry of New York State and improve the human condition through excellence in scholarship; tying research, teaching and extension to "real life" challenges and opportunities.

Throughout the process, stakeholder input is key. An Integrated Program/Research/Extension Council advises and informs priority-setting for use of these funds. It also plays an important role in an internal competitive process through which interested investigators (faculty) may apply for federal formula funds for projects with research and extension components that match the current priorities. In addition, we have 24 active Program Work Teams comprised of extension educators, faculty, and stakeholders who work together to develop, implement and evaluate priority programs.

This report documents the impacts of the work done collectively as a result of Federal Formula Funds. Descriptions of the individual work of Cornell Cooperative Extension, the Cornell University Agricultural Experiment Station and the New York State Experiment Station can be found below.

Cornell University Agricultural Experiment Station

The Cornell University Agricultural Experiment Station (CUAES) has supported science that serves society since its beginning in 1879. We engender and apply research-based knowledge that:

- advances agriculture and food systems.
- improves the environment or mitigates environmental impacts.
- increases food safety and nutrition.
- advances the health and welfare of our citizenry.
- encourages social, economic, and community development and values.

CUAES has two separate but related functions. We administer a portfolio of research and integrated research-extension projects financed with federal formula grants. This encompasses more than 200 ongoing projects. We also operate world-class research facilities throughout New York State on behalf of Cornell University's College of Agriculture and Life Sciences.

Our Cornell partners include the Colleges of Agriculture and Life Sciences, Human Ecology, and Veterinary Medicine; the Division of Nutritional Sciences, Cornell Cooperative Extension, and the New York State Agricultural Experiment Station. Funded research represents over two dozen different departments.

Our NIFA-federal formula funded projects are awarded through an internal peer review, competitive process. Additionally, our stakeholder review system in which external stakeholders rate proposals for relevancy ensures federal formula funds are directed to projects that address pressing societal needs for maximum impact. Stakeholders also help align local issues with national priorities, attending to the interests of New York's citizens within the broader context of national issues. For example, research in biomass production, climate science and agriculture, watershed management, healthy behavior in teenagers, and food handling--to name but a few projects with statewide relevance--are consistent with the broad priorities established by the National Institute for Food and Agriculture on food security, sustainable energy, food safety, climate change, obesity and nutrition.

The impact narratives in this report demonstrate the range of projects we manage via formula funds to support NIFA's goals.

Federal Formula Grant Facts for 2011:

- We manage over \$5 million in federal Hatch grants.
- Most research and integrated project grants run three years, while multi-state grants run up to five years--meaning each year we distribute approximately \$1.5 million to new, peer-reviewed, competitive projects.
- The breakdown in 2011:
 - Food security: 52.14%
 - Sustainable energy: 3.02%
 - Food safety: 6.62%
 - Climate change: 16.6%
 - Obesity and nutrition: 6.84%
 - Youth, family, and community: 14.79%

Although our internal administrative operations budget is partly supported by federal formula funds, state and college monies largely fund the farms, greenhouses and facilities foundational to our research and extension.

Operations Facts:

- Our operating budget is approximately \$3 million.
- 49 full-time staff including 42 in operations and seven in administration.
- We operate seven farms with agricultural production and forest acreage across the state, from Willsboro on Lake Champlain to Long Island on the Atlantic Seaboard.
 - Our campus facilities include 155,000 square feet of greenhouse space--the largest noncommercial greenhouse complex in the state--plus research laboratories and growth chambers.
 - Every aspect of our operation, from staff development to forest management to farm equipment, is viewed through the lens of environmental sustainability.

Federal formula grants are an essential element of Cornell University's research portfolio. They build capacity and support applied research programs that benefit not only New Yorkers but the nation's citizens as well.

New York State Agricultural Experiment Station

For more than 125 years, Cornell's New York State Agricultural Experiment Station (NYSAES) in Geneva has developed cutting-edge technologies essential to feeding the world and strengthening New York economies. The focus of both research and extension programs at NYSAES is on the production, protection, and processing of horticulture food crops, turf and hybrid willow for renewable energy. The interests of the research scientists range from applied to basic science including biotechnology, with frequent collaborations between different disciplines. Research and extension faculty work closely with members of the food and agricultural communities and encourage their graduate students and other visiting scholars to participate in this important activity. Several of the faculty members also teach graduate and undergraduate courses in Ithaca. The bare facts about the NYSAES follow:

- NYSAES was established in 1880, making it the sixth oldest agricultural experiment station in the United States.
- The budget is approximately \$29.0 million; \$9.9 million is funded through SUNY's base budget (year 2010 figures).
- Currently, 265 staff and 41 professors (10, 25, 3 and 3 FTEs in extension, research teaching and administration, respectively) are employed .
- At any one time, 25-90 graduate students are conducting Ph.D and MS studies here.
- At any one time, there are around 15 visiting scientists, 10 postdocs, 20 research associates and 6 extension associates.
- There are four academic departments Horticulture, Plant Pathology and Plant-Microbe Biology, Entomology, and Food Science , all with faculty members in Geneva and Ithaca. The focus is on improving the genetics, cultivation, protection, post-harvest handling, and processing of fruit and vegetable crops.
- Support services are provided by the following units: the CALS IT, Lee Library, CALS Communications Services, Buildings and Properties, and the Field Research Unit.
- Two pilot plants provide opportunities for entrepreneurs, processors, and wine, beer, and cider makers to add value to New York State's raw products: the Fruit & Vegetable Processing Pilot Plant, and the Vinification & Brewing Technology Laboratory.
- The Northeast Center for Food Entrepreneurship (NECFE), at the NY Food Venture Center at Geneva provides comprehensive assistance to beginning and established food entrepreneurs, thus promoting sustainable economic development of rural communities.
- The NYSAES campus includes U.S. Department of Agriculture's Plant Genetic Resources Unit (PGRU), and Grape Genetics Resources Unit (GGRU), responsible for the U.S. collection of apple, sour cherry and cold-hardy grapes and selected seed-propagated crops, such as onion, garlic, broccoli, cabbage and winter squash and for the national program on grape genetics and genomics, respectively.
- NYSAES administers a research/extension laboratory in the Hudson Valley at Highland, with one professor, two Sr. Extension Associates and support personnel. It also administers the Cornell Lake Erie Research and Extension Laboratory in Portland, New York, where a Senior Research Associate and staff work collaboratively with Extension Associates in New York State Integrated Pest Management and Cornell Cooperative Extension and faculty from Ithaca and Geneva on a range of research programs important to grape growers in the Lake Erie Region and throughout New York State. A Penn State University Extension Associate with responsibility for farm management is housed at CLEREL and works as part of the CLEREL team.
- The central Geneva campus consists of 20 major buildings, several smaller buildings for farm machinery storage and similar purposes, and 3 houses with rooms rented to graduate students, visiting scientists, and postdocs.
- The station has eleven farms for experimental plot work close to the Geneva campus with a total of 870 acres. There is also one acre of glasshouse space on the campus.

Programs at Geneva cover the continuum from fundamental to applied research, to extension and outreach for diverse stakeholder groups. A blend of classical methodologies and cutting-edge technologies is utilized to accomplish the mission. Cooperative efforts in research, extension and teaching with faculty on the Ithaca campus are common, and are facilitated by distance learning technologies. Many faculty

members work closely with county and regional extension personnel throughout the state.

Fruit and vegetable crops are a valuable part of the New York agricultural economy, and the value-added benefit of processed products increases their worth. Growing horticultural crops is technically complex because of many factors, including: the perennial nature of some crops; the consumers' demand for cosmetically perfect fresh-market produce; and the public's perception that some methods used to control diseases and pests pose risks to the environment, farm workers, and consumers. In addition, competition from other regions of the U.S. and from other countries poses challenges to this segment of New York's agricultural economy. Other challenges exist for processors including disposal of processing waste in an environmentally acceptable manner.

NYSAES has a strong commitment to strengthening the state's fruit and vegetable industries from 'the farm to the fork'. We are continually reminded of the importance of an adequate and safe supply of fruits and vegetables in the human diet. The changing complexity of agriculture and consumer demands present challenges to crop and food product production that accentuate the continual need for research, extension and teaching at NYSAES. In addition faculty members do research on bioenergy crops and on turfgrass.

While research and extension programs in Geneva have addressed global food security and hunger issues over many decades, the New York State Agricultural Experiment Station at Cornell is also especially well positioned to address other challenges identified as high priorities by the National Institute for Food and Agriculture.

Food Safety

NYSAES food scientists and plant pathologists are leaders in collaborative efforts with Cornell Cooperative Extension and fruit and vegetable growers to improve the safety of fresh fruits and vegetables through the development of detection systems for microbial contaminants and through the implementation of Good Agricultural Practices. Food safety is also a major part of the curriculum for third and fourth graders in the Elementary Science Outreach Program, a partnership between NYSAES and the Geneva City School District.

Sustainable Energy

In 2009, the Department of Horticultural Sciences at NYSAES hired a new faculty member who is focusing on opportunities to grow dedicated bioenergy crops on more than 1 million acres of marginal or underutilized land in New York State and across regions of the Upper Midwest and Southern Canada. Fast-growing shrub willow is a sustainable perennial crop very well suited for this purpose. The willow breeding program in Geneva supports expansion of the commercial willow crop enterprise with new, improved varieties. NYSAES will also play a lead role in a project to have the willow genome sequenced by the US Dept. of Energy Joint Genome Initiative, providing a database of genetic information to speed the breeding program and expand our understanding of woody plant biology.

Climate Change

NYSAES faculty members addresses issues associated with climate change on different fronts. Plant breeders are developing new fruit and vegetable varieties that will be adapted to the changing environment and will be critical for future food production. Changing climates can also be conducive for establishment of new invasive insect pests and diseases. Faculty members are monitoring several serious invasive species that include Plum Pox virus that destroys stone fruit orchards and the Swede Midge that is detrimental to cabbage and related crops. .

Global Food Security and Hunger

To ensure a safe and adequate food supply it is critical to develop the most effective and environmentally sound methods for controlling insect pests and diseases. NYSAES scientists develop effective strategies that allow producers to employ sustainable means, including organic management practices, for controlling pests and diseases. This includes research for understanding pathogen and pest biology, host susceptibility and the impacts of environmental conditions on their development. Strategies for detecting and managing pesticide resistance are also developed.

Cornell Cooperative Extension

The Cornell Cooperative Extension educational system:

- Has a presence **in every county and New York City - with actual CCE Associations in nearly every county**. In four instances, an Association covers more than one county.
- Employs 1,700 staff and educators statewide. Local employees work for their CCE Associations, each of which is governed by a volunteer Board of Directors.
- Utilizes some 50 specialists to carry out regional and statewide Extension programming in such areas as Integrated Pest Management and Fruit, Energy Education, Vegetable, and Field Crop Production and Management.
- Includes over 47, 000 volunteers who participate annually in CCE programs. Volunteer roles vary from advising and planning to teaching and mentoring. Many volunteers are trained to help carry out educational activities.
- Partners with approximately 200 faculty who have formal Extension work within their academic responsibilities, primarily in the College of Agriculture and Life Sciences and the College of Human Ecology.
- Engages a program development process that relies heavily upon local citizen input to identify issues of local importance. Local educators connect these needs with faculty resources. Often research is informed by the two-way flow of information and experience.
- Collaborates with thousands of organizations, agencies, institutions, and business interests. It is a powerful network that incubates positive community change and moves on to the next issue once sustainable solutions are established.
- Includes 55 distance learning centers across New York State, and is fully equipped to deliver events and instruction to remote audiences. These learning centers serve as a portal to Cornell University and other universities in the national land grant system. At should also be noted that webinars and on-demand videos are utilized to deliver programs.

Cornell Cooperative Extension Program Areas

4-H Youth Development: Building tomorrow's leaders

Healthy children and youth need knowledge, skills, and support to reach their potential as capable, competent, and caring citizens. Cornell Cooperative Extension's 4-H youth development programs engage young people and their families in the work of Cornell University and the land grant university system, teach knowledge and life skills that enhance quality of life, and create opportunities for positive youth development.

In classrooms, after school, and in community clubs and camp settings, 4-H youth learn by doing, and participate in practical, real life experiences that encourage them to experiment, innovate, and think independently.

In 2010, more than 167,000 youth from urban, suburban, and rural communities across New York joined in the 4-H experience for 6 or more hours each and were assisted by 15,629 volunteers. Additional youth experienced a less intensive experience through outreach workshops and events, touching more lives through outreach. Major 4-H programs provide opportunities in science and technology, youth community action, and healthy living. Program work teams provide up-to-date resources and support professional development needs of county educators working with youth in local settings.

NIFA Priority Areas Addressed:

- Childhood Obesity
- Sustainable Energy

Agriculture & Food Systems: Maximizing the value of agricultural and natural resources

Agriculture and food systems must be efficient and profitable to remain viable and benefit the quality of life for individuals, families, and communities. Cornell Cooperative Extension's agriculture and food systems programs address the needs of New Yorkers by promoting sustainability, environmental stewardship, a safe, reliable, and healthy food supply, renewable energy, recreation, and agri-tourism.

Cornell Cooperative Extension offers agricultural programs and resources in dairy and livestock, fruits, vegetables, viticulture and enology, field crops, nutrient management, food safety, and farm business economics and policy. Regional specialists and agriculture teams develop resources for small and large farms, beginning and established farmers, and commodity and specialty producer groups.

NIFA Priority Areas Addressed:

- Global Food Security and Hunger
- Climate Change
- Sustainable Energy
- Food Safety

Community and Economic Vitality: Addressing quality of life, social cohesion, ecological integrity, and economic opportunity

Education that incorporates data and research can empower residents and communities to realize increased prosperity and self-sufficiency. Cornell Cooperative Extension's community and economic vitality programs seek to build the capacity of local leaders and communities to direct their own futures as they negotiate changes in economic structures, climate change, energy sustainability, transportation and residential patterns, demographics, communication technologies, and other challenges and opportunities that effect communities.

Cornell Cooperative Extension educators help residents gather and synthesize knowledge, develop decision-making skills, and improve the use of community resources.

Cornell Cooperative Extension associations design community and economic development programming based on the context, issues, and needs of their communities. Community and economic vitality programs include land use training, inter-municipal collaboration on shared municipal services, leadership training, agroforestry workforce development, local food regional economic impact strategies, not-for-profit development, sustainable community-based initiatives, and small business agricultural education.

These and other programs help communities forge strong partnerships with campus faculty and staff, local government officials, community and economic developers, not-for-profit directors, community colleges, planners, policymakers, and informal leaders.

NIFA Priority Areas Addressed:

- Global Food Security and Hunger
- Climate Change
- Sustainable Energy

Environment & Natural Resources: Helping communities preserve and protect the environment

In order to sustain the environmental resources that are needed for healthy and pleasing communities, human beings must balance activities and needs with their associated impact. Cornell Cooperative Extension's environment and natural resources programs aim to develop knowledge that will help individuals and communities make decisions and take actions that preserve and enhance environmental quality and, therefore, human health.

Environment and natural resources programs consist of water resources, agricultural environmental management, including manure management, waste management, land use management, forestry, wildlife habitat and human interactions, fisheries, lawns and turf, invasive species, and energy, both conservation and renewable energy sources.

Cornell Cooperative Extension environment and natural resources programs serve the general public, resource managers, such as foresters, water and wastewater treatment plant operators, and farmers, and policy makers.

NIFA Priority Areas Addressed:

- Climate Change
- Sustainable Energy

Nutrition and Healthy Families: Supporting healthy and active communities

Human health, well-being, and relationships are vital to the interests of communities. Cornell Cooperative Extension promotes knowledge, skills, and behavior change that support human development and welfare across social, emotional, physical, and psychological dimensions. Cornell Cooperative Extension's nutrition, health, and resource management programs address the interaction between individuals and the world around them to help people achieve their potential, solve problems, and strengthen their families and communities. Cornell Cooperative Extension educators use multidisciplinary academic approaches and apply varied cultural, social, and economic perspectives to provide learner-focused education.

Nutrition and health programs work to reduce the incidence of childhood obesity and alleviate chronic disease prevalence through improved nutrition and the promotion of healthy lifestyles. Programs foster developmentally appropriate parenting and child care as well as elder care, address environmental hazards, and support education in financial literacy, health care issues, and energy costs and conservation.

NIFA Priority Areas Addressed:

- Global Food Security and Hunger
- Childhood Obesity
- Food Safety

Reporting Notes

A variety of data sources and documentation procedures were used to generate this report, primarily annual reporting structures. For extension, the primary sources were system-wide annual accountability reports and fiscal and personnel accounting records. Extension annual reports include participation data, reports against our approved performance indicators, and program impact statements. For research, The CRIS reporting system, annual faculty activity reports, and fiscal and personnel accounting records were the primary sources. These extension and research data are supplemented by targeted evaluation studies in selected areas.

To start the transition to national outcomes, we have mapped our existing indicators to the draft national indicators where appropriate and modified wording to make the transition to a national approach more straightforward.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	1475.0	0.0	88.0	0.0
Actual	1550.0	0.0	30.0	0.0

II. Merit Review Process

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

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

2. Brief Explanation

We use one integrated process for merit review for applied research and extension projects, including integrated and multistate activities. Key elements of the process are described here including statistics from the 2011 proposal cycle.

Review Process (Research Projects and Extension Projects with Designated Funding)

1. Principal investigators are asked to consult program priorities (established as outlined in the stakeholder involvement section) and develop short pre-proposals for new or revised projects funded by Federal Formula Funds.
2. Pre-proposals are reviewed for purpose and relevancy by a joint advisory Program Council (see stakeholder involvement section) and other external stakeholders, the principal investigator's department chair, Extension Program Associate/Assistant Directors, and the Agricultural Experiment Station directors (Ithaca and Geneva). Reviews re submitted via a secure website.

For research proposals:

1. Pre-proposals are accepted/rejected; Principal Investigators develop accepted pre-proposals into full proposals.
2. The Department Chair recommends two or three peer reviewers to the Director's Office.
3. The Director's Office obtains the necessary reviews in accordance with CSREES rules using standard format.
4. Changes suggested by the peer reviewer are conveyed to the Principal Investigator. Peer reviewer names are not revealed to the Principal Investigator.
5. The revised proposal, with required CRIS forms, is submitted to the Director's Office.
6. The Director's Office submits the package to CSREES along with an attached statement certifying the peer review was completed.
7. Reviews are kept on file in the Director's Office.
8. The Director's Office attaches a statement to the proposal and sends this with the proposal and Form 10 to the CALS Research Office.
9. After approval by CSREES, funds are allocated to the appropriate research account.

For extension proposals:

1. Extension Program Directors rank/recommend extension pre-proposals.
2. Extension Program Directors meet with Agricultural Experiment Station (Ithaca and Geneva) staff to discuss potential R-E linkages among extension pre-proposals.
3. Extension Program Directors finalize Smith-Lever funding recommendations and communicate decisions and needed modifications.

Cornell Review Criteria

- Anticipated significance of results relative to current priority needs or opportunities
- Scientific merit of objectives
- Clarity of objectives
- Appropriate methodology
- Feasibility of attaining objectives
- Accomplishment during preceding project (for revisions)
- Research performance competence of investigator(s)
- Relevance of the proposed work to regional or national goals
- Level of research-extension integration

For ongoing extension work not captured in current funded projects, we rely on our structure of Program Council and Program Work Teams for input and conduct regular program conferences with academic units to review program progress and direction. For FY11, a total of 141 pre-proposals were submitted to the two Experiment Stations and to Cooperative Extension of which 101 were funded.

III. Stakeholder Input

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

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals

- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief explanation.

Gaining stakeholder input and encouraging stakeholder participation is a system-wide expectation of all levels and units. Across the system, all of the stakeholder participation methods listed are employed, no single unit uses them all.

At the state level, we have a single multidisciplinary program council. Membership is intentionally monitored and updated to ensure involvement and ties to traditional and non-traditional constituents and established and emerging partnerships. The council provides guidance for CCE, CUAES and NYSAES by setting broad priorities for applied research and extension programming.

In addition, we have 31 active Program Work Teams comprised of extension educators, faculty, and stakeholders who work together to develop, implement and evaluate priority programs. A new team was added in FY12 focused on risk and thriving in adolescence. More than 350 individuals were involved in the work of these teams in 2011. Since 2001, forty-eight (48) program work teams have been authorized and supported to develop and deliver integrated applied research and extension programming across the state. The fact that more than 20 have completed their work and "decommissioned" indicates they are serving as intended, as a flexible program development mechanism responsive to needs. PWTs are expected to nurture research-extension integration, to encourage campus-field interactions and collaborations, to take multi-disciplinary approaches, to evaluate their efforts, and to involve their external members in all aspects of their work.

Beyond this state-level program development and stakeholder input structure/process, each of Cornell Cooperative Extension's county extension associations continue to work closely with stakeholders in their counties via participation in their local governance structures, i.e. board of directors, and program guidance structures, i.e., advisory committee structures. Formal advisory committees are also used to guide New York City Extension programs. In 2011, more than 40,000 stakeholder volunteers from diverse backgrounds participated and assisted in the direction, priority setting, and delivery of extension programs throughout the state.

By definition, "under-represented or under-served" groups require that additional outreach and engagement steps be taken. One of the most effective strategies for gaining input and developing working relationships is by networking and partnering with organizations that do have credible relationships with target groups. Our local boards of directors and advisory committees include at least 300 such representatives statewide. On both the program council and program work teams, we target representatives of organizations working effectively with groups with whom we should strengthen ties.

Effective involvement of youth in program determination and implementation is of particular concern. Our local advisory committees are expected to include youth members as part of the

needs assessment and decision making structure. In 2011, more than 3000 youth served in governance and program delivery roles statewide.

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

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Across all levels of the system, all of the techniques listed were used; the mix of methods varied from site to site and program to program. All of our units are required to have active and diverse advisory processes and to intentionally consider audiences not currently served. Activities of our state level councils and work teams described in other questions in this section. Needs assessments, focus groups, and use surveys are conducted at the level of individual program units as well as in our statewide plan of work process.

Extension educators are expected to submit narrative reports of efforts to engage underserved populations. For the 2011 reporting year, more than 130 such stories were submitted representing all five of our broad program areas. Example titles included: Franklin County Eat Smart NY works with St Regis Mohawk Tribe WIC, 'Garden to Table', 3rd Annual Sullivan County Parent Services Symposium, 4-H Urban Outreach Program focuses literacy, Back to Work Nutrition Programs Make a Difference, Bedbug Informational Training, Beginning a Successful Small Farm Operation, Breastfeeding Education, Getting the Right Start, Eat Smart New York making a Difference with Infant Nutrition in Essex County, Financial Literacy Education for Adults in Transition, and Planning Meals Saves Money.

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

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief explanation.

All of the techniques listed were used in 2011 but methods varied site to site and program to program across the system. Structures and processes for aggregating data are described in other questions in this section. The most active data gathering occurred in three venues - local advisory bodies, the program work teams, and the program council. Example outreach mechanisms include dramatic increase in use of Internet based instruction and forums at the community level directed to economic sustainability, particularly of rural communities. We continued statewide efforts begun in 2008 to provide current resources for educators regarding equal program opportunity and have done extensive participant mapping to identify opportunities to increase inclusiveness of our programs. Our Civil Rights compliance review in late 2009 provided additional guidance for connecting with diverse audiences.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

The stakeholder input process for statewide program development jointly utilized by Cornell Cooperative Extension (CCE), the Cornell University Agricultural Experiment Station (CUAES), and the New York State Agricultural Experiment Station (NYSAES) was established in February 2001.

The process informs federal formula funding priorities and provides project specific input on relevance and value of proposed work. In other words, our program council and program work teams work to improve program focus, relevance, and planning activities. Members of our program council have direct input on decisions regarding funding of current extension and research projects contributing ratings of perceived relevance. Each year, we compare funding decisions with advisory input and can confidently conclude that stakeholders are having a powerful voice in the direction of our programs. Our program council also advises the directors of CCE and CUAES on annual statewide program priorities, review Program Work Team performance and identify "gaps" in programmatic coverage. Our statewide applied research and extension priorities are updated annually, communicated to faculty and staff, and used as a primary criterion in funding decisions.

For example, for the FY11 funding year, 141 pre-proposals were received for research, extension, or integrated projects and 101 were funded. Traditionally, 85-90% of the pre-proposals highly rated by stakeholder- reviewers have been funded. The majority of the pre-proposals receiving lower ratings were not funded. Regular communications with Program Council members, especially focused on off-campus and external members, have been used each year to keep these stakeholders abreast of the decision-making process, and notified about the projects that were funded. In June 2011, all Program Council Members, representing each of the five program areas, had an opportunity to participate in an in-depth webinar focused on emerging issues and discussions about sustainable energy and climate change research and extension priorities.

Perhaps even more important is the influence of stakeholder input in determining local programming. Our county extension associations and multi-county programs are semi-autonomous, much more so than in many states. The program of work of each unit is established under guidance of stakeholders in local advisory structures and governing boards and through environmental scanning activities conducted as part of our plan of work process. Such input has immediate and specific influence on program direction and strategy.

Brief Explanation of what you learned from your Stakeholders

Stakeholders help to frame, develop and shape: plans of work, strategic plans, funding proposals, programs, and educational activities. Systemwide the Program Council and Program Work Teams have reaffirmed our commitment to the NIFA priorities below and have pointed to the emphasis areas indicated as focal points where the greatest need and the greatest opportunities to make use of campus resources cross.

Global Food Security and Hunger

Supporting new science to boost U.S. agricultural production, improve global capacity to meet the growing food demand, and foster innovation in fighting hunger by addressing food security for vulnerable populations.

Emphases includes:

- Agriculture/Natural Resources Business Management
- Producer Alternatives and New Ventures
- Agriculture/Natural Resources Production Practices
- Food Security and Hunger

[this Includes producer/processor aspects of food safety.]

Climate Change

Projects that generate knowledge to develop an agriculture system that maintains high productivity in the face of climate changes. This will help producers plan for and make decisions to adapt to changing environments and sustain economic vitality and can take advantage of emerging economic opportunities offered by climate change mitigation technologies.

Emphases includes:

- Climate Change
- Water Resources
- Biodiversity and Natural Resources Protection

Sustainable Energy

Programs that emphasize varied energy production including biomass used for biofuels, optimum forestry and crops for bioenergy production, and value-added bio-based industrial products.

Emphases includes:

- Bioenergy
- Agriculture/Natural Resources Producer Energy
- Consumer Energy
- Community Energy
- Waste Management

Nutrition Childhood Obesity

Programs that ensure that nutritious foods are affordable and available and provide guidance so that individuals and families are able to make informed, science-based decisions about their health and well-being.

Emphases includes:

- Healthy Eating and Active Living (adult and youth)
- Food Resource Management
- Decision Makers/Policy Education

Food Safety

(From NIFA Factsheet) NIFA food safety programs work to reduce the incidence of food-borne illness and provide a safer food supply by addressing the causes of micro-bial contamination and antimicrobial resistance, educating consumer and food safety professionals, and developing food processing technologies.

Emphases includes:

- Food Safety

Youth, Family and Community

- Enabling vibrant and resilient communities
- Preparing the next generation of scientists
- Enhancing science capacity in minority-serving institutions
- Enhancing youth development

Youth Emphases includes:

- Positive Youth Development Including
- Science, Engineering and Technology Literacy
- Youth Community Action

Family Emphases includes:

- Human Development
- Parenting
- Family Economic Security
- Indoor Environment

Community Emphases includes:

- Community and Economic Development
- Community Capacity Building
- Community Sustainability Decision-making
- Agricultural Awareness
- Master Gardener Program

IV. Expenditure Summary

Institution Name: Cornell University

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
8109846	0	5685603	0

Institution Name: NY State Agricultural Experiment Station

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	1195034	0

Institution Name: Cornell University

2. Totalled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	7753916	0	5255972	0
Actual Matching	7753916	0	5255972	0
Actual All Other	0	0	0	0
Total Actual Expended	15507832	0	10511944	0

Institution Name: NY State Agricultural Experiment Station

2. Totalled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	0	1050462	0
Actual Matching	0	0	1050462	0
Actual All Other	0	0	0	0
Total Actual Expended	0	0	2100924	0

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

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Climate Change
3	Sustainable Energy
4	Childhood Obesity
5	Food Safety
6	Youth, Family, and Community

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

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	5%		1%	
102	Soil, Plant, Water, Nutrient Relationships	5%		8%	
202	Plant Genetic Resources	1%		19%	
204	Plant Product Quality and Utility (Preharvest)	5%		4%	
205	Plant Management Systems	15%		8%	
206	Basic Plant Biology	0%		2%	
211	Insects, Mites, and Other Arthropods Affecting Plants	2%		6%	
212	Pathogens and Nematodes Affecting Plants	2%		13%	
213	Weeds Affecting Plants	2%		2%	
215	Biological Control of Pests Affecting Plants	3%		4%	
216	Integrated Pest Management Systems	2%		6%	
301	Reproductive Performance of Animals	1%		5%	
302	Nutrient Utilization in Animals	6%		1%	
305	Animal Physiological Processes	2%		3%	
307	Animal Management Systems	16%		4%	
311	Animal Diseases	2%		7%	
312	External Parasites and Pests of Animals	1%		1%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		2%	
601	Economics of Agricultural Production and Farm Management	25%		4%	
704	Nutrition and Hunger in the Population	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Extension	Research
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Year: 2011	1862	1890	1862	1890	
	Plan	310.0	0.0	40.0	0.0
	Actual Paid Professional	427.8	0.0	12.0	0.0
	Actual Volunteer	45.0	0.0	0.0	0.0

2. Institution Name: Cornell University

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2140082	0	2435190	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2140082	0	2435190	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

2. Institution Name: NY State Agricultural Experiment Station

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	853081	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	853081	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This is a comprehensive program entailing a wide range of applied research activities and multiple education methods depending on context and need. Campus-based faculty and extension associates, regional specialists and county-based educators all are involved in designing, implementing, and evaluating tailored educational efforts depending on the focus and scope of their role.

Multi-disciplinary, multi-institutional and collaborative program examples include: Collaborative Crops

Research Program (CCRP), Cornell-Eastern Europe-Mexico International Collaborative Project in Potato Late Blight Control (CEEM), Cornell International Institute for Food, Agriculture and Development (CIIFAD), Institute for Genomic Diversity (IGD), Institute for Global Learning, International Integrated Pest Management, International Programs Initiative for Biotechnology, International Research and Scientific Exchanges, Program in International Nutrition, Strategic World Initiative for Technology Transfer (SWIFTT), and The Essential Electronic Agricultural Library (TEEAL), work with the Gates Foundation, USAID and other private aid organizations.

2. Brief description of the target audience

Key audiences served, directly and indirectly, in enhancing agricultural and horticultural business viability include: established producers; new and young producers, consultants and service providers, input suppliers, cooperative directors and managers, marketing firms, governmental agencies, lenders, and local/state/federal governmental leaders.

Food security and hunger programming addresses individuals and families, caregivers, nutritionists, community leaders, human service providers and food policy makers at the local, state, and national levels.

3. How was eXtension used?

Cornell Cooperative Extension supports and promotes eXtension communities of practice, the eXtension public site and the professional development offered through eXtension.org.

Staff across the state are encouraged to be involved in appropriate COPs, and the link to eXtension is promoted on the front page of the Cornell Cooperative Extension public staff site. Currently 323 staff are registered users of eXtension. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of participation in COPs that fall into this plan of work area include:

Global Food Security and Hunger

- Cooperatives *
- Animal Manure Management
- Apples *
- Dairy
- Farm Safety and Health
- Forest Farming
- Grapes
- Horses
- Organic Agriculture
- Pest Management
- Pesticide Environmental Stewardship *

*Cornell Faculty/Staff on Leadership Team

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	253099	9918369	68184	2636529

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

Patent Applications Submitted

Year: 2011

Actual: 3

Patents listed

Apple Tree Rootstock (12/925,309)

Apple Tree Rootstock (12/927,537)

Apple Tree Rootstock G.890 (12/931,745)

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	125	311	436

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- (1.1a) # producers/horticulture/natural resources business persons completing education programs on business management, finance, business planning and marketing, human resource management, risk management, production economics, and business transitions. Not reporting on this Output for this Annual Report

Output #2

Output Measure

- (1.2a) # producers/horticulture business persons completing programs to expand profitability, develop marketing options, diversify or substitute alternative products or enterprises, and/or increase operational efficiencies. Not reporting on this Output for this Annual Report

Output #3

Output Measure

- (1.3a) # persons completing education programs on the labor needs of agriculture/horticulture businesses and and/or the needs of potential employees.

Not reporting on this Output for this Annual Report

Output #4

Output Measure

- (1.4a) # producers, horticulture business persons, and/or natural resource managers completing education programs on existing and new production-management practices and techniques.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- (1.5a) # producers, horticulture businesses, and/or natural resource enterprise managers completing education programs on potential environmental impacts of practices, requirements and opportunities of environmental regulations and programs, and whole farm systems.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- (1.6a) # of children, youth, and adults completing education programs on: identifying food insecurity, how to obtain food assistance, how to balancing available resources by planning food choices, and improve the sufficiency and quality of the diet.
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- (1.6b) # of policy makers and citizens participating in education programs on status of food security in their communities and possible actions to promote increased food security.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(1.1b) # participants demonstrating knowledge or skill gains in business management, finance, business planning and marketing, human resource management, risk management, production economics, inter-generational transfer and other business transitions.
2	(1.1c) # participants documented to have applied knowledge or skills gained to strengthen existing business operations.
3	(1.1d) # participating family-owned agricultural/horticultural/natural resources businesses that plan for succession, transfer, or sale of their business.
4	(1.1e) # participants reporting improved agricultural/ horticultural business profitability attributed at least in part to program participation.
5	(1.1f) # business owners successfully completing an intergenerational transfer or other desired dispensation of their business attributed at least in part to program participation.
6	(1.2b) # participants demonstrating knowledge or skill gains related to expanding profitability, developing marketing options, diversifying or substituting alternative products or enterprises, and/or increasing operational efficiencies to solve immediate concerns.
7	(1.2c) # participants documented to have initiated one or more alternative or expanded ventures.
8	(1.2d) # participants or producer groups who adopt practices of value-added production through retaining control of their product further in the processing chain, starting their own value added business, or forming alliances.
9	(1.2e) # of new food, horticultural, and agricultural businesses and/or new enterprises within existing businesses reported by program participants and attributed at least in part to program participation.
10	(1.3b) # participants who demonstrate knowledge gains related to needs of potential employees and/or availability of qualified employees.
11	(1.3c) # participants documented to have made one or more changes in human resources practices to enhance labor availability or retention.
12	(1.3d) # producers/ horticultural businesses reporting improved labor availability, performance, and/or retention of higher skilled and more valuable human resource team members attributed at least in part to program participation.
13	(1.4b) # of producers, horticulture business persons, and/or natural resource managers demonstrating knowledge/skill gains in existing/new practices and techniques; improved product handling and storage to maintain quality and food safety; and/or improving production efficiency through adoption of best management practices.
14	(1.4c) # of producers, horticulture business persons, and/or natural resource managers modifying existing practices and/or adopted new production management practices to address current issues and improve yield efficiency, consistency and/or quality.
15	(1.4d) # of producers, horticulture business persons, and/or natural resource managers who report improved ability to anticipate and respond to environmental and market variations through alternative production management strategies.
16	(1.4e) # technical assistance providers documented to have incorporated current best management practices in their recommendations.

2011 NY State Agricultural Experiment Station Research and Cornell University Research and Extension Combined Annual Report of Accomplishments and Results

17	(1.4f) # of producers, horticulture business persons, and/or natural resource managers documented to have improved economic returns to agricultural business profitability and vitality resulting from enhanced production management practices.
18	(1.5b) # of producers, horticulture businesses, and/or natural resource managers demonstrating knowledge/skill gains re environmental impacts of practices, environmental regulations and programs, whole farm systems including integrated nutrient management, integrated pest management, waste management, and water protection.
19	(1.5c) # of producers, horticulture businesses, and/or natural resource managers documented to have assessed potential environmental impacts of their operations and developed and acted on plans to eliminate or minimize those concerns.
20	(1.5d) # of producers, horticulture businesses, and/or natural resource managers documented to have developed and implemented nutrient management and/or waste management plans or modified existing plans to meet production and environmental goals and meet regulations.
21	(1.5e) # of producers, horticulture businesses, and/or natural resource managers documented to meet or exceed current environmental protection standards as a result of participating in relevant educational programs.
22	(1.5f) # resource managers reporting reduced environmental concerns for participating enterprises.
23	(1.6c) # of program participants who demonstrate knowledge or skill gains related to status of food security in their communities and possible actions to promote increased food security.
24	(1.6d) # of program participants who know what to do related to food insecurity problems such as how to obtain food assistance, how to balance available resources by planning food choices, and how to improve the sufficiency and quality of the diet.
25	(1.6e) # of program participants who have acted to improve their food security status.
26	(1.6f) # of participating communities that assess food insecurity and develop appropriate action plans.
27	(1.6g) # of individuals or households documented to have improved food security status.
28	(1.6h) # of participating communities reporting declines in food insecurity indicators.
29	New York Grapes and Wine Classified has \$1 Million in Economic Impact
30	Orchard Mechanization Producing Good Results for New York Apple Industry
31	New York State Hops Program
32	Blackberry Production in Cold Climates
33	Transition Dairy Cow Energy Balance and Reproductive Performance: An Integrated Approach to Immunology and Management
34	Diversity and Pollination Biology of Native and Managed Bees in Apple Orchards in New York

Outcome #1

1. Outcome Measures

(1.1b) # participants demonstrating knowledge or skill gains in business management, finance, business planning and marketing, human resource management, risk management, production economics, inter-generational transfer and other business transitions.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

(1.1c) # participants documented to have applied knowledge or skills gained to strengthen existing business operations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	5720

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

(1.1d) # participating family-owned agricultural/horticultural/natural resources businesses that plan for succession, transfer, or sale of their business.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	272

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Measures

(1.1e) # participants reporting improved agricultural/ horticultural business profitability attributed at least in part to program participation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2046

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Measures

(1.1f) # business owners successfully completing an intergenerational transfer or other desired dispensation of their business attributed at least in part to program participation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #6

1. Outcome Measures

(1.2b) # participants demonstrating knowledge or skill gains related to expanding profitability, developing marketing options, diversifying or substituting alternative products or enterprises, and/or increasing operational efficiencies to solve immediate concerns.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

(1.2c) # participants documented to have initiated one or more alternative or expanded ventures.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	796

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #8

1. Outcome Measures

(1.2d) # participants or producer groups who adopt practices of value-added production through retaining control of their product further in the processing chain, starting their own value added business, or forming alliances.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	330

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #9

1. Outcome Measures

(1.2e) # of new food, horticultural, and agricultural businesses and/or new enterprises within existing businesses reported by program participants and attributed at least in part to program participation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	268

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #10

1. Outcome Measures

(1.3b) # participants who demonstrate knowledge gains related to needs of potential employees and/or availability of qualified employees.

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

(1.3c) # participants documented to have made one or more changes in human resources practices to enhance labor availability or retention.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	257

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #12

1. Outcome Measures

(1.3d) # producers/ horticultural businesses reporting improved labor availability, performance, and/or retention of higher skilled and more valuable human resource team members attributed at least in part to program participation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	266

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #13

1. Outcome Measures

(1.4b) # of producers, horticulture business persons, and/or natural resource managers demonstrating knowledge/skill gains in existing/new practices and techniques; improved product handling and storage to maintain quality and food safety; and/or improving production efficiency through adoption of best management practices.

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

(1.4c) # of producers, horticulture business persons, and/or natural resource managers modifying existing practices and/or adopted new production management practices to address current issues and improve yield efficiency, consistency and/or quality.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	4158

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
302	Nutrient Utilization in Animals
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals

Outcome #15

1. Outcome Measures

(1.4d) # of producers, horticulture business persons, and/or natural resource managers who report improved ability to anticipate and respond to environmental and market variations through alternative production management strategies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1064

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #16

1. Outcome Measures

(1.4e) # technical assistance providers documented to have incorporated current best management practices in their recommendations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1146

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
302	Nutrient Utilization in Animals
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals

Outcome #17

1. Outcome Measures

(1.4f) # of producers, horticulture business persons, and/or natural resource managers documented to have improved economic returns to agricultural business profitability and vitality resulting from enhanced production management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1081

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
302	Nutrient Utilization in Animals
307	Animal Management Systems
311	Animal Diseases

312	External Parasites and Pests of Animals
601	Economics of Agricultural Production and Farm Management

Outcome #18

1. Outcome Measures

(1.5b) # of producers, horticulture businesses, and/or natural resource managers demonstrating knowledge/skill gains re environmental impacts of practices, environmental regulations and programs, whole farm systems including integrated nutrient management, integrated pest management, waste management, and water protection.

Not Reporting on this Outcome Measure

Outcome #19

1. Outcome Measures

(1.5c) # of producers, horticulture businesses, and/or natural resource managers documented to have assessed potential environmental impacts of their operations and developed and acted on plans to eliminate or minimize those concerns.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1629

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources

102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
302	Nutrient Utilization in Animals
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #20

1. Outcome Measures

(1.5d) # of producers, horticulture businesses, and/or natural resource managers documented to have developed and implemented nutrient management and/or waste management plans or modified existing plans to meet production and environmental goals and meet regulations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	876

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
307	Animal Management Systems

Outcome #21

1. Outcome Measures

(1.5e) # of producers, horticulture businesses, and/or natural resource managers documented to meet or exceed current environmental protection standards as a result of participating in relevant educational programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	419

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
216	Integrated Pest Management Systems
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #22

1. Outcome Measures

(1.5f) # resource managers reporting reduced environmental concerns for participating enterprises.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	530

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #23

1. Outcome Measures

(1.6c) # of program participants who demonstrate knowledge or skill gains related to status of food security in their communities and possible actions to promote increased food security.

Not Reporting on this Outcome Measure

Outcome #24

1. Outcome Measures

(1.6d) # of program participants who know what to do related to food insecurity problems such as how to obtain food assistance, how to balance available resources by planning food choices, and how to improve the sufficiency and quality of the diet.

Not Reporting on this Outcome Measure

Outcome #25

1. Outcome Measures

(1.6e) # of program participants who have acted to improve their food security status.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	8585

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code **Knowledge Area**
704 Nutrition and Hunger in the Population

Outcome #26

1. Outcome Measures

(1.6f) # of participating communities that assess food insecurity and develop appropriate action plans.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	58

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code **Knowledge Area**
704 Nutrition and Hunger in the Population

Outcome #27

1. Outcome Measures

(1.6g) # of individuals or households documented to have improved food security status.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6337

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
704	Nutrition and Hunger in the Population

Outcome #28

1. Outcome Measures

(1.6h) # of participating communities reporting declines in food insecurity indicators.

Not Reporting on this Outcome Measure

Outcome #29

1. Outcome Measures

New York Grapes and Wine Classified has \$1 Million in Economic Impact

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 1998, the FLGP created a web-based service where growers and wineries could list grapes and bulk juice or wine that they had available, or were looking to buy from one another. This system gave growers and wineries a single place to go to make those contacts, and made the hectic job of selling excess fruit or wine more manageable. With financial support from the New York Wine and Grape Foundation, the FLGP created a new version of the system in 2009, which has the ability to accommodate more ads and more categories than the previous version. While the majority of the users of the Classifieds system are from the Finger Lakes region, growers and wineries in other parts of the state, such as Long Island, Lake Erie and the Thousand Island regions, also post on the site.

What has been done

In January 2011, the FLGP developed an online survey that was sent to over 300 individuals on its mailing list to determine the economic impact of the classifieds site during the 2010 calendar year. Respondents were asked to provide their best estimates of how much fruit, wine and equipment that they bought or sold as a result of the Classifieds system.

Results

When the results of this survey are combined, the total amount of economic activity generated by the New York Grape and Wine Classifieds site in 2010 was \$1,027,442. The system had the largest impacts in Seneca County (43% of all activity), Yates County (22%), and grape growing regions outside of the Finger Lakes (20%). It should be noted that this is a conservative number, due to the fact that several businesses reported that they used the site to buy or purchase bulk wine or equipment but did not report the value of those transactions. In addition, we received responses to our survey from 50 of the system's 89 total users, so it is highly likely that others benefited economically from the site but did not report that to us.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #30

1. Outcome Measures

Orchard Mechanization Producing Good Results for New York Apple Industry

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Until recently, few Northeastern apple growers felt the need to use mechanical aid equipment because of a relatively abundant labor supply. However the increasing uncertainty surrounding the labor supply, the expense of labor, and the need for more intensive labor when using higher orchard densities has changed the outlook of many Northeastern apple growers. In addition, many apple growers are transitioning from low-to high-density apple production systems by adopting the Tall Spindle system, which is highly suitable for mechanization. Together, these circumstances have motivated many apple growers in New York State and elsewhere to examine ways to reduce labor costs by using labor-saving motorized platforms and/or hedgers.

What has been done

Lake Ontario fruit specialists and Cornell faculty provided several pruning workshops and showed the benefits of using platforms to more than one hundred fruit growers and employees. During workshops, participants used platforms, pneumatic tools, and learned the benefits of mechanization when adopting the Tall Spindle apple production system. In addition, a dormant pruning study measured and compared the labor efficiency of four workers with ladders against the same four workers using mechanized methods. Educational activities and research results were summarized in an Extension article published by the NY Fruit Quarterly which reached to 1,500 subscribers.

Results

There are currently 30 platforms (grower-built or purchased) being used for several orchard tasks in Western NY. Several of these platforms were shown during the 2010 IFTA summer tour. This season two growers bought a mechanized tool for apple and peach blossom thinning, one grower built a platform for hand thinning and saved 150 dollars per acre, and two begun experimenting with side-wall shearing to minimize pruning costs during the 2011 Summer. In some cases the use of platforms for dormant pruning has increased labor efficiency by 35-40%. Economic

comparisons in a tall spindle planting of 1,320 trees per acre have shown that the use of orchard platforms can save \$102/acre, \$140/acre and \$45/acre for dormant pruning, hand thinning and trellis wire installation, respectively.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #31

1. Outcome Measures

New York State Hops Program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Hops production is a new industry in the Eastern United States and very little information is available on production, post harvest processing and marketing of this crop. Some of the new growers have experience in growing other crops such as fruits and vegetables, but many are totally new to farming. Information is needed on site selection, appropriate varieties, soils and fertility, trellis systems, and scale appropriate technology and equipment. Hops are an expensive crop to start up and maintain. The goal is also to provide information on the costs and risks so that potential growers will be able to make informed decisions before growing this crop.

What has been done

The Hops Specialist has produced newsletters with detailed information on production and pest control on hops which are emailed to about 250 growers and potential growers. The Specialist has had over 135 direct contacts through email, phone and farm visits with growers and potential growers. There have also been two field events which drew about 75 people each and a major conference with 185 attendees. The Specialist is also working with other staff in New York (such as with Integrated Pest Management specialists) and other states to put together as much information as possible on the crop. The Specialist has done a great deal of outreach with the media and professional organizations and has conducted numerous interviews for other

magazine and newspaper articles all over New York.

Results

Before the program started in 2011 there were only about 20 acres of commercial hops in New York. 43 growers have stated that they gained knowledge to improve their existing hop farm. Sixty-seven growers and potential growers stated that they are now better able to make informed decisions on growing hops. After this season growers stated that they plan to have an additional 105 acres of hops in the ground in the next two growing seasons. This is an investment of at least \$1.5 million dollars in just the crop acreage with another \$0.5 million in equipment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
204	Plant Product Quality and Utility (Preharvest)
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #32

1. Outcome Measures

Blackberry Production in Cold Climates

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Blackberries are a high-value cash crop but tricky to grow in cold climates, so farmers in much of the Northeast rarely grow them. Growers need production methods that take into account the cold winters and other conditions they face.

What has been done

We developed and demonstrated two new approaches for trellising and producing bumper crops of blackberries. The first: training blackberry canes so they can be laid down for winter and

covered for protection. The second: growing them under a high tunnel. We also compiled yield and temperature data from protected and unprotected rows for the two years of our project. Then we invited growers to come see for themselves. And we created a website where growers could learn how to grow this profitable crop.

Results

Nearly 1,000 growers (and some dignitaries from state and federal government) attended our workshops in six counties or field days at the agricultural experiment stations on the Cornell and Geneva campuses, while hundreds downloaded our blackberry production guide. Our data shows that in each year of our study, yields and marketable fruit were dramatically higher in high tunnels compared to outdoor production. In 2010, high tunnel production approached the equivalent of more than 30,000 pounds per acre?while outside yields were minimal. Tunnel-grown berries produced double the percentage of marketable fruit, and fruit size was always larger.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

Outcome #33

1. Outcome Measures

Transition Dairy Cow Energy Balance and Reproductive Performance: An Integrated Approach to Immunology and Management

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The last three weeks of pregnancy and first three weeks of lactation are a stressful time for dairy cows, bred with extremely high milk production in mind. These "transition cows" often get less energy from their feed than it takes to bring their unborn calves to term; once their milk comes in, they often expend more energy than they consume. The repercussions can show up their in their ability to conceive the next time around. Endometritis, ketosis, and other costly diseases are high among the challenges of this transition period. Their true costs show up in the bulk tank, as culled

cows, and at the teller's window, not to mention a less-secure food supply.

What has been done

We identified risk factors that help dairy farmers better manage transition-cow diseases. We also evaluated feed additives such as propylene glycol and the effect these additives have on liver metabolism, energy balance, and cattle well-being and performance, then developed and promoted monitoring tools that help farmers and veterinarians keep cattle healthy and productive for over their life spans. We publicized these monitoring tools through peer-reviewed publications, web-based materials, teaching materials, and presentations to farmers and veterinarians.

Results

The transition-cow monitoring tools we're promoting are becoming more widely employed on dairies. Producers can now detect, manage, or prevent debilitating stresses among their transition cows, leading to healthier herds, dairy operations, and bank accounts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
305	Animal Physiological Processes
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #34

1. Outcome Measures

Diversity and Pollination Biology of Native and Managed Bees in Apple Orchards in New York

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

New York is the nation's second-largest apple producer. 17,000 people depend on this industry valued at \$260 million for their paychecks. In turn, growers depend on insects, largely honey bees, to pollinate apple blossoms without pollinators, no apples: certainly not enough to keep the industry alive. But now honey bees are in crisis, hit hard by a mysterious affliction: colony collapse disorder, or CCD. We wanted to see if native bees can provide a viable alternative to honey bees, then help growers learn how to maintain native bee diversity and

What has been done

We assessed how aware growers are about the pollination services native bees provide. Our 2009 grower survey reached 262 commercial apple growers, about 25% of growers, in 43 counties to gather baseline information on current management practices, knowledge, and willingness to promote pollination by wild bees. We also scouted 22 orchards over a three-year time-span to sample bee diversity and abundance in orchards employing a range of management regimes. We used two methods: general collecting had us netting any native bees on or near apple blossoms, while time-trial collecting had us collecting all bees, including honey bees, during 15-minute intervals.

Results

Our survey showed that 59% of growers consider CCD a threat to successful apple production, 85% believe native bees are important apple pollinators, 68% said they would consider management practices that would help these native bees thrive, 93% take pollinators into consideration when they select and apply pesticides and 75% of growers estimate the number of native bee species in apple orchards to be less than 10. Yet our fieldwork revealed 102 species about twice the number we expected based on a much smaller survey in 2006. Many appear to be important apple pollinators. Our report in the Spring 2010 issue of the New York State Fruit Quarterly summarized the grower survey, analyzed just how wide-ranging these native bees are, and provided suggestions on what strategies will maintain thriving native bee populations. We are working closely with an orchard consultant to get our material to growers in one of New York's prime apple-growing regions, and with the NYS IPM Program to help growers making the shift from conventional systems to IPM and organic cultivation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Agricultural/horticultural/natural resources enterprises operate in a complex and volatile context involving susceptibility to weather extremes, changing governmental policies and regulations, competitive land uses and shifting development patterns, evolving consumer demands, and globally influenced markets. During FY11 two dramatic and highly damaging flood events damaged crop and forest resources in highly productive areas of New York. Recovery is slow and will extend well into 2012 for many areas.

Fundamental change is occurring in the state and regional economies within which agricultural/horticultural/natural resources enterprises operate. The specific implications of these external factors vary greatly by locale and across commodities and business forms in some cases creating new market opportunities and in others erosion of traditional markets. Population and land use changes in farming communities has led in some places to producer/neighbor issues that influence choice of production practices. Economic stress exacerbates issues of food insecurity and hunger and many community organizations are over- burdened and unable to meet demands.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We employ a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities for each of our planned programs. The results are aggregated in a statewide accountability system which leads to the summary results reporting in the State Defined Outcomes in each plan including selected impact statements and success stories (from a pool of more than 300 stories reported). To strengthen evaluation of commercial agriculture programs, our two commercial vegetable regional specialist teams participated in an Evaluation Planning Partnership with the Cornell Office for Research on Evaluation in 2010 and 2011.

Key Items of Evaluation

See cross cutting outcomes in State Defined Outcomes.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
104	Protect Soil from Harmful Effects of Natural Elements	7%		1%	
111	Conservation and Efficient Use of Water	15%		6%	
112	Watershed Protection and Management	17%		19%	
125	Agroforestry	5%		1%	
132	Weather and Climate	14%		9%	
133	Pollution Prevention and Mitigation	10%		26%	
135	Aquatic and Terrestrial Wildlife	8%		11%	
136	Conservation of Biological Diversity	15%		12%	
141	Air Resource Protection and Management	2%		3%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	2%		12%	
405	Drainage and Irrigation Systems and Facilities	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	80.0	0.0	13.0	0.0
Actual Paid Professional	142.6	0.0	9.0	0.0
Actual Volunteer	1.3	0.0	0.0	0.0

2. Institution Name: Cornell University

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
713360	0	963209	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
713360	0	963209	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

2. Institution Name: NY State Agricultural Experiment Station

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	83374	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	83374	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This is a comprehensive effort entailing a wide range of applied research activities and multiple education methods depending on local context and need. Campus-based faculty and extension associates, regional specialists and county-based educators all are involved in designing, implementing, and evaluating tailored applied research and educational efforts depending on the focus and scope of their role. Example targeted activities include a comprehensive "Northeast Climate Impacts Assessment" that details potential impacts on crops, dairy, forests, and invasive pest species for the region and the Cornell Computational Agricultural Project that is compiling daily weather data and using complex computing tools to create a user friendly website and database for farmers to help them make critical decisions as they adapt to the changing environment. Climate change is tied intimately to sustainable energy concerns. Therefore, climate change is an important element of energy literacy initiatives across all audiences.

2. Brief description of the target audience

Key audiences served, directly and indirectly include: agricultural, horticultural and natural resource producers; consultants and service providers, resource managers, governmental agencies, and local/state/federal governmental leaders and policy makers, and individual consumers.

3. How was eXtension used?

Cornell Cooperative Extension supports and promotes eXtension communities of practice, the eXtension public site and the professional development offered through eXtension.org.

Staff across the state are encouraged to be involved in appropriate COPs, and the link to eXtension is promoted on the front page of the Cornell Cooperative Extension public staff site. Currently 323 staff are registered users of eXtension. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of participation in COPs in this plan of work area include:

Climate Change

- Climate, Woodlands, and Forests
- Agricultural Disaster Preparedness
- Floods
- Invasive Species

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	135062	4356818	38492	1228846

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	22	98	120

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 2.1a # of agricultural/natural resources producers, and/or organization and business representatives completing educational programs on the causes and implications of climate change and adaptive or mitigating strategies.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- 2.2a # of local government officials and community leaders completing educational programs on causes and implications of climate change and adaptive or mitigating strategies.
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- 2.3a # of adult and youth consumers, residents, and landowners completing educational programs on causes and implications of climate change and adaptive or mitigating strategies.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- 2.4a # of agricultural/natural resources producers, and/or organization and business representatives completing educational programs on managing water resources.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- 2.5a # of local government officials and community leaders completing educational programs on managing water resources and the relationship between water resources and land use management.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- 2.6a # of adult and youth consumers, residents, and landowners completing educational programs on water resources protection.
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- 2.7a # of agricultural/ natural resources producers, and/or organization and business representatives completing educational programs on managing natural resources, invasive species, and/or biodiversity.
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- 2.8a # of local government officials and community leaders completing educational programs on managing natural resources, invasive species, open space preservation, alternative land uses and/or biodiversity.
Not reporting on this Output for this Annual Report

Output #9

Output Measure

- 2.9a # of adult and youth consumers, residents, and landowners completing educational programs on natural resources protection, invasive species, and/or biodiversity.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	2.1b # of agricultural/natural resources producers, and/or organization and business representatives who demonstrate knowledge gains about on the causes and implications of climate change and adaptive or mitigating strategies.
2	2.1c # agricultural/natural resources producers, and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new management practices to minimize their contribution to climate change and/or adapt to climate change effects.
3	2.1d # agricultural/natural resources producers, and/or organization and business representatives documented to have successfully adapted to climate change effects enhancing economic viability.
4	2.2b # of local government officials and community leaders who demonstrate knowledge gains about causes and implications of climate change and adaptive or mitigating strategies.
5	2.2c # of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new management practices to minimize their contribution to climate change and/or adapt to climate change effects.
6	2.2d # of communities documented to have established or modified public policies to minimize contribution to climate change and/or adapt to climate change effects.
7	2.3b # of adult and youth consumers, residents, and landowners who demonstrate knowledge gains on causes and implications of climate change and adaptive or mitigating strategies.
8	2.3c # of adult and youth consumers, residents, and landowners documented to have modified existing practices and/or adopted new practices to minimize their contribution to climate change and/or adapt to climate change effects.
9	2.4b # of agricultural/natural resources producers, and/or organization and business representatives who demonstrate knowledge gains about managing water resources.
10	2.4c # agricultural/natural resources producers, and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance water resources.
11	2.4d # agricultural/ natural resources producers, and/or organization and business representatives documented to have improved and/or protected water resources.
12	2.5b # of local government officials and community leaders who demonstrate knowledge gains about managing water resources and the relationship between water resources and land use management.
13	2.5c # of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance water resources.
14	2.5d # of communities documented to have established or modified land use and development policies to enhance and protect water resources.
15	2.6b # of adult and youth consumers, residents, and landowners who demonstrate knowledge gains about water resources protection.
16	2.6c # of adult and youth consumers, residents, and landowners documented to have modified existing practices or adopted new practices to protect/enhance water resources.

2011 NY State Agricultural Experiment Station Research and Cornell University Research and Extension Combined Annual Report of Accomplishments and Results

17	2.6d # of adult and youth consumers, residents, and landowners documented to have successfully modified existing practices and/or adopted new practices leading to improved protection/enhancement of water resources.
18	2.7b # of agricultural/ natural resources producers, and/or organization and business representatives who demonstrate knowledge gains about managing natural resources, invasive species, and/or biodiversity.
19	2.7c # of agricultural/ natural resources producers, and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance natural resources and/or enhance biodiversity.
20	2.7d # of documented instances in which implementation of natural resources management practices by agricultural/ natural resources producers, and/or organization and business representatives lead to increase open space preservation, enhanced/ protected natural resources, biodiversity, land use.
21	2.8a # of local government officials and community leaders who demonstrate knowledge gains about managing natural resources, invasive species, open space preservation, alternative land uses and/or biodiversity.
22	2.8c # of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new management practices to protect/enhance natural resources and/or enhance biodiversity.
23	2.8d # of documented instances in which implementation of natural resources management practices and/or land use policies lead to increased open space preservation, enhanced or protected natural resources, enhanced biodiversity, and/or increased alternative land use.
24	2.9a # of adult and youth consumers, residents, and landowners who demonstrate knowledge gains about natural resources management, invasive species, and/or biodiversity.
25	2.9c # of adult and youth consumers, residents, and landowners documented to have modified existing practices and/or adopted new practices to protect/enhance natural resources and/or enhance biodiversity.
26	2.9d # of documented instances in which implementation of natural resources management practices by individual consumers, residents, and/or private landowners lead to increased open space preservation, enhanced or protected natural resources or enhanced biodiversity.
27	Creating the Native-Friendly Garden: Finding & Promoting Alternatives to Ornamental Invasive Plants
28	Greene County Flood Response
29	Assisting Growers in Making Management Decisions Regarding a New Invasive Agricultural Pest
30	Linking Climate Change, Lake Ecosystem Health, and Better Watershed Management in New York
31	Hydrology-Biogeochemistry Interactions in Controlling Nitrogen Fluxes in Agricultural Ecosystems
32	Finding Management Strategies to Maximize Forest Sequestration, Wood Production, and Biodiversity with Climate Change and Insect Invasion

Outcome #1

1. Outcome Measures

2.1b # of agricultural/natural resources producers, and/or organization and business representatives who demonstrate knowledge gains about on the causes and implications of climate change and adaptive or mitigating strategies.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

2.1c # agricultural/natural resources producers, and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new management practices to minimize their contribution to climate change and/or adapt to climate change effects.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	160

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
132	Weather and Climate
133	Pollution Prevention and Mitigation
405	Drainage and Irrigation Systems and Facilities

Outcome #3

1. Outcome Measures

2.1d # agricultural/natural resources producers, and/or organization and business representatives documented to have successfully adapted to climate change effects enhancing economic viability.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

2.2b # of local government officials and community leaders who demonstrate knowledge gains about causes and implications of climate change and adaptive or mitigating strategies.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

2.2c # of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new management practices to minimize their contribution to climate change and/or adapt to climate change effects.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
141	Air Resource Protection and Management

Outcome #6

1. Outcome Measures

2.2d # of communities documented to have established or modified public policies to minimize contribution to climate change and/or adapt to climate change effects.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

2.3b # of adult and youth consumers, residents, and landowners who demonstrate knowledge gains on causes and implications of climate change and adaptive or mitigating strategies.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

2.3c # of adult and youth consumers, residents, and landowners documented to have modified existing practices and/or adopted new practices to minimize their contribution to climate change and/or adapt to climate change effects.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	792

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
133	Pollution Prevention and Mitigation
136	Conservation of Biological Diversity
141	Air Resource Protection and Management

Outcome #9

1. Outcome Measures

2.4b # of agricultural/natural resources producers, and/or organization and business representatives who demonstrate knowledge gains about managing water resources.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

2.4c # agricultural/natural resources producers, and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance water resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	878

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife

Outcome #11

1. Outcome Measures

2.4d # agricultural/ natural resources producers, and/or organization and business representatives documented to have improved and/or protected water resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	768

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife

Outcome #12

1. Outcome Measures

2.5b # of local government officials and community leaders who demonstrate knowledge gains about managing water resources and the relationship between water resources and land use management.

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

2.5c # of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance water resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	46

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife

Outcome #14

1. Outcome Measures

2.5d # of communities documented to have established or modified land use and development policies to enhance and protect water resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife

Outcome #15

1. Outcome Measures

2.6b # of adult and youth consumers, residents, and landowners who demonstrate knowledge gains about water resources protection.

Not Reporting on this Outcome Measure

Outcome #16

1. Outcome Measures

2.6c # of adult and youth consumers, residents, and landowners documented to have modified existing practices or adopted new practices to protect/enhance water resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2344

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife

Outcome #17

1. Outcome Measures

2.6d # of adult and youth consumers, residents, and landowners documented to have successfully modified existing practices and/or adopted new practices leading to improved protection/enhancement of water resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	761

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife

Outcome #18

1. Outcome Measures

2.7b # of agricultural/ natural resources producers, and/or organization and business representatives who demonstrate knowledge gains about managing natural resources, invasive species, and/or biodiversity.

Not Reporting on this Outcome Measure

Outcome #19

1. Outcome Measures

2.7c # of agricultural/ natural resources producers, and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance natural resources and/or enhance biodiversity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2196

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #20

1. Outcome Measures

2.7d # of documented instances in which implementation of natural resources management practices by agricultural/ natural resources producers, and/or organization and business representatives lead to increase open space preservation, enhanced/ protected natural resources, biodiversity, land use.

Not Reporting on this Outcome Measure

Outcome #21

1. Outcome Measures

2.8b # of local government officials and community leaders who demonstrate knowledge gains about managing natural resources, invasive species, open space preservation, alternative land uses and/or biodiversity.

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

2.8c # of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new management practices to protect/enhance natural resources and/or enhance biodiversity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	289

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #23

1. Outcome Measures

2.8d # of documented instances in which implementation of natural resources management practices and/or land use policies lead to increased open space preservation, enhanced or protected natural resources, enhanced biodiversity, and/or increased alternative land use.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	454

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #24

1. Outcome Measures

2.9b # of adult and youth consumers, residents, and landowners who demonstrate knowledge gains about natural resources management, invasive species, and/or biodiversity.

Not Reporting on this Outcome Measure

Outcome #25

1. Outcome Measures

2.9c # of adult and youth consumers, residents, and landowners documented to have modified existing practices and/or adopted new practices to protect/enhance natural resources and/or enhance biodiversity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	4415

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #26

1. Outcome Measures

2.9d # of documented instances in which implementation of natural resources management practices by individual consumers, residents, and/or private landowners lead to increased open space preservation, enhanced or protected natural resources or enhanced biodiversity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1391

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #27

1. Outcome Measures

Creating the Native-Friendly Garden: Finding & Promoting Alternatives to Ornamental Invasive Plants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The introduction and spread of invasive species has been determined to be the second leading cause of global biodiversity loss. About 42% of species listed on the United States Threatened or Endangered lists are considered at risk primarily due to competition or predation from invasives. In 2007, Long Island counties passed legislation that prohibited the sale, transport, distribution, and propagation of numerous invasive plants. Some banned plants have traditionally been grown in nurseries and planted as ornamentals throughout Long Island and the Northeast. Finding and marketing suitable alternatives to banned plants is imperative to help maintain Suffolk County as the number one county in New York and the top fifteenth county in the entire United States for the value of sold horticultural commodities.

What has been done

A committee including extension educators and horticulture professionals from the public and private sector and a local university was formed. The committee created a list of alternatives to ornamental invasive plants. Alternatives were selected based on their similar ornamental characteristics and cultural requirements compared to the invasives and suitability. An education and outreach campaign was launched which has focused on professionals in the horticulture industry and has encompassed the creation and distribution of publications in hard copy and via the web, the creation of a demonstration/trial garden, and providing numerous lectures, workshops, and garden tours.

Results

The publication *Invasive Plants: Frequently Asked Questions for Long Island's Horticulture Professionals* and *Alternatives to Ornamental Invasive Plants: A Sustainable Solution for Long Island Horticulture* were created, distributed and posted on the web. The *Native-Friendly Garden* was designed and installed at the Long Island Horticultural Research and Extension Center, Riverhead. It serves as a demonstration and trial garden for industry twilight tours and public events. 7 tours of the garden have been given by the educator. 14 lectures on alternatives to ornamental invasive plants have been given by the educator at local garden club meetings, Master Gardener trainings, industry conferences, industry open houses, and invasive plant meetings. One of these lectures was at the 2010 Educational Event for Landscape Architects hosted by CCE-Suffolk in Riverhead. Of attendees who completed course evaluation forms, over 20% listed no longer using invasive plants in their designs as a current practice that they planned to change based on information gathered from the event.

4. Associated Knowledge Areas

KA Code **Knowledge Area**
136 Conservation of Biological Diversity

Outcome #28

1. Outcome Measures

Greene County Flood Response

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Communities and individuals living near streams in Greene County were severely impacted by flooding due to tropical storms Irene and Lee. People were in need of reliable, research-tested information on a variety of topics related to flood recovery. Farmers were also targeted as an audience with specific needs.

What has been done

Cornell Cooperative Extension responded to the identified need by posting fact sheets on our website, printing hard copies of fact sheets for distribution in heavily impacted areas, and reading fact sheets on local radio broadcasts. Cornell Cooperative Extension staff also secured cases of water test kits from St. Peter's Bender Environmental Laboratory as well as a local water testing lab. Cornell Cooperative Extension was instrumental in raising awareness of the need to test flooded wells and for distributing over 150 water test kits in areas of need. Cornell Cooperative Extension also provided educational programs pertinent to storm recovery, including a Wells and Septics program for residents and an Emergency Agricultural Meeting for Area Farmers program, designed to provide farmers access to all of the various disaster relief efforts being offered by different organizations and agencies, in one place.

Results

Cornell Cooperative Extension Greene was able to effectively reach impacted communities with timely and reliable information on flood recovery. Hundreds of households, with a variety of needs, were able to make informed decisions about issues involving health and well being of their homes, lives and farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate

Outcome #29

1. Outcome Measures

Assisting Growers in Making Management Decisions Regarding a New Invasive Agricultural Pest

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Brown Marmorated Stink Bug, *Halyomorpha halys* (Stål), originating from Asia, was first detected in Allentown, PA, in 1998 and was first found in New York in the Hudson Valley in December 2008. This pest has caused extensive damage to multiple agricultural crops in the Mid-Atlantic Region in recent years, and is also an urban pest as it enters building to seek winter shelter. Repeated migrations into agricultural crops and poor control results with soft pesticides, making this insect a key player that drives pest management to a point where it has become problematic. Tree fruit growers unaware of BMSB presence or absence in commodities may not make timely and or effective pest management decisions.

What has been done

Cornell and Cooperative Extension staff developed a 'Citizen Science' outreach effort using a variety of media sources. New York State residents were encouraged to submit captured BMSB specimens or images encountered in their homes when the insect began its migration into homes during the fall. During the 2011 growing season, 85 traps were monitored in various agricultural commodities throughout major fruit producing regions in New York. A website was created for growers and the public that provides access to background resources on the pest and the project, and shows the distribution of confirmed sightings of this pest in New York. Growers were kept informed of trapping results throughout the 2011 growing season so they would know if pesticide treatments were required.

Results

As of Fall 2011, 460 specimens from 87 distinct zip codes in 33 New York State counties were submitted by citizens to the project. BMSB populations appeared greatest in the Hudson Valley region but only one monitored site experienced economic injury in 2011. Frequent contact regarding the project assured commercial growers that pest levels were below threshold for treatment, thus saving unnecessary pesticide applications despite widespread concern of the potential impacts of this pest.

4. Associated Knowledge Areas

KA Code	Knowledge Area
136	Conservation of Biological Diversity

Outcome #30

1. Outcome Measures

Linking Climate Change, Lake Ecosystem Health, and Better Watershed Management in New York

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Climate change will affect lake ecosystems, but how? Water temperature and quality, dissolved oxygen, food webs, and other aspects of aquatic ecosystem health are all part of the web. In particular, warmer temperatures could promote cyanobacteria algae, a name that hints at how potent a neurotoxin these organisms can be. These fast-growing algae rob lakes of dissolved oxygen so critical to fish.

What has been done

Our study site was Oneida Lake - 21 miles long, one to five miles wide, with a watershed approximately 1,400 square miles. At just 22 feet deep, it is an ideal natural laboratory for understanding climate effects on shallow water bodies. For two years we charted: the inflow from the lake's tributaries, outflow into the Oneida River, stream and groundwater temperature loading, and precipitation and temperature. We used data to help model how warming temperatures would affect the lake, and tested our predictions against our field data. Finally, we evaluated the impacts

of climate change on 1) lake temperature profiles, 2) oxygen availability, and 3) cyanobacteria blooms, then used our models to create mitigation practices and recommendations.

Results

Our data and modeling suggest that Oneida Lake’s temperature profiles are driven by its wide, shallow configuration. Groundwater, we found, can be an important source of water to the lake. And our stream canopy experiment showed that canopy cover reduces daily temperature swings. As these tributaries flow together into broader, single streams, the canopy-shading effect is lost. Interestingly, total travel time through the watershed seems key to understanding the cumulative influences on temperature loading. Finally, our analysis of cyanobacterial populations indicates they are tied to higher temperatures and lower dissolved oxygen at the bottom of the lake. This work will help guide how scientists within the NYS Department of Environmental Conservation and the Central Finger Lakes Regional Planning Office manage Oneida and other lakes across New York. Also, the NYC Department of Environmental Protection would like to collaborate on a comparison of lake and reservoir models for the city’s watershed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #31

1. Outcome Measures

Hydrology-Biogeochemistry Interactions in Controlling Nitrogen Fluxes in Agricultural Ecosystems

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nitrogen has complicated and contradictory interactions with a sweeping range of natural and human-modified ecosystems, interactions that run the gamut from soil fertility and plant welfare to climate change, smog, and acid rain. Among these is the potential for denitrification, which

happens when waterlogged soil provides too little room for oxygen in its pores and some soil microorganisms turn nitrogen into nitrites and nitrates to get the oxygen they need. Result: nitrogen-based greenhouse gases enter the atmosphere. But waterlogged soils can also carry nitrates below the root zone and into groundwater and streams.

What has been done

We identified sites at a Cornell research farm that would be hydrologically distinct but still generally wet: sites where we might expect lots of denitrification. At each, we installed a series of piezometers; these devices are like miniature well casings that probe wet areas and yield a harvest of data. Following step-by-step soil chemistry protocols, we tested whether we could predict which areas were the most likely places to expect denitrification and thus become candidates for intervention. We also measured nitrate export in streams leaving our research area.

Results

We discovered that denitrification potential is strongly correlated to topography, in fact, 90% of the "net-missing" nitrogen in a whole-watershed nitrogen budget can be accounted for by denitrification hotspots comprising about 10% of a watershed. Our results provide a new way to look at the capacity for denitrification at specific points across a watershed. We have explored best practices for using this new knowledge, such as promoting tile drainage systems, adopting nitrogen-fixing green manures in these hotspots, and other strategies that could lessen nitrate loads to streams. Our findings, which won an award at a professional conference, are now included in coursework both on nonpoint source pollution mitigation and eco-hydrology and are being incorporated into models that better monitor and understand the Chesapeake Bay watershed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
405	Drainage and Irrigation Systems and Facilities

Outcome #32

1. Outcome Measures

Finding Management Strategies to Maximize Forest Sequestration, Wood Production, and Biodiversity with Climate Change and Insect Invasion

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

We used the USDA's Forest Service "Northeastern Decision Model" to predict how some aspects of changing climates, along with other natural stressors such as invasive species?with emerald ash borer and hemlock adelgid at the forefront, not to mention an abundance of deer?could change the face of forestry (and the growing biomass market) over the next half-century. We also wanted to see what forest types would be best adapted to these new conditions which also include higher CO2 levels that favor some plants over others.

What has been done

We projected forest dynamics under a range of simulated management techniques to help identify strategies that produce sustainable saw-timber harvests while accelerating carbon sequestration without compromising forest biodiversity. Our Decision Model forecast indicates that emerald ash borers and hemlock adelgids will cause up to 25% biomass loss during the next half-century. Anticipated climate warming over the next 50 years suggests that the forests best adapted to new conditions will contain lots of red oak. Oaks are predicted to decline, since deer prefer to browse on their seedlings. This decline might be reversed by thinning the canopy so that oaks which deer miss can grow faster.

Results

We've identified the management techniques most likely to result in the healthiest forest structure and composition fifty years from now. If, for example, owners plant 60 red oak trees per acre, we project their abundance would increase by 35% by 2060 instead of declining by eight%. This recommendation will help landowners understand the best ways to meet key management goals in the face of climate change and insect invasion. Not only that, but our results will identify how managers can extract increased amounts of fuel in an accelerating biomass market without compromising the ability of their forests to sustain both wood production and biotic diversity into the foreseeable future. We reached our stakeholders through 15 public workshops attended by about 450 people. We also enlisted nearly 300 people spanning 20 counties to funnel their observations on the health of their forests to us.

4. Associated Knowledge Areas

KA Code	Knowledge Area
125	Agroforestry

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The growing antagonism between climate skeptics and climate scientists creates direct impediments to effective education. Climate change issues play out in a complex and volatile context involving weather extremes, changing governmental policies and regulations, competitive land uses and shifting development patterns, evolving consumer demands, and globally influenced markets. The specific implications of these external factors vary greatly by locale and across commodities and business forms. Technical knowledge of climate change issues and mitigation strategies is evolving rapidly.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We employ a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities for each of our planned programs. The results are aggregated in a statewide accountability system which leads to the summary results reporting in the State Defined Outcomes in each plan including selected impact statements and success stories (from a pool of more than 300 stories reported). In 2010, we established an Energy and Climate Change team to provide leadership for statewide program initiatives. Soon after formation, the team entered into partnership with the Cornell Office for Research on Evaluation in their Evaluation Planning Partnership. This collaboration assisted the team in developing detailed logic models for initial program emphases and development of specific evaluation approaches for the coming year.

Key Items of Evaluation

See cross cutting outcomes in State Defined Outcomes.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	18%		28%	
124	Urban Forestry	10%		16%	
401	Structures, Facilities, and General Purpose Farm Supplies	14%		0%	
402	Engineering Systems and Equipment	8%		9%	
403	Waste Disposal, Recycling, and Reuse	25%		21%	
404	Instrumentation and Control Systems	5%		5%	
605	Natural Resource and Environmental Economics	20%		21%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	150.0	0.0	8.0	0.0
Actual Paid Professional	83.7	0.0	2.0	0.0
Actual Volunteer	1.9	0.0	0.0	0.0

2. Institution Name: Cornell University

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
418711	0	182599	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
418711	0	182599	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

2. Institution Name: NY State Agricultural Experiment Station

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	7569	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	7569	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This is a program entailing a wide range of applied research activities and multiple education methods depending on local context and need. Campus-based faculty and extension associates, regional specialists and county-based educators all are involved in designing, implementing, and evaluating tailored applied research and educational efforts depending on the focus and scope of their role. In Spring 2010 we launched a major statewide educational initiative based on a team of four specialists located regionally, four campus faculty in leadership roles, and several program work teams.

2. Brief description of the target audience

Agricultural/horticulture/natural resource and supporting businesses are targeted both regarding bioenergy production opportunities and information regarding alternative energy sources and conservation. Policy education efforts relate to development of agriculture and natural resources based alternative energy sources.

Consumers, property managers, and community leaders are targeted for information regarding energy supply alternatives and energy conservation options for residential, facilities, and transportation needs. Citizens, community agencies and organizations are targeted for energy-related policy education

efforts particularly as related to development of alternative energy sources and the interaction between land use and energy conservation.

Residents and property owners are targeted with stewardship and waste reduction and management in their homes and on their properties. Businesses, organizations, and producers are targeted with information about reducing impacts of their operations. Local government and community leaders are targeted with information related to governmental management of waste, such as relationship between waste management and land use, effective recycling programs, and roadkill management. Environmental planners and managers and technical assistance providers are targeted with in-depth information related to their audiences/constituents. Teachers and youth professionals and volunteers are provided with curriculum and training. Youth are targeted with age appropriate education.

3. How was eXtension used?

Cornell Cooperative Extension supports and promotes eXtension communities of practice, the eXtension public site and the professional development offered through eXtension.org.

Staff across the state are encouraged to be involved in appropriate COPs, and the link to eXtension is promoted on the front page of the Cornell Cooperative Extension public staff site. Currently 323 staff are registered users of eXtension. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of participation in COPs in this plan of work area include:

Sustainable Energy

- Farm Energy
- Home Energy
- Wood Energy

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	64463	3356775	24188	1241547

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	5	34	39

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- (3.1a) # agricultural producers and agribusiness representatives completing educational programs on the potential for development of biologically-based fuels.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- (3.1b) # local and state leaders completing educational programs on the potential for development of biologically-based fuels such as biodiesel, ethanol, methane, recycled vegetable oils, space heating fuels etc.
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- (3.1c) # agricultural producers and agribusiness, and natural resource business representatives completing educational programs about cropping for bioenergy production.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- (3.2a) # agricultural/horticulture/ natural resource and supporting business representatives completing educational programs about the availability and pros and cons of alternative energy sources and/or about potential energy savings in operations.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- (3.3a) # consumers and community leaders completing educational programs about the availability and pros and cons of alternative energy.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- (3.4a) # consumers, property managers, and/or housing officials completing educational programs about potential energy cost savings, including selecting energy providers, and energy conservation strategies and measures especially related to housing and transportation.
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- (3.5a) # community members, leaders and officials completing education programs about the relationships between development patterns and energy use/costs.
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- (3.5b) # of workforce professionals, economic developers and/or entrepreneurs participating in educational programs on energy workforce and business opportunities.
Not reporting on this Output for this Annual Report

Output #9

Output Measure

- (3.6a)# of agricultural/natural resources producers, and/or organization and business representatives completing educational programs on managing and reducing waste. (no target)
Not reporting on this Output for this Annual Report

Output #10

Output Measure

- (3.7a) # of local government officials and community leaders completing educational programs on managing and reducing waste and the relationship between waste and land use management. (no target)
Not reporting on this Output for this Annual Report

Output #11

Output Measure

- (3.8a) # of adult and youth consumers, residents, and landowners completing educational programs on waste reduction and management.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(3.1d) # agricultural producers, agribusiness, or local and state leaders who demonstrate knowledge gains about the potential for development of biologically-based fuels.
2	(3.1e) # forest owners and purchasers of forest products who demonstrate knowledge or skills gains about current markets for firewood and chips/pellets and associated cropping practices.
3	(3.1f) # producers, economic development organizations and other groups who collaborate to establish bioenergy as a viable alternative crop.
4	(3.1g) # of existing or new producers documented to have modified existing practices or technologies and/or adopted new production management practices for bioenergy production.
5	(3.1.h) # of producers, horticulture businesses and/or natural resource managers reporting that cropping for and/or use of bioenergy leads to increased economic returns to their enterprises.
6	(3.2b) # agricultural/horticulture/ natural resource and supporting businesses who demonstrate knowledge or skills gains about the availability and pros and cons of alternative energy sources and/or potential energy savings in operations.
7	(3.2c) # of agricultural/horticultural/ natural resource businesses documented to have adopted appropriate alternative energy sources and/or energy conservation practices.
8	(3.2d) # of producers/horticulture businesses/natural resource managers documented to have improved economic returns to agricultural/ horticultural business profitability and vitality resulting from adopting alternative energy sources and/or energy conservation.
9	(3.3b) # consumers and/or community leaders who demonstrate knowledge or skills gains about the availability and pros and cons of alternative energy sources especially related to housing and transportation.
10	(3.3c) # of consumers documented to have adopted appropriate alternative energy sources.
11	(3.3d) # of consumers who report savings on energy costs attributable to adopting alternative energy sources.
12	(3.4b) # consumers, property managers, and/or housing officials who demonstrate knowledge or skills gains and/or can articulate specific actions they will take related to energy cost controls and conservation measures especially related to housing and transportation.
13	(3.4c) # of consumers reporting to have adopted appropriate energy cost control and/or conservation practices.
14	(3.4d) # of property managers, and/or housing officials documented to have taken measures to improve energy cost control or efficiency of existing and new buildings.
15	(3.4e) # of consumers who report savings on energy costs attributable to adopting energy conservation measures.
16	(3.5c) # community members, leaders and officials who demonstrate knowledge gains about the relationships between development patterns and energy use/costs.

2011 NY State Agricultural Experiment Station Research and Cornell University Research and Extension Combined Annual Report of Accomplishments and Results

17	(3.5e) # communities documented to have assessed local energy development proposals and/or the relationships between current policies and regulations and energy conservation.
18	(3.5f) # of community agencies/organizations documented to have adopted appropriate alternative energy sources.
19	(3.5h) # of communities documented to have established or modified land use and development policies to promote energy conservation.
20	(3.5i) # of community agencies/organizations reporting savings on energy costs attributable to adopting alternative energy sources.
21	(3.5d) # of workforce professionals, economic developers and/or entrepreneurs demonstrating knowledge gains related to energy workforce and business opportunities.
22	(3.5g) # of new workers trained and energy-related businesses established at least in part due to participation in the program.
23	(3.5j) # of communities that report increased diversification of their local economies attributable at least in part to participation in the program.
24	(3.6b) # of agricultural/natural resources producers and/or organization and business representatives who demonstrate knowledge gains about waste management and reduction. (no target)
25	(3.6b)# of agricultural/natural resources producers and/or organization and business representatives who demonstrate knowledge gains about waste management and reduction. (no target)
26	(3.6c)# of agricultural/ natural resources producers and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new practices to manage and reduce waste. (150)
27	(3.6d)# of agricultural/ natural resources producers and/or organization and business representatives documented to have reduced costs through improved waste management practices. (no target)
28	(3.7b)# of local government officials and community leaders who demonstrate knowledge gains about waste management and reduction and the relationship between waste and land use management. (no target)
29	(3.7c)# of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new practices to manage and reduce waste. (75)
30	(3.7d)# of local government officials and community leaders documented to have established or modified waste management policies to enhance and protect land and water resources and minimize energy costs. (25)
31	(3.8b)# of adult and youth consumers, residents, and landowners who demonstrate knowledge gains about waste management and reduction. (no target)
32	(3.8c)# of adult and youth consumers, residents, and landowners documented to have modified existing practices or technologies and/or adopted new practices to manage and reduce waste. (2, 500)
33	(3.8d) number of adult and youth consumers, residents, and/or landowners, documented to have reduced waste volumes and/or costs
34	Energy Awareness at 4-H Camp

35	Seneca GR&EEN (Generating Recycling and Energy Education Now)
36	Woody Biomass as an Energy Source
37	Consumer Energy Savings
38	The Rise of Bioenergy: The Changing Role of Government Policies towards Biofuels, Agriculture and Trade for New York
39	Biochar Sequestration, Soil Fertility Improvement and Energy Production
40	Dairy Farm Management Adjustments to Biofuels-Induced Changes in Agricultural Markets

Outcome #1

1. Outcome Measures

(3.1d) # agricultural producers, agribusiness, or local and state leaders who demonstrate knowledge gains about the potential for development of biologically-based fuels.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

(3.1e) # forest owners and purchasers of forest products who demonstrate knowledge or skills gains about current markets for firewood and chips/pellets and associated cropping practices.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

(3.1f) # producers, economic development organizations and other groups who collaborate to establish bioenergy as a viable alternative crop.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	46

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

(3.1g) # of existing or new producers documented to have modified existing practices or technologies and/or adopted new production management practices for bioenergy production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems
605	Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

(3.1.h) # of producers, horticulture businesses and/or natural resource managers reporting that cropping for and/or use of bioenergy leads to increased economic returns to their enterprises.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
402	Engineering Systems and Equipment

- 403 Waste Disposal, Recycling, and Reuse
- 404 Instrumentation and Control Systems
- 605 Natural Resource and Environmental Economics

Outcome #6

1. Outcome Measures

(3.2b) # agricultural/horticulture/ natural resource and supporting businesses who demonstrate knowledge or skills gains about the availability and pros and cons of alternative energy sources and/or potential energy savings in operations.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

(3.2c) # of agricultural/horticultural/ natural resource businesses documented to have adopted appropriate alternative energy sources and/or energy conservation practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	89

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse

404	Instrumentation and Control Systems
605	Natural Resource and Environmental Economics

Outcome #8

1. Outcome Measures

(3.2d) # of producers/horticulture businesses/natural resource managers documented to have improved economic returns to agricultural/ horticultural business profitability and vitality resulting from adopting alternative energy sources and/or energy conservation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	73

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems
605	Natural Resource and Environmental Economics

Outcome #9

1. Outcome Measures

(3.3b) # consumers and/or community leaders who demonstrate knowledge or skills gains about the availability and pros and cons of alternative energy sources especially related to housing and transportation.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

(3.3c) # of consumers documented to have adopted appropriate alternative energy sources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	513

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #11

1. Outcome Measures

(3.3d) # of consumers who report savings on energy costs attributable to adopting alternative energy sources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	353

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #12

1. Outcome Measures

(3.4b) # consumers, property managers, and/or housing officials who demonstrate knowledge or skills gains and/or can articulate specific actions they will take related to energy cost controls and conservation measures especially related to housing and transportation.

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

(3.4c) # of consumers reporting to have adopted appropriate energy cost control and/or conservation practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2173

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics

Outcome #14

1. Outcome Measures

(3.4d) # of property managers, and/or housing officials documented to have taken measures to improve energy cost control or efficiency of existing and new buildings.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	69

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems
605	Natural Resource and Environmental Economics

Outcome #15

1. Outcome Measures

(3.4e) # of consumers who report savings on energy costs attributable to adopting energy conservation measures.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics

Outcome #16

1. Outcome Measures

(3.5c) # community members, leaders and officials who demonstrate knowledge gains about the relationships between development patterns and energy use/costs.

Not Reporting on this Outcome Measure

Outcome #17

1. Outcome Measures

(3.5e) # communities documented to have assessed local energy development proposals and/or the relationships between current policies and regulations and energy conservation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	36

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
403	Waste Disposal, Recycling, and Reuse

Outcome #18

1. Outcome Measures

(3.5f) # of community agencies/organizations documented to have adopted appropriate alternative energy sources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	16

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #19

1. Outcome Measures

(3.5h) # of communities documented to have established or modified land use and development policies to promote energy conservation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry

Outcome #20

1. Outcome Measures

(3.5i) # of community agencies/organizations reporting savings on energy costs attributable to adopting alternative energy sources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	18

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems

Outcome #21

1. Outcome Measures

(3.5d) # of workforce professionals, economic developers and/or entrepreneurs demonstrating knowledge gains related to energy workforce and business opportunities.

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

(3.5g) # of new workers trained and energy-related businesses established at least in part due to participation in the program.

Not Reporting on this Outcome Measure

Outcome #23

1. Outcome Measures

(3.5j) # of communities that report increased diversification of their local economies attributable at least in part to participation in the program.

Not Reporting on this Outcome Measure

Outcome #24

1. Outcome Measures

(3.6b) # of agricultural/natural resources producers and/or organization and business representatives who demonstrate knowledge gains about waste management and reduction. (no target)

Not Reporting on this Outcome Measure

Outcome #25

1. Outcome Measures

(3.6b)# of agricultural/natural resources producers and/or organization and business representatives who demonstrate knowledge gains about waste management and reduction. (no target)

Not Reporting on this Outcome Measure

Outcome #26

1. Outcome Measures

(3.6c)# of agricultural/ natural resources producers and/or organization and business representatives documented to have modified existing practices or technologies and/or adopted new practices to manage and reduce waste. (150)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems

Outcome #27

1. Outcome Measures

(3.6d)# of agricultural/ natural resources producers and/or organization and business representatives documented to have reduced costs through improved waste management practices. (no target)

Not Reporting on this Outcome Measure

Outcome #28

1. Outcome Measures

(3.7b)# of local government officials and community leaders who demonstrate knowledge gains about waste management and reduction and the relationship between waste and land use management. (no target)

Not Reporting on this Outcome Measure

Outcome #29

1. Outcome Measures

(3.7c)# of local government officials and community leaders documented to have modified existing practices or technologies and/or adopted new practices to manage and reduce waste. (75)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems

Outcome #30

1. Outcome Measures

(3.7d)# of local government officials and community leaders documented to have established or modified waste management policies to enhance and protect land and water resources and minimize energy costs. (25)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems

Outcome #31

1. Outcome Measures

(3.8b)# of adult and youth consumers, residents, and landowners who demonstrate knowledge gains about waste management and reduction. (no target)

Not Reporting on this Outcome Measure

Outcome #32

1. Outcome Measures

(3.8c)# of adult and youth consumers, residents, and landowners documented to have modified existing practices or technologies and/or adopted new practices to manage and reduce waste. (2, 500)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1399

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems

Outcome #33

1. Outcome Measures

(3.8d) number of adult and youth consumers, residents, and/or landowners, documented to have reduced waste volumes and/or costs

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3187

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems

Outcome #34

1. Outcome Measures

Energy Awareness at 4-H Camp

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Although there has been much press and public discussion about the need to conserve energy and better utilize our energy resources, there exists a pervasive lack of awareness of the many simple options available. Youth can be inspired to not only become more aware of energy use, conservation and the cost of energy as a financial consideration, but also how lower energy use will benefit our climate.

What has been done

The New York State 4-H Camp Program developed an "Energy Awareness at 4-H Camp" program in 2010 where Councilors-in-Training (CITs) participated in an information gathering needs assessment and environmental evaluation related to energy use. The CITs surveyed peers and campers, evaluated factors like camp energy consumption, and suggested strategies to promote energy conservation. CITs communicated their assessment results and presented energy saving recommendations to the Cornell Cooperative Extension Board of Director, Cornell Cooperative Extension Executive Director, and senior 4-H Camp Staff. 4-H Camp implemented

selected energy reduction and camper education strategies identified by the CITs during 2011.

Results

CITs identified facility enhancements completed at 4-H Camp including: replacing bulbs in selected lodges with energy efficient alternatives, starting a camp compost pile, replacing older appliances, enhancing groundwater drainage and labeling light switches. CITs also involved over 1000 staff and campers in a range of educational activities including Green Days to increase awareness of recycling and water consumption, harvesting natural light, checking bathrooms for running water and lights left on, and announcing a "Green Fact of the Day." Due to their involvement in the Energy Awareness at 4-H Camp: --84% of campers agreed to turn off the water while brushing their teeth. --75% of campers agreed to turn off lights when they were not in use. --79% of campers agreed to unplug appliances when they are not in use.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #35

1. Outcome Measures

Seneca GR&EEN (Generating Recycling and Energy Education Now)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the recent past, recycling education efforts in Seneca County have been minimal. The re-bidding of the county recycling contract in 2010 brought this issue to the forefront with the county Board of Supervisors. The amount of recycling in the county stands at just under 2,000 tons annually. By contrast, Seneca Meadows Landfill, which is located in the county and is the destination landfill for much of the northeast, takes in 6,000 tons of trash a day. While there are no firm numbers available in regards to the percentage of people who recycle in the county, it is far from 100% and clearly many of those who do recycle do not recycle everything that they could.

What has been done

Seneca County Cornell Cooperative Extension was asked by the County Manager to submit a proposal to the Board of Supervisors to conduct recycling education in the county with an emphasis on youth education. The proposal was accepted and Seneca County CCE, in addition to other recycling education efforts, launched Seneca GR&EEN (Generating Recycling and Energy Education Now) a teen peer recycling education program. The program recruited 14 students from 3 different school districts who were trained in the areas of recycling and solid waste management issues, energy education, teaching strategies and techniques, climate change, and civic engagement/responsibility. This took place at a 3-day, overnight training retreat along with ongoing monthly training.

Results

In the first 6 months after their training the Seneca GR&EEN educators taught over 1,500 of their peers the "how to" of reducing, reusing, and recycling as well as sharing information on energy consumption, conservation and alternative energy sources. They have presented to the County Board of Supervisors and organized events for America Recycles Day including Plastic Bag recycling contests in which over 30,000 plastic bags and wraps were collected over a two week period to be recycled. According to the county, the tonnage of recycled materials collected in the 1st nine months of the year is already above the previous record for an entire year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics

Outcome #36

1. Outcome Measures

Woody Biomass as an Energy Source

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Interest in the use of woody biomass for large-scale bioenergy production in the United States has resurfaced and increased substantially in recent years. New York State presently acquires 4-5 percent of its energy from biomass sources, including wood. The Northern region of the United States (12 states) has 85 million acres of forestland, of which 78 million acres is timberland. NYS alone is 62% forested, 85% of those woodlands are owned by private forest owners (NIPF). In the Northern region, states average a 3:1 growth to cut ratio. However, the majority of NIPF do not manage their forestland, nor do they intend to harvest over the next decade. The volume for woody bioenergy feedstock is not the issue; the challenge lies in convincing NIPF owners to become active stewards of their forestlands.

What has been done

A grant was originally awarded to the New York Forest Owners Association (NYFOA), and was then offered by NYFOA to Cornell Cooperative Extension Warren County to fulfill part of the requirements and obligations to the grant. These included developing strategies, mechanisms, and materials to diffuse the innovation of forest stewardship to promote woody biomass energy to NIPF owners. The other part of the grant was awarded to SUNY ESF to develop a survey to change agents of the region to assess awareness, knowledge and perceptions of a new innovation - woody biomass as an energy source.

Results

Presentations on the grant topic were provided at three other existing functions including. A resource list was created that links into webinar sites, research information, and other pertinent resources developed by other land grant universities and the U.S. Forest Service Woody Biomass website and the information was added to the Cornell Cooperative Extension Forest Connect website for change agents and others to be able to have access to woody biomass information and resources in one location. A woody biomass to biofuel for woodlot management fact sheet was developed and will be printed in the same format as the Forest Connect fact and be posted on the Forest Connect website. Two Modular Object-Oriented Dynamic Learning Environment (Moodle) courses were created as well.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
605	Natural Resource and Environmental Economics

Outcome #37

1. Outcome Measures

Consumer Energy Savings

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

New York consumers spend an average of \$2,600 a year for home heating, electricity, and hot water. By making their homes more energy efficient, consumers can reduce that amount by between 20 and 60%. Especially for households with limited resources the dollars saved can be important for providing other basic household needs such as food and transportation.

What has been done

'Save Energy, Save Dollars' is an educational workshop conducted by Cornell Cooperative Extension's professional educators throughout New York State. The program provides low cost/no cost strategies that can easily be implemented by homeowners and renters. Using a strength-based, interactive approach, educators encourage participants to select specific actions they will take to reduce their energy consumption at home by developing an Energy Action Plan to keep them on track. Participants are given an energy saving tool kit that includes a CFL bulb, rope caulk, outlet cover plate gaskets, and a plastic storm window. Instructors show how to properly use each item in the toolkit. Additional organizations and agencies that can help with energy conservation are identified.

Results

Since the beginning of this program, more than 41,000 people have attended more than 3,300 workshops conducted in 54 counties upstate and in New York City. Feedback from 4250 participants in 2010 and 2011 showed that: 95% felt that program instructors were skillful and knowledgeable, 91% rated sessions as helpful or very helpful, and 89% could identify one or more ways they planned on saving energy. A formal follow-up survey of 460 previous participants indicated that: 98% would recommend the program to others, 89% could identify at least one action they had taken to save energy, and 65% had refined their Energy Action. What participants said: "I learned there are plenty of ways to save on my energy bills."; "The pros and cons were very well explained."; "Even small actions are valuable!"; "The energy we use or save affects the whole world."; "It's better to turn the heat down than to turn it off completely."; "I learned to look for the Energy Star label."; "I learned how to save energy without too much effort or expense."; "I know I can save money by making my house more efficient."

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #38

1. Outcome Measures

The Rise of Bioenergy: The Changing Role of Government Policies towards Biofuels, Agriculture and Trade for New York

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Balancing the relative costs and consequences of biofuel and trade policies is a tricky business, involving complex issues and analyses. We looked at state and federal energy policies from the perspectives of reducing our dependence on oil, lessening stresses on the environment, and raising farm income, while also making sense of myriad state and federal policies and programs with their sometimes conflicting goals or consequences.

What has been done

We analyzed an array of biofuel policies: ethanol tax credits, mandates, production subsidies, import barriers, and sustainability standards. We determined how these policies complement other energy policies, such as fuel taxes. For instance, ethanol policy reduces tax costs for farm subsidy programs, cuts fuel prices, and reduces world oil prices, meaning we import less oil at lower prices, a net gain for the U.S. The U.S. also gains as a corn exporter, given that ethanol production has increased corn prices. On the other hand, consumption and production subsidies for ethanol and corn production actually promote fuel consumption?in other words, people are driving more and using more fuel. And because that fuel is mostly gasoline, it means we need to import more oil.

Results

Ethanol mandates, while well-intentioned, come with implicit economic inefficiencies, meaning that corn-ethanol fails most economic cost-benefit tests. For example, we found that ethanol replaces only .4% of a gallon of gasoline, not the full gallon assumed by lifecycle accounting. This means that CO2 savings from ethanol are more than offset by fuel-market leakage, in other words, more oil is consumed elsewhere because ethanol promotes lower oil prices. One implication: corn-ethanol does not pass the EPA?s requirement that CO2 declines 20% relative to a gallon of gasoline it is assumed to replace. Indeed, we found that biofuel mandates not only fail to fulfill most policy goals but never complement each other?and rarely are neutral to energy or

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #39

1. Outcome Measures

Biochar Sequestration, Soil Fertility Improvement and Energy Production

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Building a secure energy future means finding alternatives to depleting stocks of fossil fuels, and finding ways to capture carbon emissions from producing and using those alternatives.

What has been done

An ancient method of super-heating wood and other organic materials in the near-absence of oxygen (pyrolysis) was once used to produce biochar. Biochar is a lot like charcoal, but where charcoal is primarily made from wood, biochar can be made from just about anything: leaves, crop residues, poultry litter, and the like. Scientists have found that biochar can both improve soil fertility for centuries, but can lock carbon in the soil for many hundreds of years. Our research focuses on teasing apart the factors that could make certain feedstocks or processes better than others because the more stable the biochar, the longer it holds CO₂ in the soil.

Results

We looked at what factors most influence biochar stability: specifically the temperature the stock is baked at. We found that stable biochars are more sensitive to temperature than those that decay more quickly. Another important factor is ash content. High-ash stocks can be useful fertilizers, but they break down fairly quickly and their carbon escapes. Ash content ranges broadly from one biochar to the next?from less than one-half% to 88.2%. Higher pyrolysis temperatures for low-ash biochars increases their stability, an effect that reverses when ash

content exceeded 20%. Meanwhile, we found that nitrogen fertilizers leached into groundwater more slowly after we worked biochar into farm soils. And we have characterized a range of biochar types for carbon stability and their effect on soil fertility. Because biochar is a method that can improve sustainability by removing biomass to produce bioenergy while returning the carbon in biochar to the soil, it sustains biomass productivity and ecosystem health, and could, over time, generate more energy by diverting some energy into biochar.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #40

1. Outcome Measures

Dairy Farm Management Adjustments to Biofuels-Induced Changes in Agricultural Markets

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The move toward confined-animal feeding operations (CAFOs) which for dairy farmers means keeping 700-plus cows in a barn or paddock and bringing food to them rather than letting them out to graze, brings up a constellation of environmental and economic issues orbiting around a single problem: what to do with all the manure. Now new CAFO nutrient-management regulations slash by half how much phosphorus runoff a farm can emit, meaning about half of the manure produced on these large dairy farms must be transported off the farm. This has an immediate downstream effect on farm income, land prices or rents, land use, environmental quality, and more. And partly because the ethanol industry competes with dairy farmers for corn, feed costs have gone up.

What has been done

Because so many elements in this constellation are inextricably woven together, and because New York is such an important dairy state, third in the nation, we created a data set loaded with information on land quality, productivity, and existing nutrient levels to look at a sweeping range of issues including: how new manure-use regulations affect farm income, land use, and manure and

fertilizer applications and management, the implications of these new regulations for agricultural land prices or rents based on the land's capacity for production vs. its value as a manure disposal site, and the economic feasibility of adding distillers dried grains and solubles (DDGS), a byproduct of the ethanol industry, to dairy rations.

Results

New environmental regulations will most likely reduce CAFO incomes by about 10%. Meanwhile, nearby farmland land suitable for spreading manure under the new regulations will have added value: not just for cropping but for manure disposal as well. This value falls as distance from the source increases. Ironically, farmers might compensate for lost income by adding an ethanol-production waste product, DDGS to their herds' feed rations. But DDGS is high in nitrogen and phosphorus, the very nutrients that already delimit how much manure farmers can till in or how else they can dispose of it.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The interaction between natural disasters, the economy, and energy costs is well documented. Weather in particular has interrupted supplies and dramatically influences heating and cooling costs. Appropriations, public policy, and regulations directly affect the ability to pursue energy source alternatives, including bioenergy development, and to implement energy conservation alternatives, particularly for low-income households. Dramatic cuts in state funding for consumer energy education is a significant barrier. Public and private funders and CCE may have fewer fiscal resources and other resources to devote to energy matters. The potential for Marcellus Shale development in New York has in some ways elevated energy awareness but also has exposed how polarized views are about energy conservation and development.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We employ a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities for each of our planned programs. The results are aggregated in a statewide accountability system which leads to

the summary results reporting in the State Defined Outcomes in each plan including selected impact statements and success stories (from a pool of more than 300 stories reported). In 2010, we established an Energy and Climate Change team to provide leadership for statewide program initiatives. Soon after formation, the team entered into partnership with the Cornell Office for Research on Evaluation in their Evaluation Planning Partnership. This collaboration assisted the team in developing detailed logic models for initial program emphases and development of specific evaluation approaches for the coming year.

Key Items of Evaluation

See cross cutting outcomes in State Defined Outcomes.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Childhood Obesity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
502	New and Improved Food Products	5%		6%	
701	Nutrient Composition of Food	15%		5%	
702	Requirements and Function of Nutrients and Other Food Components	15%		33%	
703	Nutrition Education and Behavior	40%		26%	
724	Healthy Lifestyle	25%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	400.0	0.0	8.0	0.0
Actual Paid Professional	293.0	0.0	2.0	0.0
Actual Volunteer	6.0	0.0	0.0	0.0

2. Institution Name: Cornell University

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1465490	0	412048	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1465490	0	412048	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

2. Institution Name: NY State Agricultural Experiment Station

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	19020	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	19020	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This is a statewide multi-disciplinary extension program with emphases cutting across many content areas and audiences. Campus-based faculty and extension associates provide leadership and participate in work teams with CCE educators. Programs draw upon Cornell and other academic research. All are involved in designing, implementing and evaluating tailored outreach. Trained Extension nutritionists and parenting and 4-H educators lead local program activities. Researchers in horticulture and agricultural economics and marketing investigate options for improving local production and direct marketing of fresh produce into areas where they are currently lacking.

Programs for children and youth are delivered through a variety of settings: 4-H camps, clubs, fairs and afterschool as well as through child-parent/grandparent involvement projects and in-school student education. Family-focused programs promote a positive parent/care-giver-child feeding relationship and planning for good nutrition and physical activity. Extension staff collaborate with community leaders to improve the local environment for healthy eating and active living. Activities include sequential learning events, "community workshops" and engagement with community and civic leaders to improve the environment for nutrition and wellness and support of the local food system.

2. Brief description of the target audience

Audiences reached include: moderate and low income families; 4-H youth; children in and out of school; nutrition, health, and family professionals; front-line family workers; school food service staff; community leaders; and government and agency leaders at the local, state, and federal level.

3. How was eXtension used?

Cornell Cooperative Extension supports and promotes eXtension communities of practice, the eXtension public site and the professional development offered through eXtension.org.

Staff across the state are encouraged to be involved in appropriate COPs, and the link to eXtension is promoted on the front page of the Cornell Cooperative Extension public staff site. Currently 323 staff are registered users of eXtension. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of participation in COPs in this plan of work area include:

Childhood Obesity and Nutrition

- Families, Food, and Fitness

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	185288	4512299	194757	4696475

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	6	218	224

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- (4.1a) # children, youth, parents/caregivers and other adults reached via healthy eating and active living programs
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- (4.1b) # of women and health providers completing education programs addressing healthy weight gain during pregnancy and breastfeeding
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- (4.1c) #of extension educators and/or volunteers participating in training programs to enhance obesity prevention educational opportunities for children and youth, and adults who care for them
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- (4.2a) # of program participants reached to improve their food resource management and food security
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- (4.3a) # of community and/or government/ agency members completing educational programs on issues related to childhood obesity prevention programs and policy related to healthy living
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(4.1d) of children, youth, parents/caregivers and other adults who demonstrate knowledge or skill gains related to healthy eating and active living
2	(4.1e) #of women and health providers demonstrating increased knowledge or skill gains related to healthy weight gain during pregnancy and breastfeeding
3	(4.1f) # of extension educators or volunteers demonstrating knowledge or skill gains related to healthy eating and active living programs for obesity prevention
4	(4.1g) # of youth program participants documented to have applied healthy eating and/or active living, recommendations
5	(4.1h) # of adult program participants documented to have applied healthy eating and/or active living, recommendations
6	(4.1i) #of extension educators and/or volunteers reporting increased delivery of healthy living-related programs.
7	(4.1j) # of vulnerable children and youth documented to have reduced incidence of overweight and obesity as a result of participating in relevant educational programs.
8	(4.1k) # of adult program participants documented to have reduced one or more chronic disease indicators associated with overweight.
9	(4.2b) #of program participants who demonstrate knowledge or skill gains related to food resource management and food security
10	(4.2c) # of program participants who adopt food resource management and/or food security practices
11	(4.2d) # of program participants documented to have improved food resource management and/or food security
12	(4.3b) # of program participants who demonstrate increased knowledge or skill gains related to childhood obesity prevention programs and policies
13	(4.3c) # of program participants documented to have increased involvement in public/community childhood obesity prevention actions
14	(4.3d) # of participating schools and/or communities documented to have made practice and/or policy changes to promote healthy eating and active living
15	(4.3e) # of participating schools and/or communities reporting decline in incidence of childhood overweight and/or indicators of chronic diseases associated with obesity.
16	Delaware County Youth Choose Health
17	Adopting a Positive, Practical, Lifestyle for Eating Series (APPLES)

18	Families Growing Together
19	Local Food Choices, Eating Patterns, and Population Health
20	An Integrated Approach to Prevention of Obesity in High Risk Families
21	Identification of Novel Bioactive Compounds of Whole Grain Wheat and Whole Grain Wheat Products

Outcome #1

1. Outcome Measures

(4.1d) of children, youth, parents/caregivers and other adults who demonstrate knowledge or skill gains related to healthy eating and active living

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

(4.1e) #of women and health providers demonstrating increased knowledge or skill gains related to healthy weight gain during pregnancy and breastfeeding

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

(4.1f) # of extension educators or volunteers demonstrating knowledge or skill gains related to healthy eating and active living programs for obesity prevention

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

(4.1g) # of youth program participants documented to have applied healthy eating and/or active living, recommendations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	18839

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

(4.1h) # of adult program participants documented to have applied healthy eating and/or active living, recommendations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #6

1. Outcome Measures

(4.1i) #of extension educators and/or volunteers reporting increased delivery of healthy living-related programs.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

(4.1j) # of vulnerable children and youth documented to have reduced incidence of overweight and obesity as a result of participating in relevant educational programs.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

(4.1k) # of adult program participants documented to have reduced one or more chronic disease indicators associated with overweight.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

(4.2b) #of program participants who demonstrate knowledge or skill gains related to food resource management and food security

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

(4.2c) # of program participants who adopt food resource management and/or food security practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	18599

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
703	Nutrition Education and Behavior

Outcome #11

1. Outcome Measures

(4.2d) # of program participants documented to have improved food resource management and/or food security

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	14489

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
703	Nutrition Education and Behavior

Outcome #12

1. Outcome Measures

(4.3b) # of program participants who demonstrate increased knowledge or skill gains related to childhood obesity prevention programs and policies

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

(4.3c) # of program participants documented to have increased involvement in public/community childhood obesity prevention actions

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	483

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #14

1. Outcome Measures

(4.3d) # of participating schools and/or communities documented to have made practice and/or policy changes to promote healthy eating and active living

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #15

1. Outcome Measures

(4.3e) # of participating schools and/or communities reporting decline in incidence of childhood overweight and/or indicators of chronic diseases associated with obesity.

Not Reporting on this Outcome Measure

Outcome #16

1. Outcome Measures

Delaware County Youth Choose Health

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to the 2010-2013 Community Health Assessment for Delaware County, Department of Public Health, approximately 21.6% of youth were living below the poverty line. Middle School Student data showed that 31.6% of students described themselves as overweight, and 47.4% were trying to lose weight. These data provide a snapshot of the health and weight management issues facing pre-pubescent students. Among the 129 Choose Health participants, observation indicates that 48-50 students (mostly female) were struggling with being overweight due to limited exercise and poor eating habits.

What has been done

129 youth participated in six Choose Health lessons. CHOOSE HEALTH focuses on empowering middle school students with cooking and food preparation safety skills, nutrition and label reading knowledge, and strategies to adopt and maintain healthy lifestyles to decrease chronic health risks. Students measured out sugar levels found in their favorite drinks; switched from drinking soda to milk and water; compared nutritional value of snacks to determine which had the better nutritional value; learned how to use the Nutrition Facts Labels to guide their food shopping; and used food pictures to create MyPlate for meals and snacks. Youth also participated in fun ways to be active through games, body movement, dancing, and yoga at each lesson.

Results

Students, and the adult care givers who learned along side of the youth, responded enthusiastically to CHOOSE HEALTH, and pre/post assessments reflect their learning and changed food choices and portion sizes. 62.5 % of the 4-H club started choosing and eating more vegetables once they realized that Nutrition Facts Label reading tells a story, and that MyPlate assists them to know what to look for on their own plate and to have enough fruits and vegetables. 33% of the Girl Scout group switched from drinking soda to milk and water; Adult care givers supported CHOOSE HEALTH with site grown produce and store bought groceries. Evaluation feedback on lessons was shared with Cornell to provide guidance in making curriculum revisions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #17

1. Outcome Measures

Adopting a Positive, Practical, Lifestyle for Eating Series (APPLES)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to the Oswego Counts, County Wide Services Needs Assessment of 2010, 25.7% of adults in Oswego County are obese. The leading cause of death in Oswego County is diseases of the heart. Maintaining a healthy weight and engaging in a more active lifestyle has shown to decrease obesity a contributing factor in heart diseases. In February 2011, according to New York State Office of Temporary and Disability Assistance statistics, there were 8,498 food stamp households in Oswego County. The 8,498 food stamp households represent 19,378 persons and a total monthly food stamp benefit value of \$2,565,943.

What has been done

Over the course of the program CCE Oswego County enrolled 270 families in the APPLES program. At one site - the Oswego County Nutrition Program Educators conducted the APPLES programs at Harbor Lights, a day treatment agency at the Salvation Army for individuals that have limited resources and receive food stamps. The lessons included: Learning how to prepare and store food safely, feeding families well-balance meals by eating a variety of healthy food options based off the MyPyramid, learning how to read nutrition fact labels in order to shop for healthy food options, learning how to make healthier food choices on a budget using available food resources such as WIC, learning tricks in order to cut calories, fat, sugar, and sodium from homemade quick, easy and affordable meals, learning fun physical activities that the whole family can do together.

Results

77% of the participants completed the course. Participants who completed the 6-week APPLES program reported improvements in the following knowledge and skill practices based on exit behavior checklists and food recall reports: Food Resource Management, including meal planning, price comparison, and using a grocery list; General healthy food choices like increased variety and amounts of vegetables served to their families daily; Nutrition Facts labels use to

make better food choices; Food Safety, e.g. thawing and storing protein foods properly.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #18

1. Outcome Measures

Families Growing Together

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Putnam County is among the wealthiest and best-educated counties in New York State, but it is not without its issues. Obesity is a serious problem: Twenty-three per cent (23%) of children in the WIC (Women, Infant and Children) Program are obese; 58% of adult county residents are overweight or obese; and the mortality rates for cardiovascular disease, stroke and diabetes are similar to those statewide. Families with children in this wealthy county are disconnected from the land and from the traditions of working together in a home garden and, as a result, have adopted the modern-American fast-food diet.

What has been done

Families Growing Together links gardening, healthy eating and physical activity in the garden, where families can work together to grow their own healthy food, learn a new healthier lifestyle and spend more time together as a family. The year-long program began by teaching families how to prepare the soil using the lasagna (no-till) method and continued, in monthly classroom meetings, with basic gardening lessons. Putnam County Health Department nutrition educators provided lessons in healthy eating and cooking, as did the 4-H Program leader, using the new 4-

H Choose Health program. Families received a 20 x 20 plot in a community garden and each family was mentored throughout the year, both in the classroom and in the garden, by Master Gardener volunteers.

Results

At the end of the year, 75% (15 families) agreed that their awareness of healthier food choices had increased markedly: children were especially happy to eat the vegetables they grew in their own gardens, and enjoyed a wider variety of colors. Pilot-year families devoted an average of 30 hours of intense physical labor per family preparing their gardens in the fall. The following spring and summer, physical activity per adult averaged about 2 hours per week (about 1 hour per week per child). Of the 20 families, 12 reported that their children were more involved in preparing salads for dinner, harvesting items specifically for that evening s meal. A single mother reported that she was most satisfied with being able to spend more time with her children doing something other than ferrying them back and forth to programmed activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #19

1. Outcome Measures

Local Food Choices, Eating Patterns, and Population Health

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The obesity epidemic and the debilitating (and expensive) health problems that accompany it -- diabetes, heart disease, and more -- begins at home, in the kitchen, in fact. This makes the kitchen, hub of so many family activities, the logical place to begin a simple but profound intervention that brings parents and their preteen-aged children together to prepare quick, easy,

nutritious meals. Equally important is research, conducted by teams of researchers, practitioners and community stakeholders, to tease apart the food decision-making systems families use, both with and without intervention, and to analyze Cornell Cooperative Extension's needs for family food and nutrition programming.

What has been done

We developed "Cooking Together for Family Meals," a series of six weekly classes for children and their parents stressing healthful, low-cost meals that are heavy on the vegetables: dark leafy greens, winter squash, cabbage-family vegetables, and beans. We also engaged with stakeholders and educators in many, many ways: developing strategies for building family and community capacity for change; examining family and community assets to improve the health and well-being of children and their families; building a "Collaborative Engaged Research (CER) Toolbox" for practitioners that help community stakeholders create resilient community food systems?and more.

Results

"Cooking Together" results were impressive. Before and after surveys showed that 98% of families were comfortable putting vegetables in the pot, compared to 67% before, while 94% gained the confidence to adapt recipes for health values, versus 59% before. Best of all, 98% of adults and 90% of children showed a clear interest in cooking together, compared to only 48% and 40%, respectively, before the series. Our website, <http://familyfood.human.cornell.edu>, provides a wealth of data, background materials and ideas for people who want to make a difference in the health and well-being of their communities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #20

1. Outcome Measures

An Integrated Approach to Prevention of Obesity in High Risk Families

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity, which affects one third of U.S. women, is the strongest modifiable risk factor for breast cancer. Building on our worksite ecological-intervention of 2009, "Small Steps are Easier Together," we wanted to understand both the acceptance and practicality of a worksite ecological intervention to prevent weight gain among workers and worksite leaders. Our approach was two-pronged: 1) improved access to fruits, vegetables, and low- or no-calorie drinks, and 2) team walking: coworkers walking together during their breaks. We also wanted to see what effect participation had on workers' food choices and physical activity six months later.

What has been done

We accomplished our first aim by taking our approach to five small or medium-sized rural workplaces, employing open-ended interviews with CCE partners, worksite leaders, and workers, as well as four focus groups with workers in intervention sites. Sixty-five workers agreed to participate in our Small Steps program. The second aim was addressed through a follow-up survey with participants six months after the end-date of our program.

Results

Our "Small Steps" process evaluations showed much enthusiasm among participants and worksite leaders. The most successful sites were characterized by strong leadership from management, a hands-on worksite leader, group input into which strategies to use, a critical mass of employee participants, and feelings of accountability to coworkers. Indeed, 36% of participants across all worksites showed sustained walking levels, averaging 1,300 steps above baseline, a very good outcome for behavioral change. But while worksite availability of healthy foods, fruits and vegetables, water and the ease of choosing smaller portions were sustained at follow-up, gains in healthy eating were not. We took our results to about 475 researchers and health professionals, 237 community educators, and worksite leaders and members, and 300 graduate students through scientific, professional, and community meetings.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #21

1. Outcome Measures

Identification of Novel Bioactive Compounds of Whole Grain Wheat and Whole Grain Wheat Products

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With about 60 million acres planted each year, yielding upward of two billion bushels, wheat is a major crop for the U.S. economy. Most people eat wheat every day: in sandwiches and hamburger buns, as pasta and pizza, or in their morning cereal. Most of those products are based wholly or in large part on refined white flour or wheat kernels. Yet whole grains, wheat included, are good sources of phenolic phytochemicals. Until recently, no one knew just how good a source of these phytochemicals whole grains could be. These compounds are now being researched for their potential to lower the risk of chronic diseases: cardiovascular disease, diabetes, obesity, and cancer.

What has been done

The phenolic content of every whole grain is much greater than of its refined counterpart, whether you're speaking of wheat or rice, barley or oats. But the phenolic content of many whole grains was underestimated in early research, since most researchers measured only the "free phenolic content" and not phenolic phytochemicals bound to the cell wall. We reported the total phytochemical content and antioxidant activity of six varieties of whole wheat?both hard bread and soft pastry wheat cultivars. The bound fraction contributed 53.8 to 69.7%, meaning that prior measurements were inaccurate.

Results

Several decades ago, research on the vitamin content of foods had a considerable impact on the production, sale, and consumption of a whole range of foods. Phenolic phytochemicals are rather like the new vitamins, with as many as ten thousand estimated in fruits, grains, legumes, and vegetables. But while phytochemicals are not essential to life itself, unlike vitamins, fats, and protein?they have important contributions to make to health and longevity. Until recently, though, no one knew just how good a source of these phytochemicals whole grains could be. As our results are disseminated to the food industry and consumers, they could help promote the

consumption of whole grains to reduce the risk of chronic diseases?even while helping maintain the profitability of wheat growers and the food industry in New York and beyond.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Local governments, an important funder for local extension staff, face diminished revenues and increased mandated costs outside of the non-mandated extension programs. Thus having professionals available to implement new research-based programming is not always possible. A very slow recovery from the recession and pockets of high unemployment in the state affect how public and private funds are allocated to educational activities. In some instances, family subsistence is a higher priority than improved nutrition and opportunities for physical activity. As an example of the latter, in New York State, cost cuts include closing some public parks and reducing recreational physical activity programs. Some decision-makers and others in the community do not agree with all aspects of an ecological approach to childhood obesity prevention, including disagreeing with community or institutional policy changes such as eliminating non-nutritious snacks from after school activities instead viewing the individual and within the family as responsible for nutrition and health.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We employ a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities for each of our planned programs. The results are aggregated in a statewide accountability system which leads to the summary results reporting in the State Defined Outcomes in each plan including selected impact statements and success stories (from a pool of more than 300 stories reported).

Key Items of Evaluation

See cross cutting outcomes in State Defined Outcomes.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Food Safety

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
308	Improved Animal Products (Before Harvest)	5%		1%	
501	New and Improved Food Processing Technologies	10%		39%	
503	Quality Maintenance in Storing and Marketing Food Products	18%		0%	
504	Home and Commercial Food Service	30%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%		3%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	15%		19%	
721	Insects and Other Pests Affecting Humans	2%		7%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		11%	
723	Hazards to Human Health and Safety	10%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	150.0	0.0	9.0	0.0
Actual Paid Professional	48.1	0.0	3.0	0.0
Actual Volunteer	1.6	0.0	0.0	0.0

2. Institution Name: Cornell University

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
240371	0	330508	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
240371	0	330508	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

2. Institution Name: NY State Agricultural Experiment Station

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	87263	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	87263	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This is a comprehensive program entailing a wide range of applied research activities and multiple education methods depending on context and need. Campus-based faculty and extension associates, regional specialists and county-based educators all are involved in designing, implementing, and evaluating tailored educational efforts depending on the focus and scope of their role.

Examples of activities are:

- Convey general knowledge and understanding of food safety science to New York State residents and beyond via varied communication strategies;
- Provide educational programs in collaboration with regulatory agencies involved with assuring the safety and wholesomeness of food processed, prepared, sold and handled and consumed by the public in New York State;
- Via courses, presentations and materials, support transfer of new research-based information for appropriate applications in the agricultural production, manufacturing, retailing and food service industries;
- Communicate current food safety production, manufacturing and technical problems to researchers at Cornell;
- Conduct specialized instruction in the effective application of laboratory methods to maintain and improve product safety and quality in the dairy and food industry.

2. Brief description of the target audience

Audiences reached include: processors, producers and consumers with targeted programs for moderate and low income families; 4-H youth; nutrition, health, and family professionals; front-line family workers; food service and food production staff and their managers and directors; and government and agency leaders at the local, state, and federal level.

3. How was eXtension used?

Cornell Cooperative Extension supports and promotes eXtension communities of practice, the eXtension public site and the professional development offered through eXtension.org.

Staff across the state are encouraged to be involved in appropriate COPs, and the link to eXtension is promoted on the front page of the Cornell Cooperative Extension public staff site. Currently 323 staff are registered users of eXtension. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of participation in COPs in this plan of work area include:

Food Safety

- Food Safety

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	105085	3283049	37557	1153504

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	1	40	41

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- (5.1a) # of consumers in programs on: reducing food safety and/or food borne risks and illnesses including recommended purchasing, handling, storage, and preparation practices
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- (5.2a) # of producers/processors/food service providers participating in programs on: reducing food safety and/or food borne risks and illnesses including recommended production, processing, storage, handling, marketing, and preparation practices
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- (5.3a) # food safety decision-makers, policy makers and other officials reached with science-based information to improve food safety practices and policies
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(5.1b) # of consumers who demonstrate knowledge or skill gains related to reducing food safety and/or food-borne risks and illnesses including recommended purchasing, handling, storage, and preparation practices
2	(5.1c) # of consumers documented to have implemented new and/or increased application of ongoing safe food purchasing, handling, storage, and preparation practices
3	(5.1d) Reduced incidence of food-borne illness among program participants.
4	(5.2b) # of producers/processors/food service providers who demonstrate knowledge or skill gains related to reducing food safety and/or food-borne risks and illnesses including recommended production, processing, storage, handling, marketing, and preparation practices
5	(5.2c) # of producers/processors/food service providers documented to have implemented new and/or increased application of ongoing safe food production, processing, storage, handling, marketing and preparation practices.
6	(5.2d) Improved safety of foods available through wholesale and retail outlets and institutional foods.
7	(5.3b) # of food safety decision-makers, policy makers and other officials who demonstrate knowledge gains relative to improved food safety practices and policies
8	(5.3c) # of communities/ firms/or organizations documented to have assessed practices or food safety policies as a result of participating in relevant educational programs.
9	(5.3d) # of communities/firms/or organizations documented to have implemented improved practices or food safety policies as a result of participating in relevant educational programs
10	Food Safety Workshops For Farmers
11	Master Food Preservers Trained in Tompkins County
12	Healthy Soils, Healthy Communities
13	Good Agricultural Practices - Online Produce Safety Course
14	A Method to Determine Lung Health in Lambs Prior to Kosher Slaughter
15	Development of Non-Heat Based Combination Treatments for Pathogen Inactivation in Foods

Outcome #1

1. Outcome Measures

(5.1b) # of consumers who demonstrate knowledge or skill gains related to reducing food safety and/or food-borne risks and illnesses including recommended purchasing, handling, storage, and preparation practices

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

(5.1c) # of consumers documented to have implemented new and/or increased application of ongoing safe food purchasing, handling, storage, and preparation practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	9934

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service
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
721	Insects and Other Pests Affecting Humans
723	Hazards to Human Health and Safety

Outcome #3

1. Outcome Measures

(5.1d) Reduced incidence of food-borne illness among program participants.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	344

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
308	Improved Animal Products (Before Harvest)
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service
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
721	Insects and Other Pests Affecting Humans

Outcome #4

1. Outcome Measures

(5.2b) # of producers/processors/food service providers who demonstrate knowledge or skill gains related to reducing food safety and/or food-borne risks and illnesses including recommended production, processing, storage, handling, marketing, and preparation practices

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

(5.2c) # of producers/processors/food service providers documented to have implemented new and/or increased application of ongoing safe food production, processing, storage, handling, marketing and preparation practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	288

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
308	Improved Animal Products (Before Harvest)
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service

- 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
- 721 Insects and Other Pests Affecting Humans
- 723 Hazards to Human Health and Safety

Outcome #6

1. Outcome Measures

(5.2d) Improved safety of foods available through wholesale and retail outlets and institutional foods.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

(5.3b) # of food safety decision-makers, policy makers and other officials who demonstrate knowledge gains relative to improved food safety practices and policies

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

(5.3c) # of communities/ firms/or organizations documented to have assessed practices or food safety policies as a result of participating in relevant educational programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	239

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
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
721	Insects and Other Pests Affecting Humans
723	Hazards to Human Health and Safety

Outcome #9

1. Outcome Measures

(5.3d) # of communities/firms/or organizations documented to have implemented improved practices or food safety policies as a result of participating in relevant educational programs

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	124

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

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
721	Insects and Other Pests Affecting Humans
723	Hazards to Human Health and Safety

Outcome #10

1. Outcome Measures

Food Safety Workshops For Farmers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With the passage of The Food Safety Modernization Act (FSMA) and the impending release of the FDA (draft) produce safety regulation early in 2012, farmers are concerned about mandatory food safety requirements. A primary concern is to get smaller, more diversified farms with limited resources in compliance. This is being reflected in the attendance figures and number of requests that Cornell Cooperative Extension educators have had and are continuing to receive to conduct food safety workshops.

What has been done

From December 2010 through March 2011, 6 sets of 2-day food safety trainings were conducted across the state. We had a total of 128 people attend representing 68 farms. Participation included: 2 crop consultants, 2 NYC Green Market personnel, a NOFA-NY LLC certifier, a local farm bureau president, a new farmer, and an extension educator from out of state.

Results

128 people attended the sessions. Over 95% began to write their own individual farm food safety plan, with 50-75% completing their plans prior to the growing season. About 20-35% underwent and passed a 3rd-party audit and received USDA-GAPs certification or a similar 3rd-party certification from another certifying organization within one year. These workshops help prepare farms for an audit, showing them where their risks are and how to reduce them. Therefore the

farms can keep their markets and even expand into others due to 3rd-party food safety audit certifications.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
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
723	Hazards to Human Health and Safety

Outcome #11

1. Outcome Measures

Master Food Preservers Trained in Tompkins County

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Over the last few years, there has been a dramatic increase in interest in home food preservation methods. Growth in home and community gardens, organic gardening, Community Supported Agriculture (CSAs), the local food movement, as well as the sluggish economy have contributed to this interest. To avoid the problems of food spoilage and foodborne illness, however, safe research-based methods must be used when preserving foods.

What has been done

Faced with difficulty in keeping up with demand for food preservation programming, CCE-Tompkins recruited food preservation volunteers, known as Master Food Preservers. To increase access to the training, funding for 3 scholarships was secured, and a 3-day Master Food Preserver (MFP) training was held with 21 participants. The group was made up of people from diverse backgrounds, with a range of food preservation experience and plans for how they would use the information learned.

Results

The MFP training either met or exceeded their expectations of 100% of participants, and several continued toward becoming CCE Master Food Preserver volunteers. One participant wrote, "The information and resources instills a confidence that I will be able to teach food preservation safely and thoroughly." After the training, MFP volunteers assisted at two canning workshops, one jam workshop and one pickling/fermenting workshop, reaching a total of 51 participants. A volunteer also staffed a food preservation display at a community event with attendance of approximately 250 people.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #12

1. Outcome Measures

Healthy Soils, Healthy Communities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Urban community gardens provide affordable, locally grown, healthy foods and many other benefits associated with urban green spaces. However, garden soils, and urban soils in particular, can contain contaminants that may pose risks to human health, and the nature and extent of contamination in many areas remain poorly defined. Given these considerations, gardeners and other community stakeholders have identified a need for support in understanding risks associated with soil contamination and implementing strategies to reduce those risks.

What has been done

From 2008-2010, 44 NYC Parks/GreenThumb gardens that met specific criteria were sampled. In 2010 Phase I sampling was expanded to include ten additional sampling sites with a history of

NYC Parks/GreenThumb violations. In Phase II, 20 gardens were sampled in 2010-2011 to survey levels of contaminants, including metals and polycyclic aromatic hydrocarbons (PAHs), and to identify likely sources of contamination. Studies included: field trials of contamination mitigation practices, research plots in community gardens to assess uptake of metals and PAHs into vegetable crops, greenhouse plant uptake experiments, comparative studies of analytical methods to measure soil lead, effect of grinding size on soil lead analysis, and case-study analyses of variability of lead concentrations across urban sites and implications for sampling protocols and analysis. In 2011, research activities based in NYC expanded to include the development of new research beds to assess contaminant uptake (metals and PAHs) into vegetable crops. In addition to research activities in field plots and greenhouse experiments to assess contaminant uptake into vegetable crops, in 2011 vegetable samples were collected from targeted community gardens in NYC. Each vegetable sample was paired with a soil sample to investigate the relationship of soil and vegetable contaminant concentrations for different crop types.

Results

Results indicate that concentrations of lead and other metals are highly variable, as are garden characteristics, management regimes, and gardener perceptions of soil contaminant issues. Initial soils data have informed protocols for sampling additional gardens and for prioritizing sites for more extensive follow-up testing of plants and soils and the evaluation of mitigation strategies. -- Sampling has been completed for 44 GreenThumb Pilot Project sites. Results affirm that lead is often a concern in urban sites, yet 92% of growing areas sampled and 70% of gardens had lead levels below the guidance value (from NYSDEC Residential Soil Cleanup Objectives or SCOs).

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
723	Hazards to Human Health and Safety

Outcome #13

1. Outcome Measures

Good Agricultural Practices - Online Produce Safety Course

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Given the chance of widespread outbreaks of Salmonella and similar diseases when seemingly healthy vegetables are shipped to distant destinations, farmers need to understand and use the best possible sanitation protocols. It's critical not just for human health but for these farmers' bottom line, and their reputations. Growers without access to food-safety training workshops nearby especially need online opportunities.

What has been done

We developed the "Good Agricultural Practices Online Safety Course," with 31 courses delivered in English and four in Spanish. An advisory group of fruit and vegetable farmers, industry representatives, and content-area experts reviewed our courses to be sure they not only fit our objectives but were relevant to the matter at hand: produce safety.

Results

Our course describes the food safety risks that could exist on-farm, walks participants through conducting their own risk assessment, shows them which practices reduce risks, and shows them how to put those practices in place.

The course also helps some growers meet buyer demands for verified, third-party audited, food-safety programs. 768 people enrolled over the project's duration and 630 finished, meaning they took every quiz and handed in all their homework, for an 82% completion rate. Participants averaged nearly nine hours of time online during the course?not including time offline when they would have researched or completed homework assignments.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing 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
723	Hazards to Human Health and Safety

Outcome #14

1. Outcome Measures

A Method to Determine Lung Health in Lambs Prior to Kosher Slaughter

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Halal, kosher and USDA inspectors have different standards for rejecting animals after slaughter?some more strict than others. When it comes to lung health, a kosher or halal inspector who finds compromised lungs in a slaughtered animal will reject it, and it enters the regular food supply. Consider the time it traditionally takes to assess a healthy lung, then factor in today's high-speed slaughterhouse routines, it's no wonder some rabbis will reject all lambs or goats with any visible defect, however insignificant. In fact, upward of 60% of these animals are rejected?at a cost borne by kosher consumers.

What has been done

We used field-rugged ultrasound equipment to examine the lungs of live animals before the trip to the slaughterhouse. Our goal: to see if ultrasound has the potential to make visible the degree of lung health unacceptable by religious law so rabbis know up front which animals won't pass inspection, a cost-cutting intervention.

Results

We found that the ultrasound signal from a clean lamb's lung indeed is different from one with lung adhesions or disease. Our pathology studies validate that ultrasound detection works. Now we are working to refine the methodology and interpretation to permit screening of live sheep and eventually other kosher animals prior to slaughter. Given that about 80% of the U.S.'s most careful kosher consumers live in the greater New York metro area, the advantages of this cost-cutting technology has real potential to benefit New York's consumers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

Outcome #15

1. Outcome Measures

Development of Non-Heat Based Combination Treatments for Pathogen Inactivation in Foods

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In ready-to-eat foods, post-process contamination is a serious issue. Disease agents such as listeria can cause widespread havoc, while mold on cheese can cause allergic reactions and respiratory problems. The industry needs effective terminal treatments to ensure that these ready-to-eat foods are safe by the time they reach consumers.

What has been done

We researched whether we could combine an alternative to thermal processing, pulsed-light technology, with natural protectants against listeria and mold on ready-to-eat meat and dairy products. We pitted our combination treatments against the use of pulsed light alone or natural protectants exclusively. For listeria, we inoculated sterile sausages with *Listeria innocua*, a surrogate for the virulent *L. monocytogenes*, then treated them with both pulsed light and nisin; this natural bacteriocin kills other strains of bacteria. Similarly for mold growth on cheese, we treated with natamycin, a bacterially derived anti-fungal agent used for decades in the food industry, to see if combining it with pulsed light makes for an even more-effective treatment.

Results

For listeria, our first combination treatment showed no significant listeria over 28 days of refrigerated storage. For mold, our natamycin-alone treatment showed 22% mold reduction, while pulsed light treatment reduced molding by 33-40%. But though natamycin and pulsed light together also reduced molding, pulsed light alone was virtually as effective. These findings and the recommendations we provide, once incorporated into industry standards, will lead to safer,

more nutritious food and longer shelf life? saving money (including healthcare costs) for consumers and the food industry both, while protecting invaluable industry reputations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Large-scale food illness outbreaks are attributed to a number of factors such as the complexity of evolving microbes and changing food consumption patterns which influences the conduct of research and development of educational programs. Unknown agents account for approximately 81% of foodborne illnesses and hospitalizations and 64% of deaths, according to the Center for Disease Control, constraining the design of programs.

Lack of an integrated system for federal agencies and the food industry to coordinate food contamination information hampers research and education. Changing and sometimes complex governmental policies and regulations affect implementation of food safety measures.

Food from countries beyond the US may further complicate control and implementation of effective food safety measures.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We employ a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities for each of our planned programs. The results are aggregated in a statewide accountability system which leads to the summary results reporting in the State Defined Outcomes in each plan including selected impact statements and success stories (from a pool of more than 300 stories reported).

Key Items of Evaluation

See cross cutting outcomes in State Defined Outcomes.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Youth, Family, and Community

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	3%		4%	
134	Outdoor Recreation	1%		6%	
511	New and Improved Non-Food Products and Processes	3%		19%	
607	Consumer Economics	7%		2%	
608	Community Resource Planning and Development	15%		1%	
609	Economic Theory and Methods	0%		1%	
610	Domestic Policy Analysis	4%		7%	
611	Foreign Policy and Programs	0%		1%	
801	Individual and Family Resource Management	8%		2%	
802	Human Development and Family Well-Being	12%		14%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	7%		14%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	4%		4%	
805	Community Institutions, Health, and Social Services	6%		7%	
806	Youth Development	30%		18%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	475.0	0.0	9.0	0.0

Actual Paid Professional	554.9	0.0	3.0	0.0
Actual Volunteer	15.2	0.0	0.0	0.0

2. Institution Name: Cornell University

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2775902	0	932418	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2775902	0	932418	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

2. Institution Name: NY State Agricultural Experiment Station

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	155	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	155	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Youth

This is a comprehensive, statewide educational program entailing a wide variety of applied research and multiple education methods depending on local context and need. Campus-based faculty and extension associates, program work teams, the NYSACCE4-HE professional development committee and county-based educators all are involved in designing, implementing, and evaluating tailored educational efforts depending on the focus and scope of their role.

A variety of educational strategies will be used to help county educators and volunteers gain the skills and knowledge necessary to fully understand and differentiate between the range of possibilities that exist within initiatives. Trained 4-H Staff, teachers, community agency staff, volunteers, and teens lead youth in 4-H projects, which are a planned series of learning experiences through which youth develop knowledge, practical skills (woodworking, gardening, cooking, etc.) and life skills (decision-making, self-

discipline, leadership, etc.) in a variety of settings including after school programming and school enrichment activities.

Family

This is a comprehensive, statewide educational program entailing multiple education methods depending on local context and need. Campus-based faculty and extension associates and county-based educators are involved in designing, implementing, and evaluating tailored educational efforts depending on the focus and scope of their role.

Community

CCE, CUAES and NYSAES have a commitment to the people of New York to build self-capacity among citizens so they can solve problems, improve quality of life, and build strong and vibrant communities. Through integrated research and extension agendas, we can help develop effective and collaborative land use/natural resource management approaches and policies that enhance economic, environmental and social connections. Program staff work with a variety of state and local groups to tackle projects that vary in nature from applied research to pilot projects or case studies. These activities, which are demand driven (locally or regionally initiated usually with sponsored or self-financing), provide valuable insights, resources and materials for extension education.

2. Brief description of the target audience

Youth

- Young people
- Youth development educators and workers
- Youth development volunteers
- Parents and guardians
- Youth serving organizations
- Teachers and schools
- Community leaders

Family

- Parents, grandparents and other caregivers
- Child care providers
- Community stakeholders such as employers, leaders and policy makers at the local and state levels
- Low and moderate-income households who are especially vulnerable to financial setbacks and have less disposable income to commit to savings
 - Low-income households living in poor-quality housing

Community

- Elected officials, community leaders, business leaders, not-for-profit agencies, youth serving agencies, schools, environmental groups, agribusiness leaders, etc.
 - Retirees and other elders who have time to engage in community stewardship
 - Engaged community citizens
 - Communities as whole: youth and adults organizations, businesses, schools, and other institutions
 - Agriculture/horticulture/natural resource enterprise managers, community residents and visitors, youth, local media, local officials, and local planning and economic development staff.

- Youth and youth serving organizations and adult volunteers who work with youth

3. How was eXtension used?

Cornell Cooperative Extension supports and promotes eXtension communities of practice, the eXtension public site and the professional development offered through eXtension.org.

Staff across the state are encouraged to be involved in appropriate COPs, and the link to eXtension is promoted on the front page of the Cornell Cooperative Extension public staff site. Currently 323 staff are registered users of eXtension. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of participation in COPs in this plan of work area include:

Youth, Family, Community

- Science for Youth *
- Extension Master Gardener
- Enhancing Rural Capacity *
- Family Care Giving
- Financial Security for All
- Gardens, Lawns & Landscapes
- Just in Time Parenting
- Entrepreneurs and Their Communities
- Creating Healthy Communities
- Diversity, Equity and Inclusion
- Pest Management in and Around Structures
- Wildlife Damage Management *

*Cornell Faculty/Staff on Leadership Team

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	337403	6564917	349058	6832872

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	3	179	182

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- (6.1a) # of youth program educators and adult volunteers participating in programs on positive youth development.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- (6.1b) # of youth participating in projects related to vocational skills and/or citizenship.
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- (6.2a) # of 4-H members enrolled in Science and Technology project areas.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- (6.2b) # of youth reached through school enrichment and special interest programs, 4-H camp, and after school programs coded as science and technology related.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- (6.2c) # of 4-H and other youth program educators and adult volunteers participating in programs on SET for youth.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- (6.3a) # of infant and child care-givers completing non-formal education programs about quality dependent care giving.
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- (6.3b) # of persons with care-requiring dependents completing non-formal education programs on selection of care-giving individuals and facilities.
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- (6.4a) # of organizations, agencies, and institutions participating in non-formal educational programs about social and public policy issues to enhance opportunities for safe, economical, and developmentally appropriate care-giving programs for infants, children and youth.
Not reporting on this Output for this Annual Report

Output #9

Output Measure

- (6.5a) # of persons completing complete non-formal education programs about parenting.
Not reporting on this Output for this Annual Report

Output #10

Output Measure

- (6.6a) # of persons completing education programs on age-appropriate topics like spending and saving concepts, appropriate use of money, financial goals, tracking expenses, budgeting, credit management, financial planning, and/or wealth generation strategies.
Not reporting on this Output for this Annual Report

Output #11

Output Measure

- (6.7a) # of consumers and property managers completing programs on indoor air quality issues.
Not reporting on this Output for this Annual Report

Output #12

Output Measure

- (6.8a) # of residents, community leaders, entrepreneurs, economic development professionals participating in programs re: workforce, entrepreneurial climate, diversification, economic impact analysis, e-commerce, market development, business planning, partnerships.
Not reporting on this Output for this Annual Report

Output #13

Output Measure

- (6.9a) # of community members participating in educational programs related to community decision-making, public participation, planning and monitoring processes, and collaborative approaches.
Not reporting on this Output for this Annual Report

Output #14

Output Measure

- (6.10a) # of economic developers and/or entrepreneurs participating in educational programs on "green" business opportunities.
Not reporting on this Output for this Annual Report

Output #15

Output Measure

- (6.11a) # of residents and community leaders participating in programs on community assets, citizen involvement, property rights, land use, conservation, interaction between environmental, economic, and quality of life issues.
Not reporting on this Output for this Annual Report

Output #16

Output Measure

- (6.11b) # of retirees and other elders participating in programs on environmental stewardship.
Not reporting on this Output for this Annual Report

Output #17

Output Measure

- (6.12a) # of agriculture/horticulture/natural resource business persons participating in education programs on potential environmental, health, social, and cultural impacts of their operations from the perspective of the community.
Not reporting on this Output for this Annual Report

Output #18

Output Measure

- (6.13a) # of community members and/or local leaders participating in education programs on the roles of agriculture/horticulture/ natural resource enterprises in the local community, tax base, and environment.
Not reporting on this Output for this Annual Report

Output #19

Output Measure

- (6.13b) # of local community members and/or leaders participating in programs on the potential benefits of community-based agriculture and opportunities for promoting same.
Not reporting on this Output for this Annual Report

Output #20

Output Measure

- (6.14a) # of youth participating in education programs on the agriculture and food system and/or natural resource enterprises.
Not reporting on this Output for this Annual Report

Output #21

Output Measure

- (6.14b) # of adults participating in education programs on the agriculture and food system and/or natural resource enterprises.
Not reporting on this Output for this Annual Report

Output #22

Output Measure

- (6.15a) # of youth participating in education programs leading to youth community action initiatives.
Not reporting on this Output for this Annual Report

Output #23

Output Measure

- (6.15b) # of youth participating in train-the-trainer programs related to youth community action.
Not reporting on this Output for this Annual Report

Output #24

Output Measure

- (6.15c) # of adults participating train-the-trainer programs related to youth community action.
Not reporting on this Output for this Annual Report

Output #25

Output Measure

- (6.15d) # of communities participating in youth community action initiatives.
Not reporting on this Output for this Annual Report

Output #26

Output Measure

- (6.16a) # of hours of instruction by Master Gardener volunteers in educational programs for youth and adult audiences.
Not reporting on this Output for this Annual Report

Output #27

Output Measure

- (6.16b) # of hours by Master Gardener volunteers in general program support.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(6.1c) # of youth participants who demonstrate gains in vocational/citizenship skills - knowledge, attitudes, and/or behaviors.
2	(6.1d) # of youth participants who learn to set goals, make plans and identify resources to achieve goals.
3	(6.1e) # of youth program educators and adult volunteers who demonstrate knowledge and/or skill gains in meeting the needs of youth at various stages of development.
4	(6.1f) # of youth participants who demonstrate ability to express their ideas confidently and competently.
5	(6.1g) # of adult volunteers documented to mentor and advise youth and other adult volunteers in an effective and positive manner.
6	(6.1h) # of youth participants documented as serving in age-appropriate leadership roles.
7	(6.1i) # of youth organizations/programs documented as reflecting youth needs, interests, and excitement for learning.
8	(6.2d) # participants demonstrating increased awareness of SET, improved SET skills including scientific methods, knowledge of specific sciences, and/or increased awareness of opportunities to contribute to society using SET skills.
9	(6.2e) # of participants that report improved success in school science and/or increased interest in science and technology.
10	(6.2f) # youth applying SET learning to contexts outside 4-H programs, e.g., school classes, science fairs, invention contests, etc.
11	(6.2g) # youth expressing interest/demonstrating aspirations towards SET careers, e.g., career fairs, job shadowing, volunteer work or internships
12	(6.2h) # youth adopting and using new scientific methods or improved technology.
13	(6.2i) # of youth and adult volunteers documented to become contributing participants in sci/tech related issues in their communities and/or choose sci/tech related professions and who attribute same at least in part to involvement with the program.
14	(6.2j) Increased number and more diverse pool of youth pursuing education and careers in SET related fields.
15	(6.2k) Increased and more diverse pool of trained teachers, educators, scientists.
16	(6.3c) # of participating infant and child caregivers who demonstrate knowledge or skill gains related care-giving practices.
17	(6.3d) # of participating persons with care-requiring dependents who demonstrate ability to evaluate the quality of care programs

18	(6.3e) # of participating infant and child caregivers reporting to have applied positive care-giving practices.
19	(6.3f) # participating persons with care-requiring dependents reporting to have used child care quality characteristics in their care selection.
20	(6.3g) # participating persons with care-requiring dependents reporting positive change in child care as a result of participating in educational programs.
21	(6.4b) # of program participants who demonstrate knowledge or skills gains regarding community approaches to family care.
22	(6.4c) # of program participants reporting to have been involved in community level assessments of family care needs.
23	(6.4d) # of communities documented to have taken action to address family needs that can be related to educational programs and/or critical community collaborations provided.
24	(6.5b) # parents, grandparents and other adults providing parental care gaining who demonstrate knowledge or skills gains regarding developmentally appropriate and effective parenting methods.
25	(6.5c) # parents and other adults providing parental care adopting development-ally appropriate and effective parenting methods.
26	(6.5d) # parents/relative caregivers reporting to have experienced positive change in parent-child relationships and child nurturance that they attribute to implementing new parenting behaviors learned in educational programs.
27	(6.6b) # participants who demonstrate knowledge or skill gains and/or can articulate specific actions they will take related to spending and saving concepts, appropriate use of money, setting financial goals, tracking expenses, budgeting, credit management, financial planning, and/or wealth generation strategies.
28	(6.6c) # of program participants reporting they are practicing improved money management skills such as comparison shopping, paying bills on time, paying more than minimum payment, checking credit report, and reviewing and understanding bills/statements as a means to meeting financial goals.
29	(6.6d) # of program participants reporting to have met day-to-day financial obligations while also progressing on future goals for homeownership, savings, retirement accounts, etc.
30	(6.6e) # of program participants reporting to have reduced debts and/or increased savings.
31	(6.7b) # of consumers and property managers gaining awareness and knowledge of indoor air quality issues and remediation options.
32	(6.7c) # of program participants documented to have taken measures to prevent or remediate indoor air quality issues.
33	(6.7d) # of program participants documented to have reduced short-term health effects of indoor air pollutants (such as irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue) as a result of participating in educational programs.
34	(6.7e) # of participants reducing risks of respiratory diseases, heart disease, and cancer by implement measures such as radon remediation, controlling indoor triggers of asthma: secondhand smoke, dust mites, pet dander, and pests.
35	(6.8b) # of residents, community leaders, entrepreneurs, economic development professionals demonstrating knowledge/ skill gains re: workforce, entrepreneurial climate, diversification, economic impact analysis, e-commerce, market development, business

	planning, partnerships.
36	6.8c) # of residents and/or community leaders, demonstrating knowledge/skill gains about enhancing facilities and/or other community resources or services.
37	(6.8d) # of communities who plan for and implement initiatives on community based agricultural economic development, workforce development, business and entrepreneurial development and assistance, non-profit sector development and/or other elements of sustainable growth.
38	(6.8e) # of residents and/or community leaders, who plan for and initiate steps to enhance facilities, and/or other community resources or services.
39	(6.8f) # of communities establishing an infrastructure and climate to support entrepreneurs, local farms and agribusinesses attributable at least in part to initiatives of the program.
40	(6.8g) # of communities documenting improvements in facilities and/or other community resources or services.
41	(6.8h) # of employers establishing or contributing to community-based workforce development approaches.
42	(6.8i) # of employers reporting enhanced workforce availability attributable at least in part to participation in the program.
43	(6.9b) # of community members demonstrating knowledge or skills gains related to community decision-making, public participation, planning and monitoring processes, collaborative approaches, and/or emergency preparedness.
44	(6.9c) # of communities instituting new or enhanced participatory processes related to economic development.
45	(6.9d) # of collaborative partnerships established within and across communities for issue resolution and collective action and/or to improve community services.
46	(6.9e) # of documented instances in which a community effectively resolves a need or strengthens community assets attributable at least in part to participation in the program.
47	(6.9f) # of communities reporting specific improvements in quality or scope of community services.
48	(6.10b) # of workforce professionals, economic developers and/or entrepreneurs demonstrating knowledge gains related to "green" workforce and business opportunities.
49	(6.10c) # of new workers trained and "green" businesses established at least in part due to participation in the program.
50	(6.10d) # of communities that report increased diversification of their local economies attributable at least in part to participation in the program.
51	(6.11c) # of residents and/or community leaders demonstrating knowledge or skill gains related to community assets, property rights, land use, environmental conservation, interaction between environmental, economic issues, quality of life indicators.
52	(6.11d) # of community leaders documented to apply community economic development and quality of life indicators to support decision-making.
53	(6.11e) # instances in which communities are documented to have resolved agricultural-environmental conflicts and/or other land use/natural resource issues at least in part due to participation in the program.

54	(6.11f) # of communities implementing projects that protect public health and community well being through sound environmental management.
55	(6.11g) # of municipalities adopting land use planning tools that incorporate environmental dimensions and/or develop new institutional arrangements to support land use planning and environmental management.
56	(6.11h) # of communities adopting or updating farmland preservation and/or agricultural economic development plans.
57	(6.11i) # of additional acres covered by open space preservation, environmental conservation and/or protection programs attributable at least in part to participation in the program.
58	(6.11j) Documented increase in percentage of food produced locally and regionally that is consumed locally or regionally.
59	(6.11k) # of residents and/or community leaders, demonstrating knowledge/ skill gains about sustainable communities and enhancing public spaces.
60	(6.11l) # of communities that plan for development of existing communities to create a broader range of housing types within existing communities including affordable housing, focus on bikable and walkable communities, and/or a variety of transportation choices.
61	(6.11m) # of residents and/or community leaders, who plan for and initiate steps to enhance public spaces.
62	(6.11n) # of instances in which communities institute changes leading to one of following: development of existing communities, expanded range of housing types, more bikable and/or walkable community, variety of transportation choices.
63	(6.11o) # of new or enhanced community organizations or networks linking diverse sub-groups and focused on enhancing community sustainability.
64	(6.11p) # of communities documenting improvements in public spaces.
65	(6.12b) # of agriculture/horticulture/natural resource business persons demonstrating knowledge or skill gains related to potential environmental, health, social, and cultural impacts of their operations from the perspective of the community.
66	(6.12c) # of instances in which producers/ horticulture businesses/ natural resource enterprises, residents and community leaders work together to address issues.
67	(6.12d) # documented instances in which agriculture/community conflicts are resolved locally.
68	(6.13c) # of community members and/or local leaders demonstrating knowledge or skill gains related to the roles of agriculture/horticulture/ natural resource enterprises in the local community, tax base, and environment and how they are affected by local policy.
69	(6.13d) # of communities that assess how current policies and infrastructures sustain or impede agriculture/ horticulture/natural resource enterprises (such as farmland protection or including such enterprises in economic development planning) and how the enterprises are affected by public policy.
70	(6.13e) # of communities that initiate specific plans to address agriculture/ horticulture/ natural resource enterprise related issues or capitalize on new opportunities including community agriculture initiatives.
71	(6.13f) # communities documented to adopt, maintain, or expand policies supportive of appropriate agriculture/horticulture/ natural resource enterprise development and/or community agriculture.

2011 NY State Agricultural Experiment Station Research and Cornell University Research and Extension Combined Annual Report of Accomplishments and Results

72	(6.14c) # of youth demonstrating knowledge or skill gains related to the agriculture and food system and/or natural resource enterprises.
73	(6.14e) # of adults demonstrating knowledge or skill gains related to the agriculture and food system and/or natural resource enterprises.
74	(6.15e) # of youth and adults demonstrating knowledge gains related to Youth/Adult Partnerships and Youth Community Action Initiatives.
75	(6.15f) # of youth documented to have practiced life skills necessary to meet challenges of adolescence and adulthood in authentic decision-making partnerships with adults as a result of participating in the program.
76	(6.15g) # of adults documented to have applied knowledge, skills and abilities and behaviors necessary as they assist youth developing into productive community members as a result of participating in the program.
77	(6.15h) # of documented instances in which youth and adults partner to improve quality of life within a community as a result of participating in the program.
78	(6.16c) # of community residents gaining knowledge and skill in weighing the environmental impacts and consequences of management actions taken in residential landscapes and homes.
79	(6.16d) # of community residents enhancing knowledge and skill in using research-based information to make plant and management choices among alternatives.
80	(6.16e) # of community residents gaining knowledge and skill in choosing and growing food crops for home, school and community gardens.
81	(6.16f) # of community residents practicing management tactics in residential landscapes and homes that work to sustain or enhance a healthy community and environment.
82	(6.16g) # of community residents with improved availability and access to fresh fruits and vegetables.
83	(6.16h) # of community education/demonstration food gardens established or maintained.
84	(6.16i) Pounds of produce donated for distribution through local food organizations.
85	Columbia County 4-H Club Members Report Science Learning
86	4-H Robotics: A Fun Approach to increasing Youth Engagement in Science, Engineering and Tecnology
87	4-H Tech Wizard - Youth Science Enrichment in Buffalo
88	The Strengthening Families Program at CCE Orange
89	Master Gardener Project - Keuka Lake School Children's Garden
90	Financial Management Education - CCE Stueben

91	Emerald Ash Borer Education in Wayne County
92	CYFAR Project SUPER Science Camps
93	4-H Varying Veggies Garden
94	Improving Soil Test Performance, Interpretation and Education for Toxic Metals
95	Army Family Advocacy Program

Outcome #1

1. Outcome Measures

(6.1c) # of youth participants who demonstrate gains in vocational/citizenship skills - knowledge, attitudes, and/or behaviors.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

(6.1d) # of youth participants who learn to set goals, make plans and identify resources to achieve goals.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

(6.1e) # of youth program educators and adult volunteers who demonstrate knowledge and/or skill gains in meeting the needs of youth at various stages of development.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

(6.1f) # of youth participants who demonstrate ability to express their ideas confidently and competently.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	38777

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

(6.1g) # of adult volunteers documented to mentor and advise youth and other adult volunteers in an effective and positive manner.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6069

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

(6.1h) # of youth participants documented as serving in age-appropriate leadership roles.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7836

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

(6.1i) # of youth organizations/programs documented as reflecting youth needs, interests, and excitement for learning.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2824

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #8

1. Outcome Measures

(6.2d) # participants demonstrating increased awareness of SET, improved SET skills including scientific methods, knowledge of specific sciences, and/or increased awareness of opportunities to contribute to society using SET skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	80970

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #9

1. Outcome Measures

(6.2e) # of participants that report improved success in school science and/or increased interest in science and technology.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	21944

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

(6.2f) # youth applying SET learning to contexts outside 4-H programs, e.g., school classes, science fairs, invention contests, etc.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	14190

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #11

1. Outcome Measures

(6.2g) # youth expressing interest/demonstrating aspirations towards SET careers, e.g., career fairs, job shadowing, volunteer work or internships

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	19835

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #12

1. Outcome Measures

(6.2h) # youth adopting and using new scientific methods or improved technology.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	19145

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #13

1. Outcome Measures

(6.2i) # of youth and adult volunteers documented to become contributing participants in sci/tech related issues in their communities and/or choose sci/tech related professions and who attribute same at least in part to involvement with the program.

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

(6.2j) Increased number and more diverse pool of youth pursuing education and careers in SET related fields.

Not Reporting on this Outcome Measure

Outcome #15

1. Outcome Measures

(6.2k) Increased and more diverse pool of trained teachers, educators, scientists.

Not Reporting on this Outcome Measure

Outcome #16

1. Outcome Measures

(6.3c) # of participating infant and child caregivers who demonstrate knowledge or skill gains related care-giving practices.

Not Reporting on this Outcome Measure

Outcome #17

1. Outcome Measures

(6.3d) # of participating persons with care-requiring dependents who demonstrate ability to evaluate the quality of care programs

Not Reporting on this Outcome Measure

Outcome #18

1. Outcome Measures

(6.3e) # of participating infant and child caregivers reporting to have applied positive care-giving practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1189

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #19

1. Outcome Measures

(6.3f) # participating persons with care-requiring dependents reporting to have used child care quality characteristics in their care selection.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1679

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services

Outcome #20

1. Outcome Measures

(6.3g) # participating persons with care-requiring dependents reporting positive change in child care as a result of participating in educational programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2248

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #21

1. Outcome Measures

(6.4b) # of program participants who demonstrate knowledge or skills gains regarding community approaches to family care.

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

(6.4c) # of program participants reporting to have been involved in community level assessments of family care needs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2034

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #23

1. Outcome Measures

(6.4d) # of communities documented to have taken action to address family needs that can be related to educational programs and/or critical community collaborations provided.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7369

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #24

1. Outcome Measures

(6.5b) # parents, grandparents and other adults providing parental care gaining who demonstrate knowledge or skills gains regarding developmentally appropriate and effective parenting methods.

Not Reporting on this Outcome Measure

Outcome #25

1. Outcome Measures

(6.5c) # parents and other adults providing parental care adopting development-ally appropriate and effective parenting methods.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7938

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

Outcome #26

1. Outcome Measures

(6.5d) # parents/relative caregivers reporting to have experienced positive change in parent-child relationships and child nurturance that they attribute to implementing new parenting behaviors learned in educational programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

Outcome #27

1. Outcome Measures

(6.6b) # participants who demonstrate knowledge or skill gains and/or can articulate specific actions they will take related to spending and saving concepts, appropriate use of money, setting financial goals, tracking expenses, budgeting, credit management, financial planning, and/or wealth generation strategies.

Not Reporting on this Outcome Measure

Outcome #28

1. Outcome Measures

(6.6c) # of program participants reporting they are practicing improved money management skills such as comparison shopping, paying bills on time, paying more than minimum payment, checking credit report, and reviewing and understanding bills/statements as a means to meeting financial goals.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
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2011 2876

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics
801	Individual and Family Resource Management

Outcome #29

1. Outcome Measures

(6.6d) # of program participants reporting to have met day-to-day financial obligations while also progressing on future goals for homeownership, savings, retirement accounts, etc.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1828

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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607 Consumer Economics
801 Individual and Family Resource Management

Outcome #30

1. Outcome Measures

(6.6e) # of program participants reporting to have reduced debts and/or increased savings.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1672

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code Knowledge Area
607 Consumer Economics
801 Individual and Family Resource Management

Outcome #31

1. Outcome Measures

(6.7b) # of consumers and property managers gaining awareness and knowledge of indoor air quality issues and remediation options.

Not Reporting on this Outcome Measure

Outcome #32

1. Outcome Measures

(6.7c) # of program participants documented to have taken measures to prevent or remediate indoor air quality issues.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3581

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #33

1. Outcome Measures

(6.7d) # of program participants documented to have reduced short-term health effects of indoor air pollutants (such as irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue) as a result of participating in educational programs.

Not Reporting on this Outcome Measure

Outcome #34

1. Outcome Measures

(6.7e) # of participants reducing risks of respiratory diseases, heart disease, and cancer by implement measures such as radon remediation, controlling indoor triggers of asthma: secondhand smoke, dust mites, pet dander, and pests.

Not Reporting on this Outcome Measure

Outcome #35

1. Outcome Measures

(6.8b) # of residents, community leaders, entrepreneurs, economic development professionals demonstrating knowledge/ skill gains re: workforce, entrepreneurial climate, diversification, economic impact analysis, e-commerce, market development, business planning, partnerships.

Not Reporting on this Outcome Measure

Outcome #36

1. Outcome Measures

6.8c) # of residents and/or community leaders, demonstrating knowledge/skill gains about enhancing facilities and/or other community resources or services.

Not Reporting on this Outcome Measure

Outcome #37

1. Outcome Measures

(6.8d) # of communities who plan for and implement initiatives on community based agricultural economic development, workforce development, business and entrepreneurial development and assistance, non-profit sector development and/or other elements of sustainable growth.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #38

1. Outcome Measures

(6.8e) # of residents and/or community leaders, who plan for and initiate steps to enhance facilities, and/or other community resources or services.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1923

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #39

1. Outcome Measures

(6.8f) # of communities establishing an infrastructure and climate to support entrepreneurs, local farms and agribusinesses attributable at least in part to initiatives of the program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	153

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #40

1. Outcome Measures

(6.8g) # of communities documenting improvements in facilities and/or other community resources or services.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	44

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #41

1. Outcome Measures

(6.8h) # of employers establishing or contributing to community-based workforce development approaches.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	175

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

Outcome #42

1. Outcome Measures

(6.8i) # of employers reporting enhanced workforce availability attributable at least in part to participation in the program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

Outcome #43

1. Outcome Measures

(6.9b) # of community members demonstrating knowledge or skills gains related to community decision-making, public participation, planning and monitoring processes, collaborative approaches, and/or emergency preparedness.

Not Reporting on this Outcome Measure

Outcome #44

1. Outcome Measures

(6.9c) # of communities instituting new or enhanced participatory processes related to economic development.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	64

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #45

1. Outcome Measures

(6.9d) # of collaborative partnerships established within and across communities for issue resolution and collective action and/or to improve community services.

Not Reporting on this Outcome Measure

Outcome #46

1. Outcome Measures

(6.9e) # of documented instances in which a community effectively resolves a need or strengthens community assets attributable at least in part to participation in the program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	121

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #47

1. Outcome Measures

(6.9f) # of communities reporting specific improvements in quality or scope of community services.

Not Reporting on this Outcome Measure

Outcome #48

1. Outcome Measures

(6.10b) # of workforce professionals, economic developers and/or entrepreneurs demonstrating knowledge gains related to "green" workforce and business opportunities.

Not Reporting on this Outcome Measure

Outcome #49

1. Outcome Measures

(6.10c) # of new workers trained and "green" businesses established at least in part due to participation in the program.

Not Reporting on this Outcome Measure

Outcome #50

1. Outcome Measures

(6.10d) # of communities that report increased diversification of their local economies attributable at least in part to participation in the program.

Not Reporting on this Outcome Measure

Outcome #51

1. Outcome Measures

(6.11c) # of residents and/or community leaders demonstrating knowledge or skill gains related to community assets, property rights, land use, environmental conservation, interaction between environmental, economic issues, quality of life indicators.

Not Reporting on this Outcome Measure

Outcome #52

1. Outcome Measures

(6.11d) # of community leaders documented to apply community economic development and quality of life indicators to support decision-making.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	220

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
134	Outdoor Recreation
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #53

1. Outcome Measures

(6.11e) # instances in which communities are documented to have resolved agricultural-environmental conflicts and/or other land use/natural resource issues at least in part due to participation in the program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	183

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development

Outcome #54

1. Outcome Measures

(6.11f) # of communities implementing projects that protect public health and community well being through sound environmental management.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	182

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #55

1. Outcome Measures

(6.11g) # of municipalities adopting land use planning tools that incorporate environmental dimensions and/or develop new institutional arrangements to support land use planning and environmental management.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	72

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #56

1. Outcome Measures

(6.11h) # of communities adopting or updating farmland preservation and/or agricultural economic development plans.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	51

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #57

1. Outcome Measures

(6.11i) # of additional acres covered by open space preservation, environmental conservation and/or protection programs attributable at least in part to participation in the program.

Not Reporting on this Outcome Measure

Outcome #58

1. Outcome Measures

(6.11j) Documented increase in percentage of food produced locally and regionally that is consumed locally or regionally.

Not Reporting on this Outcome Measure

Outcome #59

1. Outcome Measures

(6.11k) # of residents and/or community leaders, demonstrating knowledge/ skill gains about sustainable communities and enhancing public spaces.

Not Reporting on this Outcome Measure

Outcome #60

1. Outcome Measures

(6.11l) # of communities that plan for development of existing communities to create a broader range of housing types within existing communities including affordable housing, focus on bikable and walkable communities, and/or a variety of transportation choices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
134	Outdoor Recreation
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #61

1. Outcome Measures

(6.11m) # of residents and/or community leaders, who plan for and initiate steps to enhance public spaces.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2460

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
134	Outdoor Recreation
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #62

1. Outcome Measures

(6.11n) # of instances in which communities institute changes leading to one of following: development of existing communities, expanded range of housing types, more bikable and/or walkable community, variety of transportation choices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	21

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
134	Outdoor Recreation
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #63

1. Outcome Measures

(6.11o) # of new or enhanced community organizations or networks linking diverse sub-groups and focused on enhancing community sustainability.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	55

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
134	Outdoor Recreation

608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #64

1. Outcome Measures

(6.11p) # of communities documenting improvements in public spaces.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #65

1. Outcome Measures

(6.12b) # of agriculture/horticulture/natural resource business persons demonstrating knowledge or skill gains related to potential environmental, health, social, and cultural impacts of their operations from the perspective of the community.

Not Reporting on this Outcome Measure

Outcome #66

1. Outcome Measures

(6.12c) # of instances in which producers/ horticulture businesses/ natural resource enterprises, residents and community leaders work together to address issues.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	117

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #67

1. Outcome Measures

(6.12d) # documented instances in which agriculture/community conflicts are resolved locally.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	57

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #68

1. Outcome Measures

(6.13c) # of community members and/or local leaders demonstrating knowledge or skill gains related to the roles of agriculture/horticulture/ natural resource enterprises in the local community, tax base, and environment and how they are affected by local policy.

Not Reporting on this Outcome Measure

Outcome #69

1. Outcome Measures

(6.13d) # of communities that assess how current policies and infrastructures sustain or impede agriculture/ horticulture/natural resource enterprises (such as farmland protection or including such enterprises in economic development planning) and how the enterprises are affected by public policy.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	49

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #70

1. Outcome Measures

(6.13e) # of communities that initiate specific plans to address agriculture/ horticulture/ natural resource enterprise related issues or capitalize on new opportunities including community agriculture initiatives.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	82

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
511	New and Improved Non-Food Products and Processes
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #71

1. Outcome Measures

(6.13f) # communities documented to adopt, maintain, or expand policies supportive of appropriate agriculture/horticulture/ natural resource enterprise development and/or community agriculture.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	55

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #72

1. Outcome Measures

(6.14c) # of youth demonstrating knowledge or skill gains related to the agriculture and food system and/or natural resource enterprises.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	42183

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #73

1. Outcome Measures

(6.14e) # of adults demonstrating knowledge or skill gains related to the agriculture and food system and/or natural resource enterprises.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #74

1. Outcome Measures

(6.15e) # of youth and adults demonstrating knowledge gains related to Youth/Adult Partnerships and Youth Community Action Initiatives.

Not Reporting on this Outcome Measure

Outcome #75

1. Outcome Measures

(6.15f) # of youth documented to have practiced life skills necessary to meet challenges of adolescence and adulthood in authentic decision-making partnerships with adults as a result of participating in the program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
806	Youth Development

Outcome #76

1. Outcome Measures

(6.15g) # of adults documented to have applied knowledge, skills and abilities and behaviors necessary as they assist youth developing into productive community members as a result of participating in the program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2791

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
806	Youth Development

Outcome #77

1. Outcome Measures

(6.15h) # of documented instances in which youth and adults partner to improve quality of life within a community as a result of participating in the program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2872

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
806	Youth Development

Outcome #78

1. Outcome Measures

(6.16c) # of community residents gaining knowledge and skill in weighing the environmental impacts and consequences of management actions taken in residential landscapes and homes.

Not Reporting on this Outcome Measure

Outcome #79

1. Outcome Measures

(6.16d) # of community residents enhancing knowledge and skill in using research-based information to make plant and management choices among alternatives.

Not Reporting on this Outcome Measure

Outcome #80

1. Outcome Measures

(6.16e) # of community residents gaining knowledge and skill in choosing and growing food crops for home, school and community gardens.

Not Reporting on this Outcome Measure

Outcome #81

1. Outcome Measures

(6.1f) # of community residents practicing management tactics in residential landscapes and homes that work to sustain or enhance a healthy community and environment.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	54940

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #82

1. Outcome Measures

(6.16g) # of community residents with improved availability and access to fresh fruits and vegetables.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	148845

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

Outcome #83

1. Outcome Measures

(6.16h) # of community education/demonstration food gardens established or maintained.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	229

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
608	Community Resource Planning and Development
802	Human Development and Family Well-Being
806	Youth Development

Outcome #84

1. Outcome Measures

(6.16i) Pounds of produce donated for distribution through local food organizations.

Not Reporting on this Outcome Measure

Outcome #85

1. Outcome Measures

Columbia County 4-H Club Members Report Science Learning

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

United States students are falling behind their counterparts in China, Japan, and Germany in science achievement. U.S. student interest in college major and science careers is dropping. As part of a national, state and county initiative, several leader trainings were conducted to promote the idea of intentionally planning science activities with 4-H animal projects.

What has been done

4-H has initiated the Science Mission Mandate to engage 1 million youth in hands-on science programs. In Columbia County, CCE educators have prioritized our community programs and leader trainings to focus on this important issue. Additionally, science content and focus was increased in traditional annual events like knowledge contests. For example the Dairy Olympics knowledge contest has been updated by volunteers to focus on science skills like observing and interpreting digital images and determining fat content in dairy products.

Results

Cornell Cooperative Extension Columbia County has received increased requests for information about science-based curricula and activities. An increased number of youth reported science learning in their end-of-year project story. Quotes included: "I really like the Vet Science project. I went to the vet's office and saw a C-section on a dog and got to help revive the puppies. I help with our dogs when they have puppies. I think I might like to work with a vet for my career." "My most enjoyable moment was when our first chick hatched and I got to watch. I also liked being able to put a flashlight behind the eggs and seeing the chick grow from a blood vessel to a whole breathing creature." "I have witnessed artificial insemination of a cow, the treating of scours in a calf, the trimming of cow s hoofs, and so much more. With the help of my 4-H leader, I have gained knowledge that will help me if I pursue a Dairy Health career."

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #86

1. Outcome Measures

4-H Robotics: A Fun Approach to increasing Youth Engagement in Science, Engineering and Technology

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

U.S. students are falling behind their counterparts in China, Japan, and Germany in science achievement. US student interest in college major and science careers is dropping. The county needed a project focus that would meet this need and appeal across youth audiences.

What has been done

CCECornell Cooperative Extensionin science, engineering and technology. Robotics was of interest to both parents and current enrolled youth in our 4-H program. NXT Lego kits are being used to provide programming to youth in three school districts involved as 21st Century Community Learning Centers, a countywide 4-H Robotics program has been started and Gear Tech 21 is being offered at Hidden Valley 4-H camp. CCE Schuyler is also providing regional programming and leadership on the topic of youth robotics and, and has developed a Schuyler County 4-H First Lego League.

Results

Within this past year we have been able to reach 24 new youth through our 4-H Afterschool Robotics program, and 8 additional youth through a 4-H Robotics program that was open to all youth in our county, and 4-H program. Of the 8 youth involved in our Countywide program we had an even split of males and females. A demonstration that reached 200 youth at a Lights on Afterschool program is what provided the interest for the youth that participated in both the Countywide and the 4-H Afterschool programming. We have also been able to provide regional and statewide leadership in this topic to other 4-H staff. We have also provided leadership

opportunities for two Teen Leaders, who have in-tern, mentored our 4-H First Lego League team. A parent commented, "I've had to PRY (my son) away from Robotics. I watched a few extra minutes because it was very clear that he and all of the boys that were involved (in the team) were SO engrossed and engaged. It was wonderful to see that level of interest in our kids. ...Kudos to the Robotics guy and your program!"

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #87

1. Outcome Measures

4-H Tech Wizard - Youth Science Enrichment in Buffalo

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

America faces a future of intense global competition with a startling shortage of scientists. The Buffalo City School District ranks 668th out of NY State's 682 school districts. In order to succeed, these students need opportunities to build strong skills outside of their school setting. The 4-H Tech Wizard program is an evidence-based program that is funded through the National 4-H Mentoring Grant by the Office of Juvenile Justice and Delinquency Prevention. The Erie County 4-H Tech Wizard Program targets participants from at-risk neighborhoods in Buffalo, NY.

What has been done

To address increased demand for science and technology professionals, 4-H is working to reach a bold goal of engaging one million new young people in science programs by 2013. Partnering with the Science Firsthand Program through First Hand Learning, Inc., the 4-H Staff at Cornell Cooperative Extension Erie County put into place hands-on science and technology opportunities for students at seven sites in the Buffalo City School District. Mentors from the community work with no more than 4 students for an hour or more each week in such projects as geospatial

science, entomology, kitchen chemistry, wind energy, and climate change. Parent and community events seek to engage a strong support network for youth. Community service projects strengthen youth voice and civic engagement for the youth participants. The program has engaged 120 youth and more than 100 mentors during the first 9 months of the program.

Results

In the first 9 months of the program, excitement for and new knowledge in a variety of science, engineering, and technology (SET) topics are evident in the 120 youth who have participated in the 4-H Tech Wizard program in Buffalo, NY. Through observation and journal entries, the Tech Wizard mentors have seen the excitement and knowledge growth of the youth participants. At parent events and during presentations at the Erie County Fair, youth engaged adults and youth in the same kinds of hands-on SET activities that they experience during their after-school sessions. The transfer of information to other as well as their excitement during the interactions points to the same outcomes that mentors reported. School attendance of Tech Wizards jumped from 8% to 24% between the 2nd to 3rd quarters. Research shows that increased school attendance gives greater likelihood to students graduating from high school. According to the most recent data from the SMART report, 58% of children and youth in Buffalo between the ages of 5 and 17 were not enrolled in school. With such an alarming statistic, improvements in school attendance along with improved excitement and knowledge in SET are even more reasons to continue the efforts of the Tech Wizard program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #88

1. Outcome Measures

The Strengthening Families Program at CCE Orange

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Consistent, firm and nurturing parenting practices are essential for guiding youth in their teen years but many parents and caregivers struggle with how to parent effectively during this challenging time. Teens, in turn, often need help in testing their limits and gaining increased independence while maintaining close connections with their family members. Families identified by school personnel and self-referring adults with teens aged 10-14 are targeted to attend the seven session information and skills building program.

What has been done

Over the past three years, two teams of educators were trained in the evidenced based curriculum, Strengthening Families. Four series of this seven session program are offered in our community each year. Designed to prevent teen substance abuse and other potential behavior problems, this program strengthens communication and empathy skills while helping adults to develop a practical "tool box" of skills to meet the needs of their young teens. An understanding of differing adult and teen life perspectives is also stressed, with practice activities and homework for each workshop. A family meal for all and child care for children under ten helps to eliminate important barriers to attendance and provides healthy models for the diverse families in this program.

Results

This family skills building program helps parents and caregivers learn nurturing skills that support their teen children, teach parents and caregivers how to effectively guide and discipline their youth, provides an environment with a healthy future orientation and an increased appreciation for the "other generations", and teaches youth skills for dealing with stress and peer pressure, thereby building resistance skills. Qualitative responses from youth and adult participants in the four 2010-11 program series support the significance of the lasting effect of the program. Quotes include: "I thought the program was excellent and very informative. I will apply it to our relationship going forward." "(This program) has opened so many doors between me and my family. We learned new ways of dealing with my children, when times are stressful. I will use all the skills that I have been taught throughout this program." "I had a lot of issues with my daughter. Because of this program, I have skills for life. I am very grateful. Thank you." "We have grown closer and talk about problems more."

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #89

1. Outcome Measures

Master Gardener Project - Keuka Lake School Children's Garden

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Today, 16% of children are overweight. In our mobile and technology driven society, children are disconnected from our natural environment. Recent research indicates that Children?s built environments influence their access to nutritious foods and physical activity. One example of a built environment in a public place - a school vegetable garden serves as a way to get children outside, introduce them to gardening, learn life skills and provide fresh and healthy produce and meals from the garden.

What has been done

Nine years ago, two Master Gardeners took on the responsibility of introducing a children?s garden at a local school. Over the years, extension has supported these Master Gardeners. During the summer of 2009, a Cornell Cooperative Extension Summer Intern from the Cornell Landscape Architecture School worked with the Master Gardeners and Keuka Lake School to prepare a detailed plan to more efficiently and effectively use the available garden space.

Results

Master Gardeners in Cornell Cooperative Extension Yates worked with over 200 children throughout the school year to introduce them to horticultural concepts and experiences. Life skills taught included: planning a garden; starting seeds indoors; preparing soils for planting; planting over a dozen vegetable, flower, and berry varieties; learning about and examining the various bugs and insects that inhabit the garden; proper watering; and weeding the garden. Additionally, the school's occupational therapist took the opportunity to work with her students by laying down mulch in the garden. During the summer months, over 100 students continued to tend the garden and harvest vegetable as they ripened. During the summer and fall, as the vegetables ripened, students cleaned, prepared and ate their harvest. One community member donated his time and equipment to dig post holes so that a beautiful wooden fence could be installed around the garden. The school held a dedication ceremony for the children's garden and honored the Master Gardeners with a permanent plaque to remain in the garden. After years of hard work, determination and support from the Yates County Master Gardeners, the school is now ready to operate the garden on their own.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
134	Outdoor Recreation
802	Human Development and Family Well-Being

Outcome #90

1. Outcome Measures

Financial Management Education - CCE Stueben

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Recent census information indicates 14% of New York residents are below federal poverty levels. High unemployment rates, rising costs for food, energy and transportation create challenges for many households. Credit card industry changes impact consumer debt.

What has been done

Financial Management Education programs cover techniques for implementing key financial behaviors such as goal setting, analyzing spending, creating a spending plan and locating community resources. Our Financial Management Education program consists of workshops presented to the public, working one-on-one with individuals or families, and utilizing trained financial volunteers to work with residents, all to assist with meeting basic financial needs and improving their strategies to reach their financial goals. During classes, or working one-on-one with participants, key techniques and strategies were presented to 782 individual participants.

Results

96% of participants indicated they would recommend our program to others. 88% indicated that they had improved their financial behaviors either by increasing savings, decreasing debt, tracking spending or creating a new spending plan. A quote from a participant stated "This program taught me to look more towards the future and taught me to set goals. I am very happy to have been part of your program and am finally looking forward to my future". Giving people the proper tools and strategies decreases their stress levels and gives them hope. We received the following letter: "I want to thank you for your wise financial counsel to my son-in-law. I referred him to you at a crucial time in his and his family's life. He had received a letter from a lawyer to assist him in bankruptcy. His work had lessened, his wife was on the verge of leaving; he had emotionally broken. I told him before he made any decisions to make an appointment with you at Cornell Cooperative Extension. He did and because of your educating him on his possibilities

financially, he did not need to file bankruptcy. He got his confidence back. His work increased and the family stayed intact."

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #91

1. Outcome Measures

Emerald Ash Borer Education in Wayne County

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the fall of 2010 Wayne County was added to the New York State DEC list of Emerald Ash Borer (EAB) quarantine counties. As the news of the quarantine spread in the community Master Gardener (MG) and Master Forest Owner volunteers (MFO) began receiving requests for information from consumers and woodlot owners. Consumers and communities did not necessary understand the specific threat to ash trees, regulations, quarantines, and options for control. The result could have been the unnecessary loss of treasured landscape trees, loss of substantial income from their woodlots, or misuse of chemical products.

What has been done

Master Gardeners and Master Forest Owner volunteers received training from Mark Whitmore-EAB specialist from Cornell. After completion of training and review of EAB material these volunteers became part of and an EAB team. Community presentations were conducted by EAB team members at 10 locations in Wayne County during spring 2011. The presentations provided consumers with information about the Emerald Ash Borer, its impact on ash trees, ash tree id and EAB infestation symptoms and treatment options. Also, what replacement trees to plant should they lose or decide to remove ash trees.

Results

As a result of trainings, 206 Wayne County consumers received information that could help them make informed decisions about ash tree management and pesticide use and therefore potentially decrease misuse. As EAB becomes established in Wayne County our EAB team will continue to address consumer issues with additional community information sessions. Also, through ongoing training and updates, our Master Gardeners and Master Forest Owners are kept current with Cornell recommendations so they are able to answer consumer questions while on the hotline or at woodlot visits.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #92

1. Outcome Measures

CYFAR Project SUPER Science Camps

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

To address increased demand for science and technology professionals, 4-H is working to reach a bold goal of engaging one million new young people in science programs by 2013. Of particular interest is the goal of involving youth from low income families in order to change statistics for youth entering science-related careers.

What has been done

Cornell Cooperative Extension Broome worked to provide camps to under-served youth, from low income families that would not otherwise attend camps. Extension educators and Cornell Departments worked with 12 trained teens to plan and administer science activities that were hands-on, engaging and enriching beyond what the youth would typically do in the classroom or at home. Over 70 youth attended. Camps were held at the Saratoga Youth Center, Carlisle Community Center and a mini camp at the Broome County Urban League. Concentrations included: composting science, water quality, entomology, Vet Science, embryology, GPS technology, food science, rocket science, fiber science, and chemistry.

Results

Activities included: Vet Science: youth dissected a rat and a chicken, held the heart, stretched out the spleen and intestines and unfolded the body to see the interworking. Embryology: youth candled eggs to see embryos, and watched the chicks hatch. GPS Technology: youth set out on a treasure hunt using GPS units to find hidden treasures. They set their own Geo cash, and learned how GPS is being used today in so many everyday situations. Food Science: Youth learned how sugar converts to energy and or fat within our bodies, how food creates chain reactions, learned how liquids turn to solids, made butter, watched yeast and air react and made bread. Rocket Science: youth made their own rockets using fishing line, balloons and wings to see which rocket could travel the fastest. Fiber science: youth interacted with Alpacas, looked at fibers, died the hair and learned how the Alpaca hair is woven into yarn, which is used to make clothing. Chemistry: Youth made homemade lava lamps, using lava and Alka-Seltzer, made flubber, and ooblik. Engineering: Youth constructed a bridge using straws, paper clips and tape that would hold large amounts of weight and competed to see which team won.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #93

1. Outcome Measures

4-H Varying Veggies Garden

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Research has shown that by actively participating in the growing and preparation of food, youth are more likely to try and have a positive response to new foods. Integrating vegetables into a fun gardening project not only involves youth in the planning, planting, tending, and harvesting of produce, but encourages them to try new, nutritious vegetables. With childhood obesity a growing health concern, providing more opportunities to develop good lifelong eating and active living habits can help combat this issue.

What has been done

The youth were involved in evaluating the project and planning next year s garden. Throughout the season, participants learned about plant structure, plant breeding and its connection to Cornell, gardening practices, and nutrition. Active living through gardening was promoted. Participants also learned how to harvest and prepare vegetables for taking to the farmers market and successfully marketed their produce there. In addition to learning about marketing, they also earned money to help sustain the garden project for 2012. The culminating event was a visit to Bejo Seeds in Geneva, who had donated many of the seeds for the project. They toured the demonstration gardens, learned about and tasted new varieties of vegetables, and learned about the company s role in vegetable production.

Results

The 10 foot diameter garden plot allowed 10 youth and 4 adults to benefit from the gardening project. The project was multi-disciplinary, addressing nutrition and physical activity, agricultural practices, decision making, and more. Youth tried not only the unique varieties of vegetables they had grown, but even more that Bejo had in their demonstration gardens. Participants sampled cabbage, fennel, kale, rainbow carrots, kohlrabi, parsley, cherry tomatoes, greens, and even raw onion! The youth were eager to try each vegetable and left Bejo with their arms full of fresh vegetables to take home. On the ride home, one girl shared, "I had such a good time. I ate so many veggies that I can t fit anything else in my tummy!?". All 4-H members, leaders and families were exposed to the garden through their use of the fairgrounds for club meetings and other county events (over 350 people). Additionally, the garden is part of the county fair exhibits, of which over 30,000 fairgoers visit. The connection between gardening, eating locally, the environment, and nutrition, and active living was demonstrated at the 2011 Fair.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #94

1. Outcome Measures

Improving Soil Test Performance, Interpretation and Education for Toxic Metals

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Heavy metals such as lead, cadmium, and zinc are widespread in urban soils and community gardens. Simple, low-cost, accurate testing methods are needed but the tremendous variability from one garden spot to another just a few feet away raises questions about test reliability. Meanwhile, our interactions with community stakeholders show the need for educational programs to address a range of issues including: best practices in sampling soil and testing for contaminants, access to reliable, affordable, certified soil testing labs, simple guidelines for interpreting soil-test results, access to assessments of municipal compost, what to do next if soil tests reveal contamination.

What has been done

We evaluated inexpensive screening tests for estimating lead, cadmium, and zinc in urban garden soils. Because soil-testing labs across the country use different methods, especially for testing how much lead is in the soil, we compared the three most common in their ability to estimate total soil lead. We also tested how best to consider and prepare sites and samples for testing, since results can vary widely depending on how careful the process is.

Results

We found that "1M HNO₃ extraction" was both the best and least expensive test for lead in urban soils, and it's reliable for cadmium and zinc as well. In fact, this method is far better than the most common screen for cadmium. We also saw how dangerous it is to base decisions on just one or two tests, even when samples are mixed together. And we refined our techniques for preparing samples for greater probability of accurate, consistent results, techniques we've incorporated into fact sheets and workshops, augmenting the resources already available on our website.

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics
608	Community Resource Planning and Development

Outcome #95

1. Outcome Measures

Army Family Advocacy Program

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

How does a soldier transition from battlefield to baby? What are the signs of shaken-baby syndrome or post-partum depression in mothers whose husbands are halfway around the globe? What are the signs of domestic or child abuse or neglect, particularly where dads are deployed again and again? How can families cope when dad or mom are on duty? Many of the nearly three million family members of the Army, the Army National Guard, and the Army Reserve live with these issues and their consequences every day. What can be done to mitigate them? The Army's Family Advocacy Program (FAP) trains, educates, and sometimes intervenes, but they rely on outside expertise.

What has been done

We completed 11 new training modules incorporating recent research to help train the FAPs "new-parent support home-visiting staff." In addition, our research updates, technical support, and data analysis for computer-based tracking systems influence how the army ensures accountability for these programs.

Results

The training materials we developed for the Army Family Advocacy Program are used world-wide to support the prevention, education, and intervention outreach of the FAP staff on behalf of soldiers and their families. The evaluation and research services we provide influence how the Army ensures accountability for its programs and services, while our data reports and analysis have been incorporated into client and evaluation tracking systems. These materials provide evidence-based educational information and actionable data for the activities of the Family Advocacy Program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Youth Fiscal pressures internal to Extension and among community organizations influence the scope and quality of programming available to youth. Increasing diversity of our populations creates need for a broader array of program materials, strategies and for a focus on multicultural competencies. Changing educational standards influence acceptability of existing curricula. Regional demographic differences and differences across communities influence both needs and program strategy.

Family The economic, political and governmental sectors affect the quality, availability and accessibility of infant and child care. The growth of aging and minority populations in the US means more diverse cultures and values related to parenting, child care, and family care giving. Natural disasters such as major flooding experienced in many areas of New York in 2011 and the continued weak economy affected household financial status and impacted energy issues. Public and private funders and CCE had fewer fiscal resources and other resources to devote to the quality of life in financial, human development, energy and indoor air quality matters.

Community Communities operate in a complex and volatile context involving susceptibility to weather extremes, changing governmental policies and regulations, land uses demands and shifting development patterns, evolving consumer demands and globalization related economic factors. Weather related disasters, flooding in particular, greatly impacted many communities in terms of infrastructure damage and direct costs. The global, statewide, and regional economies directly impacted local economies. Fundamental change is occurring in the state and regional economies. The specific implications of these external factors varied greatly by locale and across regions.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We employ a combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities for each of our planned programs. The results are aggregated in a statewide accountability system which leads to the summary results reporting in the State Defined Outcomes in each plan including selected impact statements and success stories (from a pool of more than 300 stories reported).

The Parenting In Context CCE statewide program has implement an online Data Collection System for program evaluation. A program work team of faculty, associates and extension professionals developed, piloted and revised a pre-and post- survey for

statewide use. This information now feeds into our State Defined Outcomes related to parenting education. Another statewide team focused on family financial management has worked over the past three years to develop and employ common assessment tools yielding aggregated data for relevant State Defined Outcomes. We plan to work with other statewide teams in coming years.

Key Items of Evaluation

See cross cutting outcomes in State Defined Outcomes. The consumer energy story is a result of efforts by a statewide family resource management team to develop and employ standard assessment measures and procedures.