

2017 Cornell University Research and Extension and NY State Agricultural Experiment Station Research Combined Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

At Cornell University, Federal Capacity Funds are administered strategically to address a wide range of issues in the state and foster integration of applied research and extension programming.

Cornell University Agricultural Experiment Station (CUAES), the New York State Agricultural Experiment Station (NYSAES), and Cornell Cooperative Extension (CCE) work collaboratively to determine planned programs that align with NIFA priority areas and direct funds to individual research and extension projects as well as projects that integrate research and extension. The approach used to integrate the work of the experiment stations and CCE is designed to serve the citizens of New York State and improve the human condition through excellence in scholarship---linking research, non-formal teaching and extension to "real life" challenges and opportunities. Director-level staff from CUAES, NYSAES, and CCE meet regularly as an Integrated Program and Research Team (IPaRT) to discuss relevant issues, research and extension projects, and new opportunities.

IPaRT recruits and communicates with a group of richly diverse research and extension stakeholders, who provide input and inform priority-setting for use of Federal Capacity Funds. These stakeholders review proposals submitted through an internal competitive process by which faculty may apply for Federal Capacity Funds for projects with research and extension components matching current priorities. In addition, we have 34 active Program Work Teams comprised of extension educators, faculty, and stakeholders from across New York State who work together to develop, implement, and evaluate priority programs.

University-wide strategic plans have reinforced the land grant research and extension mission. In 2014, a University-wide effort entitled Engaged Cornell was launched to enhance opportunities for students, the university, and communities toward the goal of strengthening opportunities for learning and engagement. Cornell Cooperative Extension has been involved in this effort to increase opportunities for community-engaged research, learning and service projects. In 2016, a liaison position was created to strengthen collaboration among Cornell students, faculty and staff, and the CCE association offices across the state--supporting development of new university links with association offices and facilitating opportunities for other extension units on campus to strengthen and diversify engagement in New York communities.

The College of Agriculture and Life Sciences (CALS) and the College of Human Ecology (CHE) continue to reinforce the bridges between science and practice, campus community partnerships, and leadership and outreach. The CHE Bronfenbrenner Center for Translational Research is dedicated to expanding, strengthening and accelerating the connections between research, policy, and practice to enhance human development and well-being. Both colleges along with the Industrial Labor Relations School of Cornell University and the Cornell University College of Veterinary Medicine are committed to research, teaching and extension, and the need to translate knowledge for public purpose.

This report documents the intentional planned program work that results from Federal Capacity Fund projects, programs, and initiatives and the results of formerly funded projects. Planned Programs were

addressed collectively by CCE, CUAES, and NYSAES. Further detail, outcome indicators, and success stories are included in the formal report.

Each organization is described below to better explain our unique system at Cornell University.

Cornell University Agricultural Experiment Station

The Cornell University Agricultural Experiment Station (CUAES) - an integral part of three colleges - advances research on food and agriculture systems, the environment, applied economics, and community and individual development. By doing so, CUAES improves people's lives and contributes towards Cornell's Land Grant mission of discovery, engagement, and advancement of learning.

CUAES links Cornell's world-class research facilities with one of the nation's most comprehensive statewide cooperative extension systems. Through this engaged, interactive system we address pressing issues that directly affect the health and welfare of the state and beyond. Many of today's most urgent societal concerns - from childhood obesity to invasive species to global climate change - are not bound by state or national boundaries. With more than 130 years of experience identifying, quantifying, and responding to emerging issues in an ever-changing world, CUAES directs some of the most important projects in the state.

The station directly manages over 5,600 acres of farms and forests, and includes the university compost facility, nine farm operations, and over 177,000 square feet of plant growth facility space--providing critical research services to scientists. Our student-run organic farm, Dilmun Hill, is a model of a student-run agricultural operation that has been emulated by other organizations and universities. Every aspect of our operation - from staff development to forest management to field practices - is viewed through the lens of sustainability.

The Cornell University Agricultural Experiment Station:

- Manages more than \$5.5 million in federal Hatch grants.
- Annually distributes approximately \$1.5 million to new competitively reviewed projects. Federal Capacity Fund projects and initiatives are an essential element of Cornell's research portfolio, supporting applied research that benefits residents of the state, region, and the nation.
- Employs over 50 full time operations staff and twelve full time administrative staff.
- Operates nine farms with agricultural production and forest acreage across the state, from Willsboro on Lake Champlain to Long Island on the Atlantic Seaboard.

New York State Agricultural Experiment Station

Established in 1880, Cornell's New York State Agricultural Experiment Station (NYSAES) in Geneva develops cutting-edge technologies essential to feeding the world and strengthening New York economies.

From developing safe and nutritious foods to pioneering means to preserve the environment, NYSAES serves millions of New York consumers, agricultural producers, food businesses and farm families throughout the state. NYSAES helps New Yorkers capitalize on new food and agricultural opportunities and is uniquely positioned to translate state-of-the art research into industry innovation and economic growth.

The New York State Agricultural Experiment Station:

- Operates a budget of approximately \$39 million--approximately one-third of which is funded through SUNY's base budget.

- Employs nearly 300 staff and over three dozen tenure-track professors.
- Partners with Faculty and Extension Associates: on the range of ten visiting scientists, ten postdocs, and 25 research and extension associates.
- Extends research and knowledge through students. In recent years there have been 50 to 55 graduate students conducting masters and doctoral studies.
- Encourages cross departmental/Research Association operations: Our four departments--horticulture; plant pathology and plant-microbe biology; entomology and food science--have faculty in Geneva and Ithaca. The main focus is on improving the genetics, cultivation, production, protection, handling and processing of fruit and vegetable crops.
- Partners with the Northeast Center for Food Entrepreneurship (NECFE), at the NY Food Venture Center at Geneva to provide assistance to over 200 food entrepreneurs annually, promoting sustainable economic development in rural communities.

The NYSAES campus includes:

- The U.S. Department of Agriculture's Plant Genetic Resources Unit (PGRU), responsible for the collection of apple, sour cherry and cold-hardy grapes and selected seed-propagated crops, such as onion, garlic, broccoli, cabbage and winter squash; and the Grape Genetics Resources Unit (GGRU), responsible for the national program on grape genetics and genomics.
- A central Geneva campus made up of 20 major buildings, several smaller buildings for farm machinery storage and similar purposes, and two houses with rooms rented to graduate students, visiting scientists, and postdocs.
- Two pilot plants -- the Fruit & Vegetable Processing Pilot Plant and the Vinification & Brewing Technology Laboratory -- provide opportunities for entrepreneurs and processors to add value to the state's raw products.
- The NYS IPM Program
- Cornell Agriculture and Food Technology Park adjacent to the main NYSAES campus
- Research/extension laboratories - Hudson Valley at Highland, NY, and the Cornell Lake Erie Research and Extension Laboratory at Portland, NY.
- Eleven farms for experimental plot work close to the Geneva campus with a total of 870 acres. There is also one acre of greenhouse space on the campus.
- The High Pressure Processing Food Validation Center

Cornell Cooperative Extension

Cornell Cooperative Extension extends Cornell University's land-grant programs to citizens all across New York State. With a presence in every county and New York City, CCE puts research into practice by providing high-value educational programs and university-backed resources that help solve real-life problems, transforming and improving New York families, farms, businesses and communities.

County associations of Cornell Cooperative Extension work with their local boards, committees and volunteers to influence decisions on program priorities and delivery. Our county extension associations and multi-county programs are separate 501(c) 3 organizations under the general supervision of Cornell University as agent for the state of New York.

Cornell Cooperative Extension:

- Annually reaches over 1.9 million participants directly, and pushes information out thoroughly through print, social media, television, radio, and web pages - potentially reaching an indirect audience in 100 million ways.
- Employs 1,033 local and regional staff and educators organized around program initiatives and local

needs including 63 regional specialists from 10 regional area agriculture teams who focus on dairy and field crops, commercial horticulture, grapes/viticulture, fruit, and vegetables.

- Extends community work by partnering with over 45,000 volunteers who advise, plan, teach and mentor in all program areas.
- Partners with nearly 300 Cornell staff and faculty; primarily from the College of Agriculture and Life Sciences and the College of Human Ecology.
- Engages a program development process that relies heavily on community input to identify issues of local importance. Often research is informed by the two-way flow of information and experience.
- Includes 55 learning centers and 9 residential youth camps across New York State, and is fully equipped to deliver events and instruction through various modes including webinars, online coursework and on-demand videos to remote audiences.

Collective, planned program areas are described below.

AGRICULTURE AND FOOD SYSTEMS: Support, maintain and develop a NY agriculture industry that is diverse, sustainable, and profitable, which produces a safe, reliable, healthy and local food supply.

CLIMATE CHANGE: Engage with multidisciplinary researchers, educators and extension faculty to quantify the current climate trends and prepare for future impacts. This plan also includes related topics - biodiversity and water quality/erosion control.

ENVIRONMENT, NATURAL RESOURCES AND SUSTAINABLE ENERGY: Engage in research and extension that uses available resources - including land and organic waste streams for renewable solutions. This plan also supports research and extension strategies that promote energy and natural resource conservation.

NUTRITION, FOOD SAFETY AND SECURITY, AND OBESITY PREVENTION: Support families, youth, communities and the agricultural industry with research and extension connected to childhood obesity prevention; youth, family and community nutrition; food security and food safety.

4-H YOUTH DEVELOPMENT/CHILDREN, YOUTH, AND FAMILIES: Enrich the lives of youth and families with research and extension programs. 4-H youth programs focus on life skill development and STEM opportunities. Family programs emphasize human development and social well-being, parenting, economic well-being, and quality of home and work environments.

COMMUNITY AND ECONOMIC VITALITY: Empower individuals and communities to make sound decisions for the future through access to research, data and resources, best practices, university-based resources and community education. This plan also supports extension efforts related to entrepreneurship, workforce development, and community based food systems support through the Master Gardener Volunteer program.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	1058.0	0.0	40.0	0.0
Actual	1033.0	0.0	36.0	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

Merit Review Process

CUAES, NYSAES and CCE work together on a process of merit review for applied research and extension projects, including review for integrated and multistate activities. Key elements of the process are described below, and include statistics from the most current (2017) proposal cycle. Director-level staff from CUAES, NYSAES, and CCE meet regularly as an Integrated Program and Research Team (IPaRT) to discuss relevant issues, research and extension projects, and new opportunities.

Submission and Review Process (Research, Extension, and Integrated Projects with Federal Capacity Funds):

- Principal investigators (PIs) are asked to consult program priorities (established as outlined in the stakeholder involvement section) and develop pre-proposals for new or revised projects funded by Federal Capacity Funds.
- PIs who meet eligibility requirements are generally allowed to submit one pre-proposal within each funding stream (e.g. Smith Lever, Hatch, Hatch Multistate), and do so through an online system, which tracks each proposal through its life cycle.
- Pre-proposals are reviewed for purpose and relevancy by external stakeholders, the principal investigator's department chair, Extension Program Associate/Assistant Directors, and the Agricultural Experiment Station directors (CUAES and NYSAES). Reviews are submitted via a secure website.

For research proposals:

- Agricultural Experiment Station directors make final determination of pre-proposals for development into full proposals.
- Full proposals are reviewed by two or three peer reviewers suggested by the PI and the PI's Department Chair.
- The final proposal is submitted to NIFA through REEPORT. Pending approval by NIFA, Hatch funds are allocated to a unique account associated with their specific project.

For extension proposals:

- Extension Program Directors rank/recommend extension pre-proposals.
- Extension Program Directors meet with Agricultural Experiment Station (Ithaca and Geneva) staff to discuss potential research and extension linkages within extension pre-proposals.
- Extension Assistant Director, Organizational Development & Accountability reviews for equal program opportunity and affirmative action considerations.
- Extension Program Directors finalize Smith-Lever funding recommendations.

Cornell University Review Criteria:

- Anticipated significance of results relative to current priority needs or opportunities

- Scientific merit of objectives
- Clarity of objectives
- Appropriate approach and methodology
- Feasibility of attaining objectives
- Accomplishment during previous projects
- Research performance and competence of investigator(s)
- Relevance of the proposed work to state, regional, or national goals
- Impact on underserved audiences
- Level of research-extension integration
- Relevance to stakeholders

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, IPaRT works with external stakeholders that provide guidance for CUAES, NYSAES and CCE by reviewing funding support requests. Involvement is intentionally monitored and updated to ensure involvement and ties to traditional and non-traditional constituents, and established and emerging partnerships.

In addition, we have 34 active Program Work Teams (PWTs). PWTs are made up of extension educators, faculty, and stakeholders who work together to determine, develop and implement priority programs within PWTs and to advise IPaRT as needed. 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. More than 1000 participants were involved in the work of these teams in 2017.

Beyond this state-level stakeholder input structure/process, each of Cornell Cooperative Extension's county extension associations continue to work closely with local stakeholders via participation in their local governance structures, i.e. board of directors, and advisory committee structures. In 2017,

more than 2,978 board and committee volunteers from diverse backgrounds participated and assisted in the direction, priority setting programs throughout the state, and over 45,000 committed volunteers assisted with program delivery adding to stakeholder involvement.

In local CCE offices stakeholder input is sought from all audiences including under-represented or under-served audiences. One of the strategies used for gaining input and developing working relationships with new audiences is by networking and partnering with organizations that do have existing and strong relationships with target groups. Local boards of directors and advisory committees also recruit an intentionally diverse membership representative of the people and the needs in the community.

Effective involvement of youth in program determination and implementation is a priority. Our local advisory committees are expected to include youth members as part of the needs assessment and decision making structure. In 2017, more than 12,000 youth reported serving in appropriate leadership, 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 expected to have active and diverse advisory processes and to intentionally consider audiences not currently served. The activities of IPaRT, stakeholders, and PWTs are described in other questions in this section. Needs assessments, focus groups, and user surveys are conducted at the individual level of program units as well as in our statewide plan of work process.

As a method of tracking program needs and input received, CCE educators are expected to submit narrative reports of efforts including efforts intentionally planned to engage underserved populations. For the 2017 reporting year, over 25% of the 440 + impact statements were submitted exemplifying programming intended for underserved audiences: 4-H programs reaching new audiences through afterschool programming and working with other organizations, food and nutrition programs helping mothers, families and food pantry clients to cook well balanced, affordable meals, parenting programs focusing on families in high stress situations, resiliency and hope building strategies for families everywhere, and Agricultural programs focussed on working with farm workers to build skills, and ensure food safety practices. Access to these examples can be found here: <http://www2.cce.cornell.edu/plans/Pages/default.aspx>

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 the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- 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 2017 but methods varied site to site and program-to-program across the system. Structures and processes for aggregating data are addressed in this section. The most active data gathering occurred in three venues - local advisory bodies, PWTs, and the IPaRT stakeholders. Web-based surveys; interactive webinars and response to social media also provide programmatic feedback. Examples of efforts to gather stakeholder input include: Assessing Barriers to Wholesaling for Small-Scale Vegetable Growers survey to quantify the hurdles, assess the impacts to growers trying to enter wholesaling, and assess what educational programs can be created to solve these problems (Cornell Vegetable Program), Auto Section Control on Corn Planters: Benefits and Costs for Decision Making - advisory committee identified precision agriculture as a topic of high priority to help direct applied research and extension work of the program. (Northwest NY Dairy Livestock and Field Crops Program), Eat Smart New York Hudson Valley and the Revitalization of the Poughkeepsie Backpack Program - identified by Advisory Committee and school district as a need to assist youth across school district (Hudson Valley SNAP-Ed), Community Strengthening our Area Residents Program begins Power of Produce for Seniors with support of community organizations and businesses to attract more senior citizens to the market and provide them with extra money to purchase locally grown fruits and vegetables needed to make healthier meals (CCE Wayne). - a program response based on survey of seniors and community organizations (CCE Sullivan - Youth & Family Development), Hydrilla Stakeholder Meetings - CCE hosts meetings with stakeholders to provide an opportunity for civil discourse and education (CCE Westchester).

In support of the objectives creating programs that meet the needs of all community stakeholders, Cornell Cooperative Extension requires local Associations to annually review and commit to the CCE Affirmative Action, Diversity and Inclusion Plan (AADIP). AADIP is a comprehensive plan that sets a foundation for building a more diverse and inclusive organization and supports organizational development and sustained culture change.

Preparing staff to understand how to meet the needs of stakeholders is a priority. In 2017 mandatory all-staff training on Title VI Civil Rights were held. Additionally, diversity and inclusion topics were built into every larger staff training effort including: New staff orientation, the Program Development Leadership Cohort, Supervisory Development Training, Executive Director Boot Camp - and as the feature of the 4-H Youth Development Diversity and Inclusivity Cohort and Opening Doors Diversity training. These offerings, along with distance learning training in the program development process, help staff learn how to identify local needs and then meet the needs of audiences through programs.

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 CUAES, NYSAES and CCE was established in February 2001.

IPaRT stakeholders and PWTs work to improve program focus, relevance, and planning activities. Stakeholder input informs Federal Capacity Fund priorities and provides project-specific input on the relevance and value of the proposed work. IPaRT stakeholders provide input that informs decisions around funding of current extension and research projects, contributing ratings of perceived relevance among other rating criteria. Statewide applied research and extension priorities are updated annually, communicated to faculty and staff, and used as a consideration in funding decisions.

County associations of Cornell Cooperative Extension work with their local boards, committees and volunteers to influence decisions on program priorities and delivery. County extension associations and multi-county programs are separate 501(c) 3 organizations under the general supervision of Cornell University as agent for the state of New York. Their local plans of work are established under guidance of stakeholders in local advisory structures and governing boards and are in alignment with the statewide plan of work.

Brief Explanation of what you learned from your Stakeholders

Stakeholders help to frame and shape plans of work, funding proposals, programs, and educational activities. System-wide, the IPaRT stakeholders and PWTs have affirmed a commitment to the NIFA priorities and have elevated needs and opportunities to make use of campus resources for educational programs. Feedback from stakeholders is sought in a variety of ways, welcomed and considered for planning. Communication between CUAES, NYSAES and CCE is open and regular at IPaRT meetings and through funding decisions.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{No Data Entered}	{No Data Entered}	{No Data Entered}	{No Data Entered}

Institution Name: Cornell University

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	8489101	0	5935382	0
Actual Matching	8489101	0	11360518	0
Actual All Other	0	0	0	0
Total Actual Expended	16978202	0	17295900	0

Institution Name: NY State Agricultural Experiment Station

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	0	1233592	0
Actual Matching	0	0	1812028	0
Actual All Other	0	0	0	0
Total Actual Expended	0	0	3045620	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	0	5071487	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Agriculture and Food Systems
2	Climate Change
3	Environment and Natural Resources and Sustainable Energy
4	Nutrition, Food Safety and Security, and Obesity Prevention
5	4-H Youth Development/Children, Youth and Families
6	Community and Economic Vitality

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Agriculture and Food Systems

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	5%		14%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		7%	
202	Plant Genetic Resources	3%		15%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		3%	
204	Plant Product Quality and Utility (Preharvest)	15%		4%	
206	Basic Plant Biology	10%		1%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		14%	
212	Pathogens and Nematodes Affecting Plants	5%		14%	
213	Weeds Affecting Plants	2%		2%	
215	Biological Control of Pests Affecting Plants	3%		8%	
216	Integrated Pest Management Systems	3%		1%	
301	Reproductive Performance of Animals	1%		4%	
302	Nutrient Utilization in Animals	6%		3%	
305	Animal Physiological Processes	2%		2%	
307	Animal Management Systems	8%		3%	
501	New and Improved Food Processing Technologies	6%		1%	
503	Quality Maintenance in Storing and Marketing Food Products	10%		2%	
601	Economics of Agricultural Production and Farm Management	8%		2%	
604	Marketing and Distribution Practices	8%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	274.0	0.0	18.0	0.0
Actual Paid	132.0	0.0	18.0	0.0
Actual Volunteer	1788.0	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
1513205	0	2649076	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1513205	0	5224242	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	1142502	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	1635863	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.

Sample Statewide/Regional Initiatives that fall within this Plan of Work

- Central NY Dairy & Field Crops Program
- Cornell Vegetable Program
- Eastern NY Commercial Horticulture Program
- Finger Lakes Grape Program
- Harvest NY
- Integrated Pest Management
- Lake Erie Regional Grape Program
- Lake Ontario Fruit Program
- Northern NY Regional Agriculture
- Northwest NY Dairy, Livestock & Field Crops Program
- Pesticide Management Education Program
- South Central NY Dairy and Field Crops Program

2. Brief description of the target audience

Key audiences served, directly and indirectly, in enhancing agribusiness 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.

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 378 staff are registered, 63 of which are faculty members. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of involvement include:

- **Sandra Cuellar**, a member of the Applied Economics and Management Unit at Cornell is director of the **Healthy Food Choices in Schools** Community of Practice.
- **Heidi Mouillesseaux-Kunzman**, Senior Extension Associate with the Community and Regional Development Institute, Development Sociology, co-leads the **Enhancing Rural Community Capacity** Community of Practice. A key focus of the ERCC CoP over the last year is further developing Foundations of Practice, a national training program targeted to community developers. The CoP was selected to participate in eXtension's 2016 Community Issues Corps Designathon to help move this initiative forward.
- **Keith Tidball**, Senior Extension Associate in the Department of Natural Resources and Assistant Director of Cornell Cooperative Extension leads the **Community Capacity Building concentration area of the Military Families Learning Network**. A key focus of this work is the Department of Defense and National Guard Bureau Building Healthy Military Communities Pilot wherein Cooperative Extension is situated as a force multiplier in the family readiness mission. Keith also has served on the national **Extension Disaster Education Network (EDEN)** Executive Committee, as well as on the EDEN Exercise Committee and Chair of the Agriculture and Cybersecurity Working Group. In New York State, he serves as the state Point of Contact and as a delegate, and is the leader of the New York State **Extension Disaster Education Network** program. Both eXtension networks evolved from eXtension

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 communities of practice.

• **Additionally: Jeff Piestrak**, Digital Collections Specialist for Mann Library at Cornell recently served as a fellow on a yearlong research project around **data** and information **structures for food systems and Extension practices**; **Jamila Simon**, 4-H Extension Associate in the Bronfenbrenner Center for Translational Research is a member of the **ECOP Ad Hoc Tech and Innovation Committee**, **Steve Hadcock**, Association Team Leader CCE Albany is a part of the **First eXtension Innovation Facilitation team**, **Nigel Gannon**, Extension Associate in the Bronfenbrenner Center for Translational Research is a part of the **Impact Collaborative Branding Team**; **June Mead**, Association Issue Leader for CCE Broome County is a **Diversity and Inclusion Issue Corps Key Informant**; and **Bonnie Collins**, Association Sr. Team Leader for CCE Oneida County, **Jeff Piestrack** (noted above) and **Andy Turner**, State 4-H Program Leader, Bronfenbrenner Center for Translational Research are all members of the **Diversity and Inclusion Issue Corps**.

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

- Agricultural Insect Pests of the Northeast U.S.
- All About Blueberries
- Apples
- Community, Local and Regional Food Systems
- Cooperatives
- Diversity Equity and Inclusion
- Enhancing Rural Capacity
- eOrganic
- Freshwater Aquaculture
- Grapes
- Impact of Climate Change on Agriculture
- Invasive Species
- LPE Manure Nutrient Team
- Pesticide Environmental Stewardship
- Precision Agriculture
- Sheep
- Small and Backyard Flocks
- Sustainable Ag Energy
- Sustainable Marine Fisheries
- Unmanned Aircraft Systems
- Women in Ag Learning Network

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	261912	17112117	46323	3026530

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

Patent Applications Submitted

Year: 2017

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	0	355	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(1.1a) Number participants documented to have applied knowledge or skills gained to strengthen existing business operations.
2	(1.1b) Number of participating family-owned agricultural/ horticultural/natural resources businesses that plan for succession, transfer, or sale of their business.
3	(1.1c) Number of participants reporting improved agricultural/ horticultural business profitability attributed at least in part to program participation.
4	(1.1d) Number of business owners successfully completing an intergenerational transfer or other desired dispensation of their business attributed at least in part to program participation.
5	(1.2a) Number of participants who demonstrate knowledge gains related to needs of potential employees and/or availability of qualified employees.
6	(1.2b) Number of participants documented to have made one or more changes in human resources practices to enhance labor availability or retention.
7	(1.2c) Number of 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.
8	(1.3a) Number of participants documented to have adopted innovations in food enterprises including production, allied services, processing, and distribution.
9	(1.3b) Number of 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.
10	(1.3c) Number 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.
11	(1.4a) Number of producers, horticulture business persons, and/or natural resource managers modifying existing practices and/or adopted new production best practices or technologies to address current issues and improve yield efficiency, consistency and/or quality and/or conservation of resources.
12	(1.4b) Number 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.
13	(1.4c) Number of technical assistance providers documented to have incorporated current best management practices in their recommendations.
14	(1.4d) Number of producers or horticulture business persons, reporting increased dollar returns per acre or reduced costs per acre.
15	(1.5a) Number 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.
16	(1.5b) Number 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 or regulations.

17	(1.5c) Number 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.
18	(1.5d) Number of resource managers reporting reduced environmental concerns for participating enterprises.
19	Furthering Development of a Successful Vegetable Disease Identification Web Site Used by Extension Educators and Others
20	Biocontrol of Root Weevils
21	Increasing Engagement of Audiences for Field Crop and Soil Science Information Through Web-based Media Principle
22	Quality Crop Varieties and Seeds
23	Improving Nutrient and Weed Management in Reduced Tillage Systems for Vegetables
24	Students Engaging the Environment: A Student and Scientist Collaboration to Assess Aquatic Invasive Species
25	From the Ground Up: Soil Best Management Practices for Vegetable Production on a Rooftop Farm
26	Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises

Outcome #1

1. Outcome Measures

(1.1a) Number 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
2017	3508

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

(1.1b) Number of 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
2017	167

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

(1.1c) Number of 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
2017	1752

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
604	Marketing and Distribution Practices

Outcome #4

1. Outcome Measures

(1.1d) Number of 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
2017	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
604	Marketing and Distribution Practices

Outcome #5

1. Outcome Measures

(1.2a) Number of participants who demonstrate knowledge gains related to needs of potential employees and/or availability of qualified employees.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #6

1. Outcome Measures

(1.2b) Number of 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
2017	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #7

1. Outcome Measures

(1.2c) Number of 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
2017	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
604	Marketing and Distribution Practices

Outcome #8

1. Outcome Measures

(1.3a) Number of participants documented to have adopted innovations in food enterprises including production, allied services, processing, and distribution.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	661

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
604	Marketing and Distribution Practices

Outcome #9

1. Outcome Measures

(1.3b) Number of 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
2017	516

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
604	Marketing and Distribution Practices

Outcome #10

1. Outcome Measures

(1.3c) Number 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
2017	311

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
604	Marketing and Distribution Practices

Outcome #11

1. Outcome Measures

(1.4a) Number of producers, horticulture business persons, and/or natural resource managers modifying existing practices and/or adopted new production best practices or technologies to address current issues and improve yield efficiency, consistency and/or quality and/or conservation of resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	5315

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
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
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #12

1. Outcome Measures

(1.4b) Number 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
2017	1412

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
604	Marketing and Distribution Practices

Outcome #13

1. Outcome Measures

(1.4c) Number of 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
2017	2404

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
604	Marketing and Distribution Practices

Outcome #14

1. Outcome Measures

(1.4d) Number of producers or horticulture business persons, reporting increased dollar returns per acre or reduced costs per acre.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2013

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
604	Marketing and Distribution Practices

Outcome #15

1. Outcome Measures

(1.5a) Number 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
2017	1746

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
206	Basic Plant Biology
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
307	Animal Management Systems

Outcome #16

1. Outcome Measures

(1.5b) Number 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 or regulations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1038

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #17

1. Outcome Measures

(1.5c) Number 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
2017	629

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
216	Integrated Pest Management Systems
501	New and Improved Food Processing Technologies

Outcome #18

1. Outcome Measures

(1.5d) Number of 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
2017	101

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
216	Integrated Pest Management Systems

Outcome #19

1. Outcome Measures

Furthering Development of a Successful Vegetable Disease Identification Web Site Used by Extension Educators and Others

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Accurate identification of a disease is step one in management because effective practices tend to be disease specific. Symptoms can vary over time and can be subtly different among diseases on a crop. Numerous photographs of diseases and disorders in commercial crops and research plantings that had been taken over many years on Long Island were recognized as a valuable resource that needed to be made available.

What has been done

Posting photographs on the web was identified as the most effective way to widely share the images. Information about identification, biology and management for each disease was included to increase value. A Photo Gallery web site was set up as a component of another web site (<http://blogs.cornell.edu/livegpath/>). Some images were posted before this project to assess utility before investing time and resources.

Results

Posting photographs on the web was identified as the most effective way to widely share the images. Information about identification, biology and management for each disease was included to increase value. A Photo Gallery web site was set up as a component of another web site (<http://blogs.cornell.edu/livegpath/>). Some images were posted before this project to assess utility before investing time and resources.

4. Associated Knowledge Areas

KA Code	Knowledge Area
206	Basic Plant Biology
212	Pathogens and Nematodes Affecting Plants

Outcome #20

1. Outcome Measures

Biocontrol of Root Weevils

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Black vine-Strawberry root weevil complex is a difficult to control pest of berry productions in the northeast and Canada. Strawberries, blueberries and raspberries are high value crops, with the cost of establishment ranging from \$3,700-\$8,500 per acre. Economic damage is caused by larval feeding resulting in reduced plant vigor and death. The root weevil complex has been shown to be very susceptible to bio-control nematodes. Unlike the commercially available strains; which are expensive (est. \$1,200/acre) and require accurate application timing for effectiveness, native NY strains of bio-control nematodes can persist in NY soils for multiple years and have been successfully used to manage a closely related species across NNY.

What has been done

Successful management of the root weevil complex requires an integrated approach utilizing identification, education, recommendations, and applications. This three year study focused on; educational material development specifically for berry producers, identifying and catalogue berry producers impacted by root weevil complex, promote adoption of using biocontrol nematodes to producers with fields infested with root weevils. A single application of a mix of EPN species has shown to successfully reduce larval populations and restore fields to full berry production. In order to control the insect complex on the farm, all of the hosts need to be inoculated with the appropriate mix of EPN species.

Results

To date the focus of the project was to make berry producers aware of the low-cost bio-control nematode program. The successful establishment of biological nematodes at Bieler Enterprises, Cross Island Farms, Full and By Farms, and Rulfs Orchards has led farm managers to report decreased root weevil populations since inception. This research project has shown the effectiveness of using native persistent entomopathogenic nematodes (EPNs) for long-term

control of the root feeding root weevil complex attacking NYS berry producers. Moving forward, adoption of the whole-farm approach for biocontrol nematode applications is recommended, if not imperative to effectively cause a decline of the root weevil complex to a sub-economic level for berry producing farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants

Outcome #21

1. Outcome Measures

Increasing Engagement of Audiences for Field Crop and Soil Science Information Through Web-based Media Principle

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is an ongoing challenge to provide the latest crop production information to a large, diverse, and geographically isolated set of professionals in NY State, including farmers, growers, crop managers, crop consultants, industry and public service agencies. These individuals need the most current technologies and management practices for sustainable field crop production.

What has been done

A comprehensive web site, fieldcrops.org, and communications plan was developed that includes videos, microblogging, social media, and content accessible on mobile devices. Videos were filmed at field days, annual meetings, and as special productions with topics including sampling for soil health assessment, soybean diseases, and malting barley crop production. Extension agents were trained in production of field cam videos, which allow developing problems and timely events to be highlighted. Time-lapse videos were produced to create engaging views of disease and crop development. The program provides daily tweets and stories with crops-related information to maintain regular client linkage with Cornell’s program and with the broader web

literature of highly relevant information.

Results

The project has provided considerably increased access to crop and soil science information and has strengthened the linkages and engagement of audiences with the programs at Cornell and with extension professionals. For example, the field crops web site now has 640 followers and a 162% increase in page views. The soybean pages have increased page views eight fold. Tweet impressions are over 20,000 per year, which is a highly effective method of leading viewership to our sites and maintaining highly relevant, dynamic content that engages audiences.

Websites: <https://fieldcrops.cals.cornell.edu/> & <https://scs.cals.cornell.edu/extension-outreach/field-crop-production>

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

Outcome #22

1. Outcome Measures

Quality Crop Varieties and Seeds

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Field crops and vegetables are grown on 49% of operated farm acres in New York and generate \$1.5 billion in direct annual value in the State. Cornell’s plant breeders develop, test, and identify varieties of these crops with the local adaptation, yield potential, and quality to ensure the success of NY’s field crop and vegetable acres. Information exchange among growers, end-users, and breeders is essential to identify varietal needs that productively orient breeding programs, to highlight new varieties that can improved productivity and sustainability for field crop

and vegetable growers, and to encourage use of high quality seed in NY.

What has been done

This project tested varieties on farms and experiment stations and shared performance data to help seed companies, seed growers, farmers and gardeners choose varieties that met their needs. Opportunities were provided for information exchange among growers, processors, chefs, seed industry personnel, and breeders about experiences with new crop varieties and about specific crop traits that need improvement. Foundation seed of Cornell-developed and Cornell-identified varieties were produced, and seed growers were educated on the importance of certified seed. Staff worked with NYS Department of Agriculture and Markets to help bring state seed law and regulations up-to-date. Public education was also provided about plant breeding, crop varieties, and genetic engineering.

Results

Three new potato varieties were identified based on grower feedback and will be available in 2018. During 2017, 26 vegetable licenses were executed ? ten for squash, nine for tomato, four for pumpkin, two for snap pea, and one for pepper. Variety trials of forage legumes and grasses, small grains, and corn grain and silage were conducted annually and results shared through the Cornell Guide for Integrated Field Crop Management. The NY Seed Improvement Project inspected over 4,000 acres of seed production fields for Certification or Quality Assurance every year. Presentations about varieties, seed, and genetic engineering reached 5,890 people in person and many more via displays, radio and television interviews, and web-based media. Website: <http://plbrgen.cals.cornell.edu/cals/pbg/programs/departmental/extension/index.cfm>

4. Associated Knowledge Areas

KA Code	Knowledge Area
206	Basic Plant Biology

Outcome #23

1. Outcome Measures

Improving Nutrient and Weed Management in Reduced Tillage Systems for Vegetables

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Tillage is a critical tool for vegetable farmers, especially those using organic practices, however intensive and frequent tillage is detrimental to long-term soil quality, increases the risk of soil and nutrient runoff, and consumes excess fuel and labor. Organic farmers are increasingly looking to adopt reduced tillage (RT) practices that minimize soil disturbance to overcome these problems but many barriers remain. Reduced tillage practices can require system-wide changes in crop production where farmers must consider different approaches to managing residue, weeds, insect pests, fertility, and cover crops. Solutions must be scale-appropriate and match the size of a farmers operation, fit within their crop rotations, and account for available tools and equipment.

What has been done

This project developed, demonstrated, and shared RT practices that are suitable to vegetable producers at all scales. A team of organic RT farmers elevated their expertise, informed research trial design, and fostered sharing of successful methods. Field trials were performed at small and large scales to investigate labor needs, weed management, equipment, economics, soil fertility, and crop performance with RT. Partners included farmers, extension educators across NY, and non-profit organizations to share field research results, support on-farm demonstrations, and design intensive, farmer-to-farmer workshops to guide farmers in adopting practices that work on their own farm.

Results

Organic growers are making informed decisions on how to implement, refine, and expand RT systems on their farm. Information gap was filled among small farms and shown how to suppress weeds and maintain high yields with RT while decreasing hand labor as much as 80%. Legume-cereal cover crop combinations and RT methods that work to overcome residue management challenges while decreasing fertilizer nitrogen needs by at least 50% were identified. Outcomes were shared through 20 + workshops in NY and the Northeast attended by 1,300 stakeholders. Developed a learning network of over 300 growers and educators with an interest in learning more about RT practices.

Website: <http://smallfarms.cornell.edu/projects/reduced-tillage/>

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
206	Basic Plant Biology
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

Outcome #24

1. Outcome Measures

Students Engaging the Environment: A Student and Scientist Collaboration to Assess Aquatic Invasive Species

Not Reporting on this Outcome Measure

Outcome #25

1. Outcome Measures

From the Ground Up: Soil Best Management Practices for Vegetable Production on a Rooftop Farm

Not Reporting on this Outcome Measure

Outcome #26

1. Outcome Measures

Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises

Not Reporting on this Outcome Measure

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 the last decade highly damaging flood events damaged crop and forest resources in highly productive areas of New York. Recovery is slow 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. There is a growing interest by consumers, communities and producers to market local foods locally. This interest continues to influence programs, research and funding availability. These trends are expected to continue.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Each of the plans addresses a broad combination of applied research and extension initiatives spanning multiple audiences, methods, and intended outcomes. A combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities are expected to provide comprehensive assessment. We work towards this goal by doing two things - professional development to enhance evaluation capacity of our system and collecting quantitative and qualitative documentation of local, regional and statewide programs.

Evaluation Capacity Building: Cornell Cooperative Extension has worked with the Cornell Office of Research on Evaluation (CORE) to strengthen evaluation practice and build evaluation capacity. CORE developed The Systems Evaluation Protocol that takes programs from logic models (columnar) to pathway models (a visual model that shows relationship of short-term, mid-term and long-term outcomes) and helps to create an evaluation strategy. CORE tested and refined The Systems Evaluation Protocol in partnership with CCE programs from 2006 - 2015. The Protocol has been integrated into professional development in CCE, to promote consistent approaches to evaluation of county-based, regional, and statewide programs. Although the formal project connection with CORE ended in 2015, access to the Netway and online training continues to be available. Additionally, CCE program leaders are being trained in logic and pathway modelling through the CCE Program Development Leadership Cohort, an in-depth and comprehensive professional development experience targeting program leaders to become more proficient at program planning and evaluation.

Regional/Statewide documentation examples. Many regional and statewide programs are receiving federal capacity funds. Documentation of outcomes is a requirement of funding. Results shape future program efforts and impact program design. **An example evaluation from a funded project can be found below.**

There is also a requirement for our local and regional programs to report on statewide outcomes/indicators: Program documentation results are aggregated in a statewide accountability database that includes both qualitative and quantitative data for reporting and helping us to better understand impacts. Quantitative system wide outcome data is reported in the outcome portion of this report.

Key Items of Evaluation

Example evaluation for the Agriculture and Food Systems Plan - Project: Advancing Season Extension (Jud Reid) - use of a variety of evaluation methods have been used in this project, including surveys, interviews and formal discussion/feedback. The primary benchmarks for success in this project are 1) BMP adoption by participating growers, 2) increased high tunnel yields and/or income and 3) successful outreach efforts. For the purposes of this final report, please see results in the Project Conclusion section.

Many NYS vegetable growers have found high tunnels, low-to-minimally heated greenhouses, to be a profitable investment for their farm and have expanded their use of this technology. In the latest census (2012) NYS listed 435 protected environment vegetable operations (greenhouse/high tunnel). This represents over 100% growth from the previous 5 year period and a statewide value of over \$27,000,000 (USDA, 2014). That level has grown in the last six years to an estimated 600 high tunnel operations in New York State. However, growers are finding that long term soil health and fertility management in high tunnels is different than in the field. Over application of fertility sources results in excess nutrient levels; impairing the soil's potential to support crop growth over the long term. Specific nutrients of concern are calcium, phosphorus and magnesium which can impair balanced crop uptake of other key elements such as potassium and manganese. Sound research based information, coupled with education on best management practices (BMPs) will ensure long term sustainability for these growers, resulting from improved nutrient management and higher profitability.

High tunnel vegetable growers participating in this project improved their ability to manage soil and nutrients through intensive soil, water and foliar analyses and implementation of project best management practices. The project team presented project results at 54 educational outreach events attended by over 1500 growers. Twenty-nine farms across NYS participated in intensive sampling. The nineteen farms that provided complete economic data reported an average net annual high tunnel income of \$17,569.51 in 2017. This represents an average net high tunnel income increase of \$4,307.49, a 47% increase from the baseline data provided by the growers. Tunnel area increased by 10.3% over the project period, representing new capital investment of \$42,875 in 17,150 square feet of high tunnel space erected during the project period. With 435 greenhouse/high tunnel operations in NYS valued at \$27,000,000 (2012 census), 20% industry-wide adoption would translate into \$2.4 million dollars in increased net revenue. 50% adoption would be a net increase of \$6,156,000 for NYS farmers.

More detail about this project can be found at:

- <http://smallfarms.cornell.edu/online-courses/course-descriptions/season-extension-with-high-tunnels-bf-220/>

-

http://cvp.cce.cornell.edu/submission.php?id=523&crumb=greenhouse_and_tunnels|greenhouse_tunnels

- <http://cvp.cce.cornell.edu/specialist.php?id=8>
- <http://blogs.cornell.edu/hightunnels/>
- <http://www.youtube.com/watch?v=0WTTXaY64yc>

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	0%		12%	
104	Protect Soil from Harmful Effects of Natural Elements	7%		0%	
111	Conservation and Efficient Use of Water	15%		0%	
112	Watershed Protection and Management	17%		11%	
125	Agroforestry	5%		0%	
132	Weather and Climate	14%		14%	
133	Pollution Prevention and Mitigation	10%		13%	
135	Aquatic and Terrestrial Wildlife	8%		15%	
136	Conservation of Biological Diversity	15%		9%	
141	Air Resource Protection and Management	2%		1%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	2%		0%	
405	Drainage and Irrigation Systems and Facilities	5%		0%	
902	Administration of Projects and Programs	0%		25%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	69.0	0.0	5.0	0.0
Actual Paid	11.0	0.0	5.0	0.0
Actual Volunteer	3087.0	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
120928	0	830271	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
120928	0	1525688	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	8802	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	12002	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The initiative is guided by faculty and staff involved with several programs:

- **The Cornell Climate Change Program Work Team (PWT)** was formed in 2010 and currently has more than sixty five members comprised of Cornell faculty, staff, Cornell Cooperative Extension educators from around New York State, and external stakeholders who are working to advance climate change research and outreach programs. The PWT provides a mechanism through which faculty and extension educators connect with stakeholders to identify the needs surrounding climate change impacts and opportunities in New York State, create educational materials, and design learning experiences that address these needs. You can view the list of Climate Change PWT members at the Cornell Cooperative Extension website.

- **The Cornell Institute for Climate Change and Agriculture (CICCA)** is focused on supporting farmers of New York and beyond with decision tools for strategic adaptation to climate change, so that they are better able to cope with potential negative effects of climate change, and are better able to take advantage of any opportunities that it might bring. A Climate Smart Farming Team (<http://climateinstitute.cals.cornell.edu/climate-smart-farming/climate-smart-farming-extension-team/>) has been established and is comprised of members of the CCE Area Agriculture Teams, representing

farmers across the state. Adaptation and mitigation tools are being developed and made available on a new Web site (<http://climateinstitute.cals.cornell.edu/>).

- CCE educators from Dutchess, Putnam, Columbia/Greene, and Ulster have been working with the Hudson River Estuary Program (NYS Department of Environmental Conservation) and the NYS Water Resources Institute to develop and deliver storm resiliency programming, particularly in the wake of Hurricane Sandy and other recent high-impact storm events.

- CCE of Tompkins and other Associations are leading and contributing to development of local energy plans, adoption of renewable energy, and climate change education, including approaches to mitigation and adaptation.

- **The Atkinson Center for a Sustainable Future's (ACSF) Climate Change Focus Group** began in 2008 and currently has 17 interdisciplinary faculty members from across campus, representing disciplines such as: climate science, ecology, agriculture, engineering, economics, history, and social sciences, that guide research and teaching at the University.

- **NY EDEN** <http://emergencypreparedness.cce.cornell.edu/Pages/default.aspx> The New York Extension Disaster Education Network (NY EDEN) is a collaborative educational network based at Cornell University, dedicated to educating New York residents about preventing, preparing for and recovering from emergencies and disasters that could affect their families and communities. NY EDEN is affiliated with both the national USDA EDEN network and with Cornell University Cooperative Extension.

- **NYS Integrated Pest Management** <http://www.nysipm.cornell.edu/> Research, demonstrations, education, and outreach are part of a comprehensive plan to make IPM the safe, effective pest management solution for all New Yorkers. Solutions that help protect our health, our economic well-being, and our environment.

- **Invasive Species Education and Monitoring Efforts** The New York Invasive Species Clearinghouse at <http://www.nyis.info/> provides information on upcoming invasive species events and invasive species news of interest to New Yorkers, and has linkages with the New York Invasive Species Database (iMapInvasives). The New York Invasive Species Research Institute in the Department of Natural Resources at Cornell provides communication and coordination with researchers across NYS. The Hemlock Initiative, also based in the Department of Natural Resources, engages CCE educators and volunteers in an effort to investigate and manage hemlock woolly adelgid. CCE continues to be involved with with the State's eight PRISMs (Partnerships for Regional Invasive Species Management. CCE of Saratoga hosts the Capital/Mohawk PRISM. The AgroForestry Resource Center of CCE of Columbia/Greene is very involved in invasive species management, particularly with respect to forestry.

- **Master Watershed Stewards Program** <https://blogs.cornell.edu/humandimensions/ny-master-watershed-steward-program/> The mission of the New York Master Watershed Steward Program is to strengthen local capacity for successful management and protection of watersheds by empowering volunteers.

- **Cornell Garden-Based Learning program** <http://gardening.cce.cornell.edu/> in partnership with CCE educators, CCE Master Gardener Volunteers and Cornell Plantations is supporting climate science literacy and environmental stewardship through climate change and gardening initiatives. Educational outreach activities target children, youth, adults and families audiences engaged in managing lawns, gardens and landscapes in school, community and residential settings with a focus on the adoption of adaptation and mitigation strategies that reduce carbon footprint, conserve water resources, promote biodiversity, limit invasive species and protect natural resources.

- **Stormwater Management** <http://www.clrp.cornell.edu/workshops/stormwater.html> Stormwater management training is part of the Cornell Local Roads program which provides training and technical assistance to local highway and public works officials in New York State. CCE of Orange County also hosts stormwater management training for consultants, engineers, and planners.

- **New York State Water Resources Institute (WRI)** <http://wri.cals.cornell.edu/about/> works to improve the management of water resources in New York State and the nation. WRI works with water research and water management communities and collaborating with regional, state, and national partners to increase awareness of emerging water resources issues and to develop and assess new water management technologies and policies.

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, non-government organizations, individual consumers, and 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 378 staff are registered, 63 of which are faculty members. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of involvement include:

- **Sandra Cuellar**, a member of the Applied Economics and Management Unit at Cornell is director of the **Healthy Food Choices in Schools** Community of Practice.

- **Heidi Mouillesseaux-Kunzman**, a Senior Extension Associate with the Community and Regional Development Institute, Development Sociology, co-leads the **Enhancing Rural Community Capacity** Community of Practice. A key focus of the ERCC CoP over the last year is further developing Foundations of Practice, a national training program targeted to community developers. The CoP was selected to participate in eXtension's 2016 Community Issues Corps Designathon to help move this initiative forward.

- **Keith Tidball**, Senior Extension Associate in the Department of Natural Resources and Assistant Director of Cornell Cooperative Extension leads the **Community Capacity Building concentration area**

of the Military Families Learning Network. A key focus of this work is the Department of Defense and National Guard Bureau Building Healthy Military Communities Pilot wherein Cooperative Extension is situated as a force multiplier in the family readiness mission. Keith also has served on the national **Extension Disaster Education Network (EDEN)** Executive Committee, as well as on the EDEN Exercise Committee and Chair of the Agriculture and Cybersecurity Working Group. In New York State, he serves as the state Point of Contact and as a delegate, and is the leader of the New York State **Extension Disaster Education Network** program. Both eXtension networks evolved from eXtension communities of practice.

- **Additionally: Jeff Piestrak**, Digital Collections Specialist for Mann Library at Cornell recently served as a fellow on a yearlong research project around **data** and information **structures for food systems and Extension practices**; **Jamila Simon**, 4-H Extension Associate in the Bronfenbrenner Center for Translational Research is a member of the **ECOP Ad Hoc Tech and Innovation Committee**, **Steve Hadcock**, Association Team Leader CCE Albany is a part of the **First eXtension Innovation Facilitation team**, **Nigel Gannon**, Extension Associate in the Bronfenbrenner Center for Translational Research is a part of the **Impact Collaborative Branding Team**; **June Mead**, Association Issue Leader for CCE Broome County is a **Diversity and Inclusion Issue Corps Key Informant**; and **Bonnie Collins**, Association Sr. Team Leader for CCE Oneida County, **Jeff Piestrack** (noted above) and **Andy Turner**, State 4-H Program Leader, Bronfenbrenner Center for Translational Research are all members of the **Diversity and Inclusion Issue Corps**.

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

- Agricultural Insect Pests of the Northeast U.S.
- Bee Health
- Climate, Forests and Woodlands
- Diversity Equity and Inclusion
- Impact of Climate Change on Agriculture
- Invasive Species
- Pesticide Environmental Stewardship
- Sustainable Ag Energy

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	103103	11627204	9248	1042922

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

Patent Applications Submitted

Year: 2017

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	1	39	40

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(2.1a) Number of consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government and community leaders who demonstrate knowledge gains about on the causes and implications of climate change and adaptive or mitigating strategies.
2	(2.1b) Number of agricultural/ natural resources producers, organization and business representatives documented to have adopted recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands, emergency preparedness etc.
3	(2.1c) Number of agencies/ organizations/ communities documented to have adopted recommended climate mitigation practices and policies.
4	(2.2a) Number of consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government and community leaders documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance water resources.
5	(2.2b) Number of documented instances when consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government and community leaders have improved and/or protected water resources.
6	(2.3a) Number of consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government and community leaders documented to have modified existing practices or technologies and/or adopted new practices to protect/enhance natural resources and/or enhance biodiversity.
7	Advancing Season Extension of NYS Vegetables with Soil and Water Best Management Practices
8	Spotted Wing Drosophila Trap Network- coordinated monitoring and information delivery
9	Global change and urban trees: promoting sustainable landscapes through a better understanding of tree root biology.
10	Climate change and invasive mussels: interacting effects on New York lakes

Outcome #1

1. Outcome Measures

(2.1a) Number of consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government and community leaders who demonstrate knowledge gains about on the causes and implications of climate change and adaptive or mitigating strategies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	11300

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
125	Agroforestry
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
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #2

1. Outcome Measures

(2.1b) Number of agricultural/ natural resources producers, organization and business representatives documented to have adopted recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands, emergency preparedness etc.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	9644

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

(2.1c) Number of agencies/ organizations/ communities documented to have adopted recommended climate mitigation practices and policies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	75

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

Outcome #4

1. Outcome Measures

(2.2a) Number of consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government 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
2017	9655

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

Outcome #5

1. Outcome Measures

(2.2b) Number of documented instances when consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government and community leaders 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
-------------	---------------

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

Outcome #6

1. Outcome Measures

(2.3a) Number of consumers, residents, agricultural/ natural resources producers, organization and business representatives, and/or local government and community leaders 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
2017	11099

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
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #7

1. Outcome Measures

Advancing Season Extension of NYS Vegetables with Soil and Water Best Management Practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

High tunnels play a crucial role in season extension for market growers, but maintaining long-term productivity poses a challenge. Over application of fertility sources results in excess levels of non-target nutrients, impairing the soil's potential to support crop growth over the long term. Specific nutrients of concern are calcium, phosphorus and magnesium, which can impair balanced crop uptake of other key elements such as potassium and manganese. Long term high tunnel soil health and fertility success depends on grower understanding of soil nutrient dynamics and adoption of fertility management practices that mitigate or prevent these common issues.

What has been done

To examine the relationships between soil conditions, fertility management and tunnel productivity, as well as support development and implementation of research-based best management practices, 29 high tunnel operations across New York State were engaged in a program to collect soil, water, compost and foliar nutrient data as well as fertility input and management inputs. The data collected over three growing seasons was compiled and analyzed to identify trends in the relationships between soil and foliar nutrient levels. The process of intensive sampling and frequent communication with project staff exposed cooperating growers to a range of options for managing high tunnel soil and fertility challenges, allowing growers to select practices that fit their operation.

Results

100% of the cooperating growers adopted at least 3 management practices that support long term soil health and fertility, with a median adoption rate of 9 (out of 18) practices, improving their ability to manage soil and nutrients for the long term. The farms that provided complete economic data reported an average net high tunnel income increase of 47% over the project term with an average net income of \$17,569.51 per operation in 2017. The project team presented project results at 54 educational outreach events attended by over 1500 growers.

Website: <https://blogs.cornell.edu/hightunnels/>

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
132	Weather and Climate

Outcome #8

1. Outcome Measures

Spotted Wing Drosophila Trap Network- coordinated monitoring and information delivery

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Spotted Wing Drosophila (SWD) is an invasive insect from East Asia that can destroy unprotected, susceptible fruit crops. SWD was been found in New York in 2011, in 2012 it caused severe damage to berry crops- raspberries, blackberries, blueberries. Without control measures, SWD caused upwards of 80% crop loss. SWD can lay eggs directly into ripening fruit, before harvest. After only a few days, the fruit dimples, shrivels, disintegrates, and rots. For growers to protect their fruit from SWD, they must treat repeatedly with insecticides throughout the harvest period resulting in significant economic and environmental costs. Data suggested growers could wait to spray insecticide until SWD was found in traps in a regional location and still protect their crops.

What has been done

Extension educators in the Lake Ontario Fruit Program, the Eastern NY Commercial Horticulture Program and nine County Associations (Erie, Genesee, Herkimer, Livingston, Steuben, Suffolk, Tioga, Ulster and Wyoming) collaborated with the PI to provide early warning of SWD in over 20 counties in NY. 55 raspberry, 47 blueberry, 7 blackberry, 5 grape, and 3 strawberry plantings were monitored; trap catch data alerted the presence of SWD; 43 blog posts /year, reached > 250 growers and educators; a SWD distribution map displayed cooperators' contributed data; IPM information was developed for protecting crops; insecticide quick guides and how-to guides for SWD IPM were created; monitoring methods were improved; and SWD monitoring data was shared with researchers across the U.S.

Results

The SWD trap network gave growers accurate, timely information about SWD presence and risk via the SWD blog and distribution map. Cornell Fruit Resources SWD webpages improved their knowledge about the selection and timing of insecticide sprays, SWD biology, monitoring, sampling fruit, and alternative management tactics. IPM adoption was promoted and growers assisted to reduce crop losses from SWD.

Websites: blogs.cornell.edu/swd1/ & fruit.cornell.edu/spottedwing/

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #9

1. Outcome Measures

Global change and urban trees: promoting sustainable landscapes through a better understanding of tree root biology.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2017

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The effect of shifting climate scenarios underground, especially water limitation, is poorly understood despite insufficient water being a main cause of reduced growth and mortality in urban trees. Understanding what controls root dynamics can lead to more efficient and profitable landscapes. This project examines rooting characteristics of an array of native and non-native Eastern temperate tree species to help inform the tree selection decisions and aid future urban tree persistence.

What has been done

The researchers established a long-term field experiment that mimics reduced rooting volumes through 48 in-ground, hydraulically isolated tree boxes. Boxes with ladders between each tree allowed for trees to be viewed below ground. The access areas were covered with an insulated lid when not in use to prevent temperature fluctuations. The team examined eight initial tests of drought tolerance and related standard above ground ratings to root capacitance and vulnerability. The team also established root exudate profiles to understand how tree species vary in their rhizosphere.

Results

Through a series of experiments, Bauerle and her team found the root systems of select tree species do have the ability to retain water despite drought. The team is targeting these species for future studies that investigate drought level and frequency on tree survivability. The team also found there is great variation in tree root exudate profiles and that these profiles can change with drought. The root exudates can facilitate water retention in the rhizosphere and may significantly alter the water dynamics around tree roots. The team's established site will have continued impacts as it serves as both a research laboratory to address urban tree response to limited water availability and as an outdoor classroom for educators and plant science students.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #10

1. Outcome Measures

Climate change and invasive mussels: interacting effects on New York lakes

Not Reporting on this Outcome Measure

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

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. Flooding events during recent years continues to elevate consumer and community interest in disaster preparedness and water quality protection for families, communities and farms. The shift in interest, program offerings and campus and research support is evident. These trends are expected to continue.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Each of the plans addresses a broad combination of applied research and extension initiatives spanning multiple audiences, methods, and intended outcomes. A combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities are expected to provide comprehensive assessment. We work towards this goal by doing two things - professional development to enhance evaluation capacity of our system and collecting quantitative and qualitative documentation of local, regional and statewide programs.

Evaluation Capacity Building: Cornell Cooperative Extension has worked with the Cornell Office of Research on Evaluation (CORE) to strengthen evaluation practice and build evaluation capacity. CORE developed The Systems Evaluation Protocol that takes programs from logic models (columnar) to pathway models (a visual model that shows relationship of short-term, mid-term and long-term outcomes) and helps to create an evaluation strategy. CORE tested and refined The Systems Evaluation Protocol in partnership with CCE programs from 2006 - 2015. The Protocol has been integrated into professional development in CCE, to promote consistent approaches to evaluation of county-based, regional, and statewide programs. Although the formal project connection with CORE ended in 2015, access to the Netway and online training continues to be available. Additionally, CCE program leaders are being trained in logic and pathway modelling through the CCE Program Development Leadership Cohort, an in-depth and comprehensive professional development experience targeting program leaders to become more proficient at program planning and evaluation.

Regional/Statewide documentation examples. Many regional and statewide programs

are receiving federal capacity funds. Documentation of outcomes is a requirement of funding. Results shape future program efforts and impact program design. **An example evaluation from a funded project can be found below.**

There is also a requirement for our local and regional programs to report on statewide outcomes/indicators: Program documentation results are aggregated in a statewide accountability database that includes both qualitative and quantitative data for reporting and helping us to better understand impacts. Quantitative system wide outcome data is reported in the outcome portion of this report.

Key Items of Evaluation

Example evaluation for the Climate Change Plan - Project: Local Government Capacity (Shorna Allred)- use of interviews, discussion groups, surveys

Climate change and extreme weather events such as flooding are affecting communities across New York State. This project sought to better understand the adaptive capacity (resilience) of local government officials and residents in Binghamton, New York, and 2) helping them move along a trajectory of community sustainability and resilience at both local and regional scales.

This project used a variety of evaluation methods, from verbal queries of target audiences (2017 Community Meeting), and in-depth debriefing sessions with students (2015 & 2016 Interns), to written survey assessments post-events (2016 Living with Water Resiliency Summit and Play).

Feedback from 2016 Summer interns suggests that interns learned about flooding and resiliency, developed connections with the City of Binghamton as a unique place, and came to better understand government-citizen relations (CAL S NYS Internship Program final posters, final papers, and in-person conversations). Responses from community members demonstrate outreach programs increased understanding of flooding and resiliency, a core project goal; for example, 95% of 23 community members who completed an evaluation after attending the "Living with Water" play (through which key findings gleaned through analysis of qualitative data from Story Circles was shared) indicated that they agreed or strongly agreed that they "learned something new about Binghamton's experience of the floods as a result of" the play reading. 87% agreed or strongly agreed that "they better understand the role arts can play in community recovery/resiliency." Similarly of 37 Summit attendees who completed the evaluation, the following percentages said they increased their understanding of the following topics "moderately" or "a great deal," respectively: flood preparedness and response - 47.5%/32.5%; flood mitigation programs put into place since 2011 - 32.5%/50%; flood prediction - 27.5%/45%; waterfront development initiatives - 47.5%/27.5%; building local flood resiliency - 35%/45%; information about Binghamton's efforts to recover from the floods of 2006 and 2011 - 37.5%/40%; coming together as a community in response to the floods of 2006 and 2011 - 22.5%/40%; regional flood mitigation planning - 42.5%/42.5%.

More recently, in a Fall 2017 community meeting and discussion, designed to share preliminary results of Summer 2017 survey data about potential river-related development opportunities, approximately 40 community members engaged in a facilitated conversation about ways to support community and economic development through river-related recreational opportunities. Participants shared several development strategies and

expressed interest in being a part of moving these efforts forward.

More detail about this PI can be found at:

- <http://dnr.cals.cornell.edu/people/shorna-broussard-allred>
- <http://cornell.academia.edu/ShornaBroussardAllred>

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Environment and Natural Resources and Sustainable Energy

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	18%		0%	
124	Urban Forestry	10%		8%	
205	Plant Management Systems	0%		58%	
308	Improved Animal Products (Before Harvest)	0%		4%	
401	Structures, Facilities, and General Purpose Farm Supplies	14%		0%	
402	Engineering Systems and Equipment	8%		1%	
403	Waste Disposal, Recycling, and Reuse	25%		11%	
404	Instrumentation and Control Systems	5%		1%	
511	New and Improved Non-Food Products and Processes	0%		9%	
605	Natural Resource and Environmental Economics	20%		2%	
609	Economic Theory and Methods	0%		6%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	64.0	0.0	3.0	0.0
Actual Paid	83.0	0.0	3.0	0.0
Actual Volunteer	4640.0	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
951196	0	564957	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
951196	0	1119899	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	76894	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	149281	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.

Topics include: Home and school composting, residential landscapes, waste management, wildlife management and forestry, renewable energy resources, energy conservation and efficiency, heating with wood, forestry etc.

Sample Statewide/Regional Initiatives that fall within this Plan of Work

- Consumer Education Program for Residential Energy Efficiency
- Energy Education in Camp
- Farm Energy Audits
- Farm Waste Management
- Green Building Seminar Series
- Maple Program
- Master Composters

- Master Forest Owners
- Master Naturalist
- Master Gardener Volunteer Program
- Private Forest Stewardship Program
- Recycling Ag Plastics
- Save Energy, Save Dollars
- Urban Forestry

2. Brief description of the target audience

- Key audiences served, directly and indirectly include: agricultural and natural resource producers; consumers and property owners, home/school/community gardeners businesses and organizations, local/state/federal governmental leaders.
- Businesses, organizations, and producers are targeted with information about improved management practices and alternative land uses, such as agroforestry. Environmental planners and managers and technical assistance providers, such as foresters, are targeted with in-depth information related to their audiences/constituents. Teachers, youth professionals and volunteers are targeted with in-depth knowledge for youth enrichment.
- Agricultural/horticulture/natural resource and supporting businesses are targeted both regarding bioenergy production opportunities and information regarding alternative energy sources and conservation. Consumers are targeted for information regarding energy supply alternatives and energy conservation options for residential, facilities, and transportation needs.
- Residents and property owners are targeted with stewardship and waste reduction and management in their homes and on their properties including lawns and gardens. Businesses, organizations, and producers are targeted with information about reducing impacts of their operations. 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 378 staff are registered, 63 of which are faculty members. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of involvement include:

- **Sandra Cuellar**, a member of the Applied Economics and Management Unit at Cornell is director of the **Healthy Food Choices in Schools** Community of Practice.
- **Heidi Mouillesseaux-Kunzman**, Senior Extension Associate with the Community and Regional Development Institute, Development Sociology, co-leads the **Enhancing Rural Community Capacity** Community of Practice. A key focus of the ERCC CoP over the last year is further developing Foundations of Practice, a national training program targeted to community developers. The CoP was selected to participate in eXtension's 2016 Community Issues Corps Designathon to help move this initiative forward.
- **Keith Tidball**, Senior Extension Associate in the Department of Natural Resources and Assistant

Director of Cornell Cooperative Extension leads the **Community Capacity Building concentration area of the Military Families Learning Network**. A key focus of this work is the Department of Defense and National Guard Bureau Building Healthy Military Communities Pilot wherein Cooperative Extension is situated as a force multiplier in the family readiness mission. Keith also has served on the national **Extension Disaster Education Network (EDEN)** Executive Committee, as well as on the EDEN Exercise Committee and Chair of the Agriculture and Cybersecurity Working Group. In New York State, he serves as the state Point of Contact and as a delegate, and is the leader of the New York State **Extension Disaster Education Network** program. Both eXtension networks evolved from eXtension communities of practice.

- **Additionally: Jeff Piestrak**, Digital Collections Specialist for Mann Library at Cornell recently served as a fellow on a yearlong research project around **data** and information **structures for food systems and Extension practices**; **Jamila Simon**, 4-H Extension Associate in the Bronfenbrenner Center for Translational Research is a member of the **ECOP Ad Hoc Tech and Innovation Committee**, **Steve Hadcock**, Association Team Leader CCE Albany is a part of the **First eXtension Innovation Facilitation team**, **Nigel Gannon**, Extension Associate in the Bronfenbrenner Center for Translational Research is a part of the **Impact Collaborative Branding Team**; **June Mead**, Association Issue Leader for CCE Broome County is a **Diversity and Inclusion Issue Corps Key Informant**; and **Bonnie Collins**, Association Sr. Team Leader for CCE Oneida County, **Jeff Piestrak** (noted above) and **Andy Turner**, State 4-H Program Leader, Bronfenbrenner Center for Translational Research are all members of the **Diversity and Inclusion Issue Corps**.

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

- Climate, Forests and Woodlands
- Consumer Horticulture
- Diversity Equity and Inclusion
- Forest Farming
- Northeast Woody/Warm-Season Biomass
- Pesticide Environmental Stewardship
- Sustainable Ag Energy
- Wood Energy

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	108663	10394148	29562	2827759

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

Patent Applications Submitted

Year: 2017
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	0	66	66

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(3.1a) Number of producers, economic development organizations and other groups who collaborate to establish bioenergy as a viable alternative crop.
2	(3.1b) Number of existing or new producers documented to have modified existing practices or technologies and/or adopted best management practices for bioenergy production, harvesting, and/or storage systems.
3	(3.1c) Number 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.
4	(3.2a) Number of agricultural/horticultural/ natural resource businesses documented to have adopted appropriate alternative energy sources and/or energy conservation practices.
5	(3.2b) Number 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.
6	(3.3a) Number of consumers documented to have adopted appropriate alternative energy sources.
7	(3.3b) Number of consumers who report savings on energy costs attributable to adopting alternative energy sources.
8	(3.4a) Number of consumers reporting to have adopted appropriate energy cost control and/or conservation practices.
9	(3.4b) Number of property managers, and/or housing officials documented to have taken measures to improve energy cost control or efficiency of existing and new buildings.
10	(3.4c) Number of consumers who report savings on energy costs attributable to adopting energy conservation measures.
11	(3.5a) Number of communities documented to have assessed local energy development proposals and/or the relationships between current policies and regulations and energy conservation.
12	(3.5b) Number of community agencies/ organizations documented to have adopted appropriate alternative energy sources.
13	(3.5c) Number of communities that adapt or revise policies in response to large scale energy development (e.g., Marcellus shale development) and/or include energy as a component of their comprehensive plans.
14	(3.5d) Number of communities documented to have established or modified land use and development policies to promote energy conservation.
15	(3.5e) Number of community agencies/organizations reporting savings on energy costs attributable to adopting alternative energy sources.
16	(3.6a) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents who demonstrate knowledge gains about waste management and reduction.
17	(3.6b) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents documented to have modified existing

	practices or technologies and/or adopted new practices to manage and reduce waste.
18	(3.6c) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents documented to have reduced costs through improved waste management practices.
19	(3.7a) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents documented to have modified existing practices or technologies that will assist with natural resources management and the environment.
20	Sustainability of Perennial Grass Bioenergy Crops on Marginal New York Soils

Outcome #1

1. Outcome Measures

(3.1a) Number of 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
2017	0

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 #2

1. Outcome Measures

(3.1b) Number of existing or new producers documented to have modified existing practices or technologies and/or adopted best management practices for bioenergy production, harvesting, and/or storage systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

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 #3

1. Outcome Measures

(3.1c) Number 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
2017	0

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

(3.2a) Number 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
2017	75

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

(3.2b) Number 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
2017	41

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 #6

1. Outcome Measures

(3.3a) Number 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
2017	659

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 #7

1. Outcome Measures

(3.3b) Number 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
2017	148

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 #8

1. Outcome Measures

(3.4a) Number 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
2017	2685

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 #9

1. Outcome Measures

(3.4b) Number 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
2017	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
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems
605	Natural Resource and Environmental Economics

Outcome #10

1. Outcome Measures

(3.4c) Number 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 #11

1. Outcome Measures

(3.5a) Number of 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
2017	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
124	Urban Forestry
403	Waste Disposal, Recycling, and Reuse

Outcome #12

1. Outcome Measures

(3.5b) Number 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
2017	4

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 #13

1. Outcome Measures

(3.5c) Number of communities that adapt or revise policies in response to large scale energy development (e.g., Marcellus shale development) and/or include energy as a component of their comprehensive plans.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

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 #14

1. Outcome Measures

(3.5d) Number 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
2017	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
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse

Outcome #15

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	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
605	Natural Resource and Environmental Economics

Outcome #16

1. Outcome Measures

(3.6a) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents who demonstrate knowledge gains about waste management and reduction.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2718

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 #17

1. Outcome Measures

(3.6b) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents documented to have modified existing practices or technologies and/or adopted new practices to manage and reduce waste.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1907

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 #18

1. Outcome Measures

(3.6c) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents documented to have reduced costs through improved waste management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2156

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 #19

1. Outcome Measures

(3.7a) Number of agricultural/natural resources producers, organization and business representatives, community leaders, and/or residents documented to have modified existing practices or technologies that will assist with natural resources management and the environment.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	11300

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 #20

1. Outcome Measures

Sustainability of Perennial Grass Bioenergy Crops on Marginal New York Soils

Not Reporting on this Outcome Measure

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, energy and waste management 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 and natural resource protection matters. These trends are expected to continue.

The scope and scale of outcomes is greatly enhanced by augmenting Federal Capacity Funds with external sources of support. However, external grant funds may only support certain activities or aspects of this plan. Local governments, an important funding source 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. Pockets of high unemployment in the state affect how public and private funds are allocated to address community needs. In some instances, family subsistence will be a higher priority than improved nutrition and physical activity behaviors, or improved access to healthy food and activity opportunities.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Each of the plans addresses a broad combination of applied research and extension initiatives spanning multiple audiences, methods, and intended outcomes. A combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities are expected to provide comprehensive assessment. We work towards this goal by doing two things - professional development to enhance evaluation capacity of our system and collecting quantitative and qualitative documentation of local, regional and statewide programs.

Evaluation Capacity Building: Cornell Cooperative Extension has worked with the Cornell Office of Research on Evaluation (CORE) to strengthen evaluation practice and build evaluation capacity. CORE developed The Systems Evaluation Protocol that takes programs from logic models (columnar) to pathway models (a visual model that shows relationship of short-term, mid-term and long-term outcomes) and helps to create an evaluation strategy. CORE tested and refined The Systems Evaluation Protocol in partnership with CCE programs from 2006 - 2015. The Protocol has been integrated into professional development in CCE, to promote consistent approaches to evaluation of county-based, regional, and statewide programs. Although the formal project connection with CORE ended in 2015, access to the Netway and online training continues to be available. Additionally, CCE program leaders are being trained in logic and pathway modelling through the CCE Program Development Leadership Cohort, an in-depth and comprehensive professional development experience targeting program leaders to become more proficient at program planning and evaluation.

Regional/Statewide documentation examples. Many regional and statewide programs are receiving federal capacity funds. Documentation of outcomes is a requirement of funding. Results shape future program efforts and impact program design. **An example evaluation from a funded project can be found below.**

There is also a requirement for our local and regional programs to report on statewide outcomes/indicators: Program documentation results are aggregated in a statewide accountability database that includes both qualitative and quantitative data for reporting and helping us to better understand impacts. Quantitative system wide outcome data is reported in the outcome portion of this report.

Key Items of Evaluation

Example evaluation for Environment, Natural Resources & Sustainable Energy Plan- Project: Changing Sustainability Norms (Janis Dickinson) - use of follow up observations to monitor practice changes

One of the most important questions in sustainability science is how to foster resilient communities that readily shift towards healthy, sustainable behaviors. Community resilience requires the ability to connect, collaborate, and work together to improve

sustainability, environmental health, and welfare. New research on social influence indicates that bottom-up drivers of community can play an important role in generating rapid behavioral change. Learning how to make this happen will provide vital information needed to develop bottom-up solutions for both chronic and catastrophic problems; this becomes especially important in situations where top down regulation is missing, is ineffective (fails to overwhelm), or is insufficient to solve a community-level problem. By learning more about bottom-up mechanisms, we can discover low cost strategies for supporting change at the level of neighborhoods and communities, and determine whether such changes are sustained over time. Small changes, when summed across the state, can alter economic conditions, health, water and energy use, disaster response, and food security outcomes as well as increasing adoption of sustainable behaviors that together have a large impact on environmental health for people and for wildlife. Borrowing from the research indicating that social influence is helpful for combating obesity, smoking, and alcohol abuse, we set out to test the hypothesis that making sustainable practices visible increases social learning and behavioral contagion, fostering more resilient, connected, and sustainable neighborhoods.

Three full years of data are required to assess the effect of front/back yard practices (visible/not visible) on social contagion in 4-block experimental neighborhoods. In advance of the final field season we assessed the ecological impacts of the practices participants undertook after year 1 and will complete a manuscript. A strong increase in pollinator numbers and in the diversity of pollinators, the number of honeybee pollinators, and the number of non-honeybee pollinators were observed. This establishes the efficacy of the practices that participants are undertaking, which ultimately supports the idea that contagion of these practices is valuable. We also have monitored birds and will evaluate impacts on bird diversity after year 3's field data are collected. Evaluation Approaches/Methods and Results: As described above, we have a strong result indicating positive effects of the practices residents have undertaken on pollinator abundance and diversity. These results are based on model selection using generalized linear mixed models. The experimental nature of the project, which involves random assignment of participants to backyard/frontyard restoration treatments and matched unmanaged control yards was strengthened by creating trios of yards that are equivalent in home price, degree of urbanization, and other characteristics. Creating matched trios reduced the random between-treatment variance, increasing the overall statistical power of the study.

More detail about this project can be found at:

- <http://dnr.cals.cornell.edu/people/janis-dickinson>
- <http://content.yardmap.org/>

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Nutrition, Food Safety and Security, and Obesity Prevention

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
303	Genetic Improvement of Animals	0%		3%	
311	Animal Diseases	0%		21%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	0%		1%	
315	Animal Welfare/Well-Being and Protection	0%		4%	
502	New and Improved Food Products	2%		5%	
603	Market Economics	0%		1%	
607	Consumer Economics	3%		4%	
701	Nutrient Composition of Food	11%		5%	
702	Requirements and Function of Nutrients and Other Food Components	8%		2%	
703	Nutrition Education and Behavior	33%		8%	
704	Nutrition and Hunger in the Population	5%		1%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		6%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	8%		19%	
721	Insects and Other Pests Affecting Humans	0%		2%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		3%	
723	Hazards to Human Health and Safety	0%		7%	
724	Healthy Lifestyle	25%		5%	
903	Communication, Education, and Information Delivery	0%		3%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	190.0	0.0	8.0	0.0
Actual Paid	185.0	0.0	7.0	0.0
Actual Volunteer	14850.0	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
2118989	0	1260090	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2118989	0	2289195	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	5394	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	14882	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

Programs for children and youth are delivered through a variety of settings: afterschool programs, in-school student enrichment, 4-H clubs, summer camps, and fairs, as well as through cooking or other educational programs involving both children and their parent or caregiver. Family-focused programs promote a positive parent/caregiver-child feeding relationship and an understanding of age appropriate nutrition and physical activity. Extension staff also collaborate with community leaders to improve the local policies, systems, and environments 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. Professional development is provided to county and regional staff through in-person and online trainings.

Food safety activities provide educational programs in collaboration with regulatory agencies involved with assuring the safety and wholesomeness of food grown, processed, prepared, sold and handled and consumed by the public in New York State. They are delivered via courses, presentations and educational materials, support transfer of new research-based information for appropriate applications in the agricultural production, manufacturing, retailing and food service industries.

Food security activities may be aimed at both/either nutrition and garden-based efforts which address culturally acceptable, nutritionally adequate, safely grown diets and sustainable growing projects through a variety of means, including school and community gardens and youth-led food systems activities.

Sample Statewide/Regional Initiatives that fall within this Plan of Work

- Adopting Healthy Habits (AHH)
- Choose Health Action Teens (CHAT)
- Choose Health: Fun, Food & Fitness (CHFFF)
- Choose Health Officers (CHO)
- Cooking Up Fun!: Vary Your Veggies
- Cornell Healthy After School Self-Assessment (CHASE)
- Cornell Farm to School Research and Extension Program
- Cornell NutritionWorks Online Professional Development Program
- Discovering Our Food System
- Expanded Food and Nutrition Education Program (EFNEP)
- Farmers Market Nutrition Program
- Master Gardener Volunteer Program
- National GAPs Program Online Produce Safety Course
- Northeast Regional Nutrition Education and Obesity Prevention Center of Excellence (NE-RNECE)
- Produce Safety Alliance Grower and Train-the-Trainer Programs
- Seed to Supper
- Supplemental Nutrition Assistance Program - Education (SNAP-Ed)
- Youth Grow
- Youth Healthy Eating and Active Living Program Work Team (YHEAL PWT)

2. Brief description of the target audience

Childhood obesity prevention program audiences reached include: low-income families; 4-H youth; children in and out of school; nutrition and health professionals; school food service staff; community leaders; and government and agency leaders at the local, state, and national levels. Food security program audiences reached include: low-income individuals and families; and child caregivers, community leaders, human service providers and food policy makers at the local, state, and national levels.

Food safety program audiences reached include: produce growers, dairy farmers, food processors, producers and consumers with targeted programs for low- and moderate- income families; 4-H youth; nutrition and health professionals; food service and food production staff and their managers and directors; and government and agency leaders 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 378 staff are registered, 63 of which are faculty members. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of involvement include:

- **Sandra Cuellar**, a member of the Applied Economics and Management Unit at Cornell is director of the **Healthy Food Choices in Schools** Community of Practice.
- **Heidi Mouillesseaux-Kunzman**, Senior Extension Associate with the Community and Regional Development Institute, Development Sociology, co-leads the **Enhancing Rural Community Capacity** Community of Practice. A key focus of the ERCC CoP over the last year is further developing Foundations of Practice, a national training program targeted to community developers. The CoP was selected to participate in eXtension's 2016 Community Issues Corps Designathon to help move this initiative forward.
- **Keith Tidball**, Senior Extension Associate in the Department of Natural Resources and Assistant Director of Cornell Cooperative Extension leads the **Community Capacity Building concentration area of the Military Families Learning Network**. A key focus of this work is the Department of Defense and National Guard Bureau Building Healthy Military Communities Pilot wherein Cooperative Extension is situated as a force multiplier in the family readiness mission. Keith also has served on the national **Extension Disaster Education Network (EDEN)** Executive Committee, as well as on the EDEN Exercise Committee and Chair of the Agriculture and Cybersecurity Working Group. In New York State, he serves as the state Point of Contact and as a delegate, and is the leader of the New York State **Extension Disaster Education Network** program. Both eXtension networks evolved from eXtension communities of practice.
- **Additionally: Jeff Piestrak**, Digital Collections Specialist for Mann Library at Cornell recently served as a fellow on a yearlong research project around **data** and information **structures for food systems and Extension practices**; **Jamila Simon**, 4-H Extension Associate in the Bronfenbrenner Center for Translational Research is a member of the **ECOP Ad Hoc Tech and Innovation Committee**, **Steve Hadcock**, Association Team Leader CCE Albany is a part of the **First eXtension Innovation Facilitation team**, **Nigel Gannon**, Extension Associate in the Bronfenbrenner Center for Translational Research is a part of the **Impact Collaborative Branding Team**; **June Mead**, Association Issue Leader for CCE Broome County is a **Diversity and Inclusion Issue Corps Key Informant**; and **Bonnie Collins**, Association Sr. Team Leader for CCE Oneida County, **Jeff Piestrack** (noted above) and **Andy Turner**, State 4-H Program Leader, Bronfenbrenner Center for Translational Research are all members of the **Diversity and Inclusion Issue Corps**.

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

- Creating Healthy Communities
- Diversity Equity and Inclusion
- Food Systems Impact Collaborative
- Healthy Food Choices in Schools

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	353555	9564003	430558	11647008

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

Patent Applications Submitted

Year: 2017

Actual: 2

Patents listed

62/508,118 - Compositions and Methods for Gene Targeting using Crispr-Cas and Transposons

62/459,934 - High-Water-Content and Resilient PEG-Based Hydrogels

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	1	73	74

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(4.1a) Number of children and youth who demonstrate knowledge or skill gains related to healthy eating and active living
2	(4.1b) Number parents/ caregivers and other adults who demonstrate knowledge or skill gains related to healthy eating and active living.
3	(4.1c) Number of youth program participants documented to have applied healthy eating and/or active living, recommendations
4	(4.1d) Number of adult program participants documented to have applied healthy eating and/or active living, recommendations
5	(4.2a) Number of program participants who adopt food resource management and/or food security practices
6	(4.3a) Number of program participants documented to have increased involvement in public/community childhood obesity prevention actions
7	(4.3b) Number of participating schools and/or communities documented to have made practice and/or policy changes to promote healthy eating and active living
8	(4.4a) Number of program participants who have acted to improve their food security status.
9	(4.4b) Number of community action plans implemented as a result of community based assessment.
10	(4.5a) Number of consumers who demonstrate knowledge or skill gains related to reducing food safety and/or foodborne risks and illnesses including recommended purchasing, handling, storage, and preparation practices.
11	(4.5b) Number of consumers documented to have implemented new and/or increased application of ongoing safe food purchasing, handling, storage, and preparation practices.
12	(4.6a) Number 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.
13	(4.7a) Number of communities/ firms/or organizations documented to have assessed practices or food safety policies as a result of participating in relevant educational programs.
14	(4.7b) Number of communities/ firms/or organizations documented to have implemented improved practices or food safety policies as a result of participating in relevant educational programs.
15	(4.4c) Number of program participants who have acted to improve their food security status by growing food.
16	(4.4d) Number of program participants who have assisted another/others in improving their food security status through growing food.
17	EFNEP

18	Taste Deviation in Juvenile Obesity, and its Effect on Food Choice
19	Taming the tiger: using males to control the invasive Asian Tiger mosquito in New York State
20	Breeding Methods and Germplasm for Improved Nutritional Quality of Sweet Corn

Outcome #1

1. Outcome Measures

(4.1a) Number of children and youth who demonstrate knowledge or skill gains related to healthy eating and active living

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	89697

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

Outcome #2

1. Outcome Measures

(4.1b) Number parents/ caregivers and other adults who demonstrate knowledge or skill gains related to 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
2017	70254

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 #3

1. Outcome Measures

(4.1c) Number 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
2017	83832

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 #4

1. Outcome Measures

(4.1d) Number 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

Outcome #5

1. Outcome Measures

(4.2a) Number 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 Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	64201

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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701	Nutrient Composition of Food
703	Nutrition Education and Behavior

Outcome #6

1. Outcome Measures

(4.3a) Number 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
2017	669

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 #7

1. Outcome Measures

(4.3b) Number 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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	224

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

Outcome #8

1. Outcome Measures

(4.4a) Number 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
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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
702	Requirements and Function of Nutrients and Other Food Components

Outcome #9

1. Outcome Measures

(4.4b) Number of community action plans implemented as a result of community based assessment.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	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
702	Requirements and Function of Nutrients and Other Food Components

Outcome #10

1. Outcome Measures

(4.5a) Number of consumers who demonstrate knowledge or skill gains related to reducing food safety and/or foodborne risks and illnesses including recommended purchasing, handling, storage, and preparation practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	46836

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 #11

1. Outcome Measures

(4.5b) Number 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
2017	1694

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #12

1. Outcome Measures

(4.6a) Number 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
2017	654

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #13

1. Outcome Measures

(4.7a) Number 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
2017	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
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

Outcome #14

1. Outcome Measures

(4.7b) Number 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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	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
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #15

1. Outcome Measures

(4.4c) Number of program participants who have acted to improve their food security status by growing food.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1465

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
903	Communication, Education, and Information Delivery

Outcome #16

1. Outcome Measures

(4.4d) Number of program participants who have assisted another/others in improving their food security status through growing food.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	265

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
704	Nutrition and Hunger in the Population
903	Communication, Education, and Information Delivery

Outcome #17

1. Outcome Measures

EFNEP

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)

Childhood obesity is a major public health problem in New York State (NYS). Nearly one-third of preschool-age children in New York State, aged 2 up to 5 years, are considered obese or overweight. In New York City alone, about one in four elementary school children (grades K-5) are obese.

Healthy lifestyle education programs that teach targeted dietary practices and increased physical activity to families are intended to help break this cycle. The Expanded Food and Nutrition Education Program (EFNEP) is provided to low-income parents of young children and youth in 21 counties across New York State and the five boroughs of New York City.

What has been done

Nutrition staff provide a series of six or more nutrition education sessions to participants to facilitate acquisition of the knowledge, skills, attitudes and changed-behaviors to encourage incorporation of healthy eating habits and an active lifestyle. Topics include food resource management, food safety, nutrition practices, and physical activity. Paraprofessional staff from the community are trained to deliver engaging sessions that include hands on activities. Food tastings and/or hands on food preparation tasks are integrated into most sessions to provide opportunities for participants to taste healthy low-cost recipes and practice food preparation skills. During FFY 2017, 6,322 adult and 5,939 youth graduates received at least six nutrition education contacts.

Results

During 2017, 6,322 adults received an average of 7.2 educational sessions; 5,939 youth received an average of 6.1 educational sessions. Ninety one percent of participants report incomes at or below the federal poverty level. Evaluation data, collected via surveys administered pre- and post-education, demonstrated the behavior change. As a result of their participation in EFNEP, adult graduates realized the following:

Pre and post question sets are used for adults and youth. Year end data for adults demonstrate that 80% improved food resource management skills, 87% improved dietary practices, 66% improved food safety practices and 48% improved the frequency of physical activity. Year-end data on youth demonstrate that 81% improved their ability to choose healthy foods, 52% improved food safety practices, 45% increased food preparation skills and 52% increased the frequency of physical activity.

Websites: <http://fnec.cornell.edu/for-partners/programs/efnep/> & <http://www.human.cornell.edu/people/jed36>

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #18

1. Outcome Measures

Taste Deviation in Juvenile Obesity, and its Effect on Food Choice

Not Reporting on this Outcome Measure

Outcome #19

1. Outcome Measures

Taming the tiger: using males to control the invasive Asian Tiger mosquito in New York State

Not Reporting on this Outcome Measure

Outcome #20

1. Outcome Measures

Breeding Methods and Germplasm for Improved Nutritional Quality of Sweet Corn

Not Reporting on this Outcome Measure

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

Pockets of high unemployment in the state affect how public and private funds are allocated to address community needs. In some instances, family subsistence will be a higher priority than improved nutrition and physical activity behaviors, or improved access to healthy food and activity opportunities. As an example of the latter, in New York State, cost-cutting proposals include closing some public parks and reducing recreational physical activity programs. In addition, some decision-makers and others in the community may not agree with all aspects of an ecological approach to childhood obesity prevention. They may disagree with community or institutional policy changes such as eliminating non-nutritious snacks from after school activities and place all responsibility on the individual and the family, disregarding policy, system, and environmental influences outside the

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Each of the plans addresses a broad combination of applied research and extension initiatives spanning multiple audiences, methods, and intended outcomes. A combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities are expected to provide comprehensive assessment. We work towards this goal by doing two things - professional development to enhance evaluation capacity of our system and collecting quantitative and qualitative documentation of local, regional and statewide programs.

Evaluation Capacity Building: Cornell Cooperative Extension has worked with the Cornell Office of Research on Evaluation (CORE) to strengthen evaluation practice and build evaluation capacity. CORE developed The Systems Evaluation Protocol that takes programs from logic models (columnar) to pathway models (a visual model that shows relationship of short-term, mid-term and long-term outcomes) and helps to create an evaluation strategy. CORE tested and refined The Systems Evaluation Protocol in partnership with CCE programs from 2006 - 2015. The Protocol has been integrated into professional development in CCE, to promote consistent approaches to evaluation of county-based, regional, and statewide programs. Although the formal project connection with CORE ended in 2015, access to the Netway and online training continues to be available. Additionally, CCE program leaders are being trained in logic and pathway modelling through the CCE Program Development Leadership Cohort, an in-depth and comprehensive professional development experience targeting program leaders to become more proficient at program planning and evaluation.

Regional/Statewide documentation examples. Many regional and statewide programs are receiving federal capacity funds. Documentation of outcomes is a requirement of funding. Results shape future program efforts and impact program design. **An example evaluation from a funded project can be found below.**

There is also a requirement for our local and regional programs to report on statewide outcomes/indicators: Program documentation results are aggregated in a statewide accountability database that includes both qualitative and quantitative data for reporting and helping us to better understand impacts. Quantitative system wide outcome data is reported in the outcome portion of this report.

Key Items of Evaluation

Example evaluation for- The Expanded Food and Nutrition Education Program (Joan Doyle Paddock)- pre-post evaluation survey conducted in person

The Expanded Food and Nutrition Education Program (EFNEP) is provided to low-income parents of young children and youth in 21 counties across New York State and the five boroughs of New York City. Nutrition staff provide a series of 6 or more nutrition education sessions to participants in groups or individually to facilitate acquisition of the knowledge, skills, attitudes and changed-behaviors to encourage incorporation of healthy eating habits and an active lifestyle. Topics include food resource management, food safety, nutrition

practices, and physical activity.

Pre and post question sets are used for adults and youth. Year end data for adults demonstrate that 80% improved food resource management skills, 87% improved dietary practices, 66% improved food safety practices and 48% improved the frequency of physical activity. Year end data on youth demonstrate that 81% improved their ability to choose healthy foods, 52% improved food safety practices, 45% increased food preparation skills and 52% increased the frequency of physical activity.

More detail about this project and the PI can be found at:

- <http://fnec.cornell.edu/for-partners/programs/efnep/>
- <http://www.human.cornell.edu/people/jed36>

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

4-H Youth Development/Children, Youth and Families

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
134	Outdoor Recreation	1%		9%	
607	Consumer Economics	7%		0%	
608	Community Resource Planning and Development	9%		0%	
610	Domestic Policy Analysis	2%		0%	
802	Human Development and Family Well-Being	33%		45%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	7%		0%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	4%		24%	
806	Youth Development	34%		19%	
901	Program and Project Design, and Statistics	3%		3%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	308.0	0.0	4.0	0.0
Actual Paid	248.0	0.0	2.0	0.0
Actual Volunteer	15431.0	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
2832215	0	476256	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2832215	0	890915	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	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Youth: 4-H Youth Development is a comprehensive, statewide positive youth development program. 4-H entails a wide variety of applied research and educational methods based on need and local context. Campus-based faculty and Extension Associates, Program Work Teams (PWTs), State Office staff, the New York State Association of CCE 4-H Educators (NYSACCE4-HE), county-based educators, volunteers, and youth leaders are all involved in designing, implementing, and evaluating program efforts.

NYS 4-H's first priority is to create a safe, inclusive space for learning, sharing, and collaboration welcoming to people from diverse backgrounds, cultures and perspectives. A 4-H Learning Experience is an active, reflective learning and growing process where young people, connected in transformative relationships with educators and each other, engage in progressive learning pathways in the dynamic ecology of positive youth development. Young people participate in a variety of 4-H Learning Experiences through 4-H projects. A project is a planned series of experiential learning opportunities that focuses on a particular topic area and learning goals over a period of time. 4-H Learning Experiences includes a wide array of delivery modes, ways of learning, project and topic areas, and local adaptations. All young people who participate in a 4-H Learning Experience are considered members. Members may participate in one or several 4-H Learning Experiences, through one or many delivery modes and in one or many project areas. They may join for a short-term experience or remain involved for several years.

Through their 4-H Learning Experiences, youth develop understanding, practical skills, life skills, contribute to their community, and explore their sparks. A spark is a special quality, skill, or interest that a young person is passionate about and is a source of meaning and purpose. 4-H Learning Experiences, projects, and programs aim to support young people as they develop the 6 Cs: caring, character, confidence, competence, connection, and contribution.

A variety of educational strategies are also used to support county educators and volunteers. Professional development goals include assisting colleagues in gaining the knowledge and skills necessary to assess the ranges of possibilities that exist within and among program areas. Trained 4-H educators and staff, volunteers, youth, schoolteachers, community agency staff and others lead youth in 4-H projects.

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 (as well as state-wide) educational efforts depending on the focus and scope of their role.

Sample Statewide Program Initiatives that fall within this Plan of Work:

- 4-H Youth Development Program (clubs, events, camps, afterschool, school enrichment)
- 4-H and NYS Library Partnership
- 4-H National Mentoring Program
- ACT (Assets Coming Together) for Youth
- 4-H Public Presentations
- Children, Youth, and Families at Risk Program (CYFAR)
- Cornell Early Childhood Program
- Cornell Research Program on Self-Injurious Behavior
- Design & Environmental Analysis: knowledge, ideas, and designs that contribute to improving the places in which we work, live, learn, heal, and play
 - Events: 4-H Career Explorations Conference, State Teen Action Representative Retreat (STARR), National 4-H Conference, Dairy Discovery Days, Animal Crackers, Public Presentations, State Fair, etc.
 - Family Economics and Resource Management
 - Operation Military Kids
 - Parenting in Context Initiative
 - Role of Grandparents in the Lives of Adolescent Grandchildren
 - Volunteer development opportunities and events

2. Brief description of the target audience

Youth

- Young people ages 5-19: Cloverbuds (5-8), pre-teens (9-12), and teens (13-19)
- Youth development educators, staff, and volunteers
- Families, parents, and guardians
- Youth-serving organizations
- Teachers and schools (elementary, middle, high school)
- Community leaders
- Underserved communities (Black, Latino, Native American, Asian youth).

Family

- Parents, grandparents and other caregivers
- Child care providers
- Community stakeholders such as employers, leaders and policy makers at local/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

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 378 staff are registered, 63 of which are faculty members. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of involvement include:

- **Sandra Cuellar**, a member of the Applied Economics and Management Unit at Cornell is director of the **Healthy Food Choices in Schools** Community of Practice.
- **Heidi Mouillesseaux-Kunzman**, Senior Extension Associate with the Community and Regional Development Institute, Development Sociology, co-leads the **Enhancing Rural Community Capacity** Community of Practice. A key focus of the ERCC CoP over the last year is further developing Foundations of Practice, a national training program targeted to community developers. The CoP was selected to participate in eXtension's 2016 Community Issues Corps Designathon to help move this initiative forward.
- **Keith Tidball**, Senior Extension Associate in the Department of Natural Resources and Assistant Director of Cornell Cooperative Extension leads the **Community Capacity Building concentration area of the Military Families Learning Network**. A key focus of this work is the Department of Defense and National Guard Bureau Building Healthy Military Communities Pilot wherein Cooperative Extension is situated as a force multiplier in the family readiness mission. Keith also has served on the national **Extension Disaster Education Network (EDEN)** Executive Committee, as well as on the EDEN Exercise Committee and Chair of the Agriculture and Cybersecurity Working Group. In New York State, he serves as the state Point of Contact and as a delegate, and is the leader of the New York State **Extension Disaster Education Network** program. Both eXtension networks evolved from eXtension communities of practice.
- **Additionally: Jeff Piestrak**, Digital Collections Specialist for Mann Library at Cornell recently served as a fellow on a yearlong research project around **data** and information **structures for food systems and Extension practices**; **Jamila Simon**, 4-H Extension Associate in the Bronfenbrenner Center for Translational Research is a member of the **ECOP Ad Hoc Tech and Innovation Committee**, **Steve Hadcock**, Association Team Leader CCE Albany is a part of the **First eXtension Innovation Facilitation team**, **Nigel Gannon**, Extension Associate in the Bronfenbrenner Center for Translational Research is a part of the **Impact Collaborative Branding Team**; **June Mead**, Association Issue Leader for CCE Broome County is a **Diversity and Inclusion Issue Corps Key Informant**; and **Bonnie Collins**, Association Sr. Team Leader for CCE Oneida County, **Jeff Piestrack** (noted above) and **Andy Turner**, State 4-H Program Leader, Bronfenbrenner Center for Translational Research are all members of the **Diversity and Inclusion Issue Corps**.

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

- CYFAR

- Diversity Equity and Inclusion
- Family Caregiving
- Financial Security for All
- Healthy Food Choices in Schools
- Just In Time Parenting
- Military Families
- Youth Geospatial Technology

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	127108	5806036	313292	14310545

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

Patent Applications Submitted

Year: 2017
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	15	63	78

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(5.1a) Number of youth who demonstrate ability to express their ideas confidently and competently.
2	(5.1b) Number of youth who demonstrate intercultural competence and cultural humility.
3	(5.1c) Number of youth who demonstrate improved college and career-readiness skills.
4	(5.1d) Number of youth who demonstrate Science and Engineering Practices.
5	(5.1e) Number of youth who demonstrate increased knowledge and skills in Animal Science fields.
6	(5.1f) Number of youth who develop environmental literacy.
7	(5.1g) Number of youth who demonstrate a deeper understanding and appreciation of complex food systems and their impact in those systems.
8	(5.2a) Number of youth who applied knowledge and skills in programs, projects, and activities to foster an inclusive and diverse learning environment.
9	(5.2b) Number of youth who lead community service projects in partnership with adults using skills learned in 4-H.
10	(5.2c) Number of youth programs and organizations documented to incorporate youth voice in programming to reflect youth needs, interests, and excitement for learning.
11	(5.3a) Number of 4-H Volunteer Leaders who lead learning experiences in partnership with youth.
12	(5.3b) Number of 4-H Teen Leaders who lead learning experiences in partnership with youth.
13	(5.4a) Number of parents and other adults providing parental care who adopt developmentally appropriate and effective parenting behaviors and methods.
14	(5.4b) Number of parents/ relative caregivers who report experiencing positive changes in parent-child relationships and parenting skills that they attribute to implementing new parenting behaviors and methods learned in parent education programs.
15	(5.5a) Number of participating infant and child caregivers reporting to have applied positive care-giving practices.
16	(5.5b) Number of participating persons with care-requiring dependents reporting to have used childcare quality characteristics in their care selection.
17	(5.5c) Number of participating persons with care-requiring dependents reporting positive change in childcare as a result of participating in educational programs.

18	(5.6a) Number of program participants reporting to have been involved in community level assessments of family care needs.
19	(5.6b) Number of communities documented to have taken action to address family needs that can be related to educational programs and/or critical community collaborations provided.
20	(5.7a) Number 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.
21	(5.7b) Number of program participants reporting to have met day-to-day financial obligations while also progressing on future goals for home ownership, savings, retirement accounts, etc.
22	(5.7c) Number of program participants reporting to have reduced debts and/or increased savings.
23	(5.8a) Number of program participants documented to have taken measures to prevent or remediate indoor air quality issues.
24	Parenting a Section Time Around (PASTA) NYC Enhance Outreach

Outcome #1

1. Outcome Measures

(5.1a) Number of youth 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
2017	39492

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 #2

1. Outcome Measures

(5.1b) Number of youth who demonstrate intercultural competence and cultural humility.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	34643

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 #3

1. Outcome Measures

(5.1c) Number of youth who demonstrate improved college and career-readiness skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	27107

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 #4

1. Outcome Measures

(5.1d) Number of youth who demonstrate Science and Engineering Practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	42848

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

(5.1e) Number of youth who demonstrate increased knowledge and skills in Animal Science fields.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	22192

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

(5.1f) Number of youth who develop environmental literacy.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	41940

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

(5.1g) Number of youth who demonstrate a deeper understanding and appreciation of complex food systems and their impact in those systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	27649

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 #8

1. Outcome Measures

(5.2a) Number of youth who applied knowledge and skills in programs, projects, and activities to foster an inclusive and diverse learning environment.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	34713

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

(5.2b) Number of youth who lead community service projects in partnership with adults using skills learned in 4-H.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	10199

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

(5.2c) Number of youth programs and organizations documented to incorporate youth voice in programming to reflect youth needs, interests, and excitement for learning.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2504

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 #11

1. Outcome Measures

(5.3a) Number of 4-H Volunteer Leaders who lead learning experiences in partnership with youth.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	4810

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 #12

1. Outcome Measures

(5.3b) Number of 4-H Teen Leaders who lead learning experiences in partnership with youth.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2111

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 #13

1. Outcome Measures

(5.4a) Number of parents and other adults providing parental care who adopt developmentally appropriate and effective parenting behaviors and methods.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	6726

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 #14

1. Outcome Measures

(5.4b) Number of parents/ relative caregivers who report experiencing positive changes in parent-child relationships and parenting skills that they attribute to implementing new parenting behaviors and methods learned in parent education programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	5844

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 #15

1. Outcome Measures

(5.5a) Number of participating infant and child caregivers reporting to have applied positive caregiving practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2840

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

Outcome #16

1. Outcome Measures

(5.5b) Number of participating persons with care-requiring dependents reporting to have used childcare quality characteristics in their care selection.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1226

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

Outcome #17

1. Outcome Measures

(5.5c) Number of participating persons with care-requiring dependents reporting positive change in childcare 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
2017	1860

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

Outcome #18

1. Outcome Measures

(5.6a) Number 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
2017	1358

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 #19

1. Outcome Measures

(5.6b) Number 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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1101

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 #20

1. Outcome Measures

(5.7a) Number 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
2017	5085

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 #21

1. Outcome Measures

(5.7b) Number of program participants reporting to have met day-to-day financial obligations while also progressing on future goals for home ownership, 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
2017	871

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 #22

1. Outcome Measures

(5.7c) Number of program participants reporting to have reduced debts and/or increased savings.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	1349

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 #23

1. Outcome Measures

(5.8a) Number 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	529

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 #24

1. Outcome Measures

Parenting a Section Time Around (PASTA) NYC Enhance Outreach

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The rate of grandparents living with their grandchildren has been on the rise over the past decade with current rates at 1 in 11 children living in a kinship care arrangement at some point before the age of 18. Grandparents and other kinship caregivers are in need of additional support to address the stress encountered related to concerns regarding their future, physical limitations, social isolation and limited access to resources. Care challenges impact caregiver mental and physical health and effectiveness in caring for young relatives. Information, supportive environments and resources designed to address the needs of kinship caregivers are needed that will result in a positive outcomes for youth and caregivers.

What has been done

CUCE-NYC conducted a three year outreach and research project designed to utilize the Parenting A Second Time Around (PASTA) curriculum, specifically developed to equip kinship caregivers with information, resources and support designed to strengthen their skills and confidence to provide effective care of the children they are parenting. Participants were randomly assigned to a treatment or control group, with pre/post surveys administered before and after programs. Each group received both programs. This phase attempted to include more Spanish speaking and special needs families. Focus groups with participants from prior cohorts were held to learn about how they were currently using PASTA project information while raising kin.

Results

A 2016 Capstone Class of Human Ecology seniors analyzed pre/post data from the initial phase of the PASTA project and found that participants: better understood their legal rights; increased knowledge of available resources; realized times had changed; shifted from authoritarian to authoritative parenting; improved communication skills and see PASTA as a social network. Focus groups conducted in 2014, 2015 and a 2016 reunion identified similar themes: enhanced communication; better relationships between kinship caregiver and biological parent; no longer using force to punish; more knowledge of how to access legal and other services; teens are especially challenging. Despite challenges with recruiting adequate participants for research in phase two, NYC's Department for the Aging has funded PASTA for 2018.

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 of programming available to youth. The increasing diversity of our populations creates the need for an array of program materials, strategies, and a dedication to multicultural competencies. Changing educational standards influence the acceptability or credibility of existing curricula. Regional and community demographic differences influence both program strategies and professional development needs.

Family The economic, political and governmental sectors affect the quality, availability and accessibility of childcare. The growth of aging and minority populations in the US means more diverse cultures and values related to parenting, childcare, and family care giving. Natural disasters and the economy affect household financial status and impact energy issues. They also affect the quality of the indoor air environment. Government regulation and policies driven by public priorities can change the circumstances of personal finances, the energy market and the quality of the indoor household environment. Public and private funders and CCE may have fewer fiscal resources and other resources to devote to the quality of life in financial, energy and indoor air quality matters.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Each of the plans addresses a broad combination of applied research and extension initiatives spanning multiple audiences, methods, and intended outcomes. A combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities are expected to provide comprehensive assessment. We work towards this goal by doing two things - professional development to enhance evaluation capacity of our system and collecting quantitative and qualitative documentation of local, regional and statewide programs.

Evaluation Capacity Building: Cornell Cooperative Extension has worked with the Cornell Office of Research on Evaluation (CORE) to strengthen evaluation practice and build evaluation capacity. CORE developed The Systems Evaluation Protocol that takes programs from logic models (columnar) to pathway models (a visual model that shows relationship of short-term, mid-term and long-term outcomes) and helps to create an evaluation strategy. CORE tested and refined The Systems Evaluation Protocol in partnership with CCE programs from 2006 - 2015. The Protocol has been integrated into professional development in CCE, to promote consistent approaches to evaluation of county-based, regional, and statewide programs. Although the formal project connection with CORE ended in 2015, access to the Netway and online training continues to be available. Additionally, CCE program leaders are being trained in logic and pathway modelling through the CCE Program Development Leadership Cohort, an in-depth and comprehensive professional development experience targeting program leaders to become more proficient at program planning and evaluation.

Regional/Statewide documentation examples. Many regional and statewide programs are receiving federal capacity funds. Documentation of outcomes is a requirement of funding. Results shape future program efforts and impact program design. **An example evaluation from a funded project can be found below.**

There is also a requirement for our local and regional programs to report on statewide outcomes/indicators: Program documentation results are aggregated in a

statewide accountability database that includes both qualitative and quantitative data for reporting and helping us to better understand impacts. Quantitative system wide outcome data is reported in the outcome portion of this report.

Key Items of Evaluation

Example evaluation for the- Parenting in Context (Kimberly Kopko) - use of pre-post questionnaire

The Cornell Cooperative Extension (CCE) system offers a variety of programs for parents and caregivers. Offered at CCE associations throughout New York, these programs reach a wide range of families and seek to promote positive parenting and, ultimately, healthy family and child development. This report presents data collected from participants in CCE parent education programs between July 2016 to July 2017. Participants included parents and caregivers taking part in programs that comprised at least six hours of content delivery. Data were collected from participants at the first session (a pre-test) and at the last session (a post-test).

This study used a pre- and post-test evaluation, in which the participants were asked to answer two identical surveys--one given at the first session of the class and another given after the completion of the last parenting class. The survey included ten questions about parenting attitudes, behaviors, and knowledge. The pre/post study design allows researchers to see if participants' attitudes, behaviors, and knowledge change during the course of the parenting programs. Using this type of research design does not allow one to determine whether taking part in the parent education class caused a change in attitudes, behaviors, and knowledge; such changes could occur for other reasons outside of the program. However, it is possible that any significant pre-to-post changes in parenting attitudes, behaviors and knowledge that are observed may have resulted from taking part in the program.

Evaluation information is based on information provided by 266 participants, who completed a parent education program and completed both a pre- and a post-test survey. Nine out of ten items on the survey showed significant improvements from the pre- to the post-test. Specifically, CCE parent education participants reported increases in: having more patience with their child, confidence in making rules that take their child's needs into consideration, and explaining the reasons for those rules, physical affection towards their child, communicating something positive about their child with other adults, time spent reading with their child, and a belief that they have enough people to count on. Participants reported decreases in: how often they yell at their child, and amount of time their child spent engaged in non-educational screen time activity. A p-value generated from a paired t-test was used as a statistical measure to determine whether a change in a given survey question between the pre- and post-test was significant. A p-value of .10 or less was considered statistically significant.

More detail about this project can be found at:

- <http://www.human.cornell.edu/people/kak33>
- <http://www.human.cornell.edu/pam/engagement/parenting/professionals/cce>
- <http://www.bctr.cornell.edu/tag/kimberly-kopko/>
-

http://ecommons.cornell.edu/bitstream/handle/1813/40092/PAM_KimberlyKopko.pdf?sequence=1

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Community and Economic Vitality

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	22%		26%	
134	Outdoor Recreation	5%		0%	
602	Business Management, Finance, and Taxation	8%		0%	
608	Community Resource Planning and Development	34%		52%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	21%		17%	
805	Community Institutions, Health, and Social Services	10%		5%	
Total		100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	121.0	0.0	3.0	0.0
Actual Paid	83.0	0.0	1.0	0.0
Actual Volunteer	7362.0	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
952568	0	154732	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
952568	0	310579	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	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

CCE, CUAES and NYSAES have a commitment to the people of New York to build self-capacity among citizens, leaders, and local officials so they are better positioned to address challenges and opportunities, improve quality of life, and build strong and vibrant communities. Through integrated research and extension agendas, we can help develop effective and collaborative agriculture, energy, emergency management, and land use/natural resource management approaches and policies that enhance economic, environmental and social connections. Educators 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.

Sample Statewide/Regional Initiatives that fall within this Plan of Work

·Agriculture and Food Systems Development: Community and Economy

- Community and Energy
- Community Capacity Building
- Entrepreneurship
- Land Use Education
- Leadership Development

- Master Gardener Volunteer Program
- New York Extension Disaster Education Network (NY EDEN)
- Regional Economic Development
- Sustainable and Resilient Communities
- Training for Local Officials
- Workforce Development

2. Brief description of the target audience

- Elected officials, community leaders, business and economic leaders, not-for-profit agencies, schools, environmental groups, agribusiness leaders, etc.
- Retirees and other elders who have time to engage in community stewardship
- Engaged community citizens
- Communities as a 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
- Workforce development specialists

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 378 staff are registered, 63 of which are faculty members. Staff have cited the usefulness of COPs - particularly where there are identified national projects - such as with Financial Security for All COP.

Examples of involvement include:

- **Sandra Cuellar**, a member of the Applied Economics and Management Unit at Cornell is director of the **Healthy Food Choices in Schools** Community of Practice.
- **Heidi Mouillesseaux-Kunzman**, Senior Extension Associate with the Community and Regional Development Institute, Development Sociology, co-leads the **Enhancing Rural Community Capacity** Community of Practice. A key focus of the ERCC CoP over the last year is further developing Foundations of Practice, a national training program targeted to community developers. The CoP was selected to participate in eXtension's 2016 Community Issues Corps Designathon to help move this initiative forward.
- **Keith Tidball**, Senior Extension Associate in the Department of Natural Resources and Assistant Director of Cornell Cooperative Extension leads the **Community Capacity Building concentration area of the Military Families Learning Network**. A key focus of this work is the Department of Defense and National Guard Bureau Building Healthy Military Communities Pilot wherein Cooperative Extension is situated as a force multiplier in the family readiness mission. Keith also has served on the national **Extension Disaster Education Network (EDEN)** Executive Committee, as well as on the EDEN Exercise Committee and Chair of the Agriculture and Cybersecurity Working Group. In New York State, he serves as the state Point of Contact and as a delegate, and is the leader of the New York State **Extension Disaster Education Network** program. Both eXtension networks evolved from eXtension communities of practice.
- **Additionally: Jeff Piestrak**, Digital Collections Specialist for Mann Library at Cornell recently served as a fellow on a yearlong research project around **data** and information **structures for food systems and**

Extension practices; **Jamila Simon**, 4-H Extension Associate in the Bronfenbrenner Center for Translational Research is a member of the **ECOP Ad Hoc Tech and Innovation Committee**, **Steve Hadcock**, Association Team Leader CCE Albany is a part of the **First eXtension Innovation Facilitation team**, **Nigel Gannon**, Extension Associate in the Bronfenbrenner Center for Translational Research is a part of the **Impact Collaborative Branding Team;** **June Mead**, Association Issue Leader for CCE Broome County is a **Diversity and Inclusion Issue Corps Key Informant;** and **Bonnie Collins**, Association Sr. Team Leader for CCE Oneida County, **Jeff Piestrack** (noted above) and **Andy Turner**, State 4-H Program Leader, Bronfenbrenner Center for Translational Research are all members of the **Diversity and Inclusion Issue Corps**.

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

- Community, Local and Regional Food Systems
- Creating Healthy Communities
- Diversity Equity and Inclusion
- Enhancing Rural Capacity
- Entrepreneurs and Their Communities
- Extension Disaster Education Network
- Extension Master Gardener
- Extension Master Gardener Coordinators
- Extension Master Gardener National Program Committee
- Financial Security for All
- Fostering Civil Discourse
- Military Families
- Military Families Concentration Leaders
- Military Families Authors

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	149070	13210354	65946	5844033

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

Patent Applications Submitted

Year: 2017
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	12	61	73

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	(6.1a) Number of communities who plan for and implement initiatives on community based agricultural economic development, land use, energy, workforce development, business and entrepreneurial development and assistance, non-profit sector development and/or other elements of sustainable growth.
2	(6.1b) Number of residents and/or community leaders, who plan for and initiate steps to enhance facilities, and/or other community resources or services
3	(6.1c) Number of municipalities that were part of an intentional process re: intergovernmental cooperation.
4	(6.1d) Number of communities establishing an infrastructure and climate to support entrepreneurs, local farms and agribusinesses attributable at least in part to initiatives of the program.
5	(6.1e) Number of communities documenting improvements in facilities and/or other community resources or services.
6	(6.2a) Number of communities instituting new or enhanced participatory processes related to community and economic vitality.
7	(6.2b) Number of local officials who cite LGU research and data as having influenced a decision.
8	(6.2c) Number 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.
9	(6.3a) Number of communities and municipalities that address the connection between their land base and possible energy scenarios.
10	(6.3b) Number of sustainability initiatives adopted.
11	(6.3c) Number of communities that address climate change and energy issues in an integrated manner.
12	(6.3d) Number of communities that incorporate energy use and development in their comprehensive plans.
13	(6.4a) Number of communities utilizing information of NY-EDEN.
14	(6.4b) Number of community leaders documented to apply community economic development and quality of life indicators to support decision-making.
15	(6.4c) Number of communities who were better prepared to deal with emergencies and disasters.
16	(6.4d) Number of communities implementing projects that enhance community sustainability and/or protect public health and community well-being through sound environmental management.
17	(6.5a) Number 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.
18	(6.5b) Number of communities adopting or updating farmland preservation and/or agricultural economic development plans.
19	(6.6a) Number of residents and/or community leaders, who plan for and initiate steps to enhance public spaces.
20	(6.6b) Number of new or enhanced community organizations or networks linking diverse sub-groups and focused on enhancing community sustainability.
21	(6.6c) Number of communities documenting improvements in public spaces.
22	(6.7a) Number of instances in which producers/ horticulture businesses/ natural resource enterprises, residents and community leaders work together to address issues.
23	(6.7b) Number of agriculture/horticulture/natural resource business persons who are better prepared to deal with disasters and emergencies.
24	(6.7c) Number 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.
25	(6.7d) Number of communities that initiate specific plans to address agriculture/ horticulture/ natural resource enterprise related issues or capitalize on new opportunities including community agriculture initiatives.
26	(6.7e) Number of documented instances in which agriculture/community conflicts are resolved locally.
27	(6.7f) Number of communities documented to adopt, maintain, or expand policies supportive of appropriate agriculture/horticulture/ natural resource enterprise development and/or community agriculture.
28	(6.8a) Number of residents practicing management tactics in homes, lawns, gardens and landscapes that support environmental stewardship and a sustainable community.
29	(6.8b) Number of residents who plan for and initiate steps to enhance homes, lawns, gardens and landscapes that support environmental stewardship and a sustainable community.
30	(6.1f) Number of new shared services among municipalities.
31	Economic Contributions of Agricultural and Rural Electric Cooperatives to the New York State Economy

Outcome #1

1. Outcome Measures

(6.1a) Number of communities who plan for and implement initiatives on community based agricultural economic development, land use, energy, 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	70

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

(6.1b) Number 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	572

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 #3

1. Outcome Measures

(6.1c) Number of municipalities that were part of an intentional process re: intergovernmental cooperation.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	93

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

(6.1d) Number 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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	42

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 #5

1. Outcome Measures

(6.1e) Number 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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	35

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 #6

1. Outcome Measures

(6.2a) Number of communities instituting new or enhanced participatory processes related to community and economic vitality.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	23

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 #7

1. Outcome Measures

(6.2b) Number of local officials who cite LGU research and data as having influenced a decision.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	39

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 #8

1. Outcome Measures

(6.2c) Number 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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	116

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 #9

1. Outcome Measures

(6.3a) Number of communities and municipalities that address the connection between their land base and possible energy scenarios.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	110

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 #10

1. Outcome Measures

(6.3b) Number of sustainability initiatives adopted.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	20

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 #11

1. Outcome Measures

(6.3c) Number of communities that address climate change and energy issues in an integrated manner.

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 #12

1. Outcome Measures

(6.3d) Number of communities that incorporate energy use and development in their comprehensive plans.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	12

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 #13

1. Outcome Measures

(6.4a) Number of communities utilizing information of NY-EDEN.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	5

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 #14

1. Outcome Measures

(6.4b) Number 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	19

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

Outcome #15

1. Outcome Measures

(6.4c) Number of communities who were better prepared to deal with emergencies and disasters.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	20

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 #16

1. Outcome Measures

(6.4d) Number of communities implementing projects that enhance community sustainability and/or protect public health and community well-being through sound environmental management.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	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
131	Alternative Uses of Land
134	Outdoor Recreation
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #17

1. Outcome Measures

(6.5a) Number 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
2017	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
131	Alternative Uses of Land
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #18

1. Outcome Measures

(6.5b) Number 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
2017	29

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 #19

1. Outcome Measures

(6.6a) Number 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
2017	70

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 #20

1. Outcome Measures

(6.6b) Number 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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	13

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #21

1. Outcome Measures

(6.6c) Number of communities documenting improvements in public spaces.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	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
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #22

1. Outcome Measures

(6.7a) Number 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	324

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 #23

1. Outcome Measures

(6.7b) Number of agriculture/horticulture/natural resource business persons who are better prepared to deal with disasters and emergencies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	91

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #24

1. Outcome Measures

(6.7c) Number 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 Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	230

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 #25

1. Outcome Measures

(6.7d) Number 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	96

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 #26

1. Outcome Measures

(6.7e) Number of documented instances in which agriculture/community conflicts are resolved locally.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	118

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 #27

1. Outcome Measures

(6.7f) Number of 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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	103

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 #28

1. Outcome Measures

(6.8a) Number of residents practicing management tactics in homes, lawns, gardens and landscapes that support environmental stewardship and a sustainable community.

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 #29

1. Outcome Measures

(6.8b) Number of residents who plan for and initiate steps to enhance homes, lawns, gardens and landscapes that support environmental stewardship and a sustainable community.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	10667

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

Outcome #30

1. Outcome Measures

(6.1f) Number of new shared services among municipalities.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	35

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

Outcome #31

1. Outcome Measures

Economic Contributions of Agricultural and Rural Electric Cooperatives to the New York State Economy

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With over three-quarters of agricultural output in NYS marketed through farmer-owned cooperatives, it is evident that cooperatives play an important, and arguably undervalued, role in agricultural markets. In addition to their direct contributions, their activities support other industries backward-linked in the agricultural supply chain. There is substantial interest from cooperative leaders in understanding the economic impacts their organizations make to local economies, and in communicating that value to their members. Given cooperative profits are distributed back to local member owners, understanding differences in impact due to the unique business model is also useful for policy officials interested in economic development opportunities for rural New York.

What has been done

A customized economic input-output (IO) model of NYS was constructed with representative spending patterns for agricultural marketing, service, supply, rural electric, and Farm Credit System cooperatives doing business in NYS. Using total agricultural cooperative business volumes in the state, the value of the associated backward-linked industry relationships was estimated; i.e., indirect effects representing sales by cooperative supply chain firms, and induced effects representing additional industry sales from consumption out of labor income. Additional economic impacts that accrue to the economy due to the nature of cooperative business model are assessed through cooperative patronage refund distributions and equity redemptions.

Results

Agricultural cooperatives doing business in NYS directly contributed \$3.8 billion in total output and 5,745 jobs to the NYS economy in 2016. When backward-linked, business-to-business transactions and household spending out of labor income are considered, these values grow to \$8.1 billion and 25,751, respectively. The results imply strong industry multiplier effects for

agricultural cooperatives, whereby every \$1 of direct output generates an additional \$1.10 in backward-linked industry output and every direct job generates an additional 3.5 jobs from related business activity in the state. The cooperative business structure itself, whereby profits are redistributed to local members based on patronage, resulted in an additional \$93 million in labor income and 455 jobs in NYS, relative to identical levels of economic activity incurred by similar investor-owned firms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

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 can greatly impact communities in terms of infrastructure damage and direct costs. The global, statewide, and regional economies directly impact local economies. Fundamental change is occurring in the state and regional economies. The specific implications of these external factors vary greatly by locale and across regions.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Each of the plans addresses a broad combination of applied research and extension initiatives spanning multiple audiences, methods, and intended outcomes. A combination of routine program monitoring and documentation, near-term outcome assessment, and targeted follow-up activities are expected to provide comprehensive assessment. We work towards this goal by doing two things - professional development to enhance evaluation capacity of our system and collecting quantitative and qualitative documentation of local, regional and statewide programs.

Evaluation Capacity Building: Cornell Cooperative Extension has worked with the Cornell Office of Research on Evaluation (CORE) to strengthen evaluation practice and build evaluation capacity. CORE developed The Systems Evaluation Protocol that takes programs from logic models (columnar) to pathway models (a visual model that shows relationship of

short-term, mid-term and long-term outcomes) and helps to create an evaluation strategy. CORE tested and refined The Systems Evaluation Protocol in partnership with CCE programs from 2006 - 2015. The Protocol has been integrated into professional development in CCE, to promote consistent approaches to evaluation of county-based, regional, and statewide programs. Although the formal project connection with CORE ended in 2015, access to the Netway and online training continues to be available. Additionally, CCE program leaders are being trained in logic and pathway modelling through the CCE Program Development Leadership Cohort, an in-depth and comprehensive professional development experience targeting program leaders to become more proficient at program planning and evaluation.

Regional/Statewide documentation examples. Many regional and statewide programs are receiving federal capacity funds. Documentation of outcomes is a requirement of funding. Results shape future program efforts and impact program design. **An example evaluation from a funded project can be found below.**

There is also a requirement for our local and regional programs to report on statewide outcomes/indicators: Program documentation results are aggregated in a statewide accountability database that includes both qualitative and quantitative data for reporting and helping us to better understand impacts. Quantitative system wide outcome data is reported in the outcome portion of this report.

Key Items of Evaluation

Example evaluation for the Agriculture and Food Systems Plan - NYS Cooperative Contributions (Todd Schmit) - use of financial information from cooperative surveys and cooperative annual reports.

This project estimated the economic contribution of agricultural cooperatives, including Farm Credit System and rural electric cooperatives, to the New York State economy. Using financial information from cooperative surveys and cooperative annual reports, state-specific sales and expenditure patterns were estimated, including levels of spending incurred locally (i.e., in New York State). In 2016 dollars, agricultural cooperatives doing business in New York State directly contributed \$3.8 billion in total output, 5,745 jobs, and \$688 million in gross domestic product (GDP) to the New York State economy. When backward-linked supply chain business-to-business transactions (indirect effects) and household spending out of labor income (induced effects) are considered, these values grow to \$8.1 billion, 25,751, and \$3.1 billion, respectively. The results imply significantly strong multiplier effects for the industry, whereby every \$1 of direct output by agricultural cooperatives generate an additional \$2.11 in backward linked industry output, every direct job generates an additional 4.48 jobs, and every \$1 of direct GDP generates an additional \$4.48 in GDP from related business activity in the state.

Representative local production functions were created for agricultural marketing, service, and supply cooperatives sectors, as well as production functions for the two Farm Credit System cooperatives operating in New York State and all four rural electric cooperatives. The production functions were inputted into a customized Input-Output model using IMPLAN software. Total agricultural cooperative business volumes were obtained from USDA, while the Farm Credit System and rural electric cooperative business volumes were obtained from the surveys collected. The input-output modeling approach allowed us to the economic contributions in terms of jobs, output, and value added, and their respective economic multipliers. We also conducted supplemental analyses to compare the relative

contributions of similar industries but for non-cooperative business structures. It is worth noting that our empirical approach goes beyond previous studies and published research by better incorporating production functions and local purchasing patterns into the analysis, along with more refined approaches to treating residual returns (profits) to the owners of the cooperatives; that is, the farmer members themselves.

In 2016 dollars, agricultural cooperatives doing business in New York State directly contributed \$3.8 billion in total output, 5,745 jobs, and \$688 million in gross domestic product (GDP) to the New York State economy. When backward-linked supply chain business-to-business transactions (indirect effects) and household spending out of labor income (induced effects) are considered, these values grow to \$8.1 billion, 25,751, and \$3.1 billion, respectively. The results imply significantly strong multiplier effects for the industry, whereby every \$1 of direct output by agricultural cooperatives generate an additional \$2.11 in backward linked industry output, every direct job generates an additional 4.48 jobs, and every \$1 of direct GDP generates an additional \$4.48 in GDP from related business activity in the state. The cooperative business structure itself, whereby profits are redistributed to local members based on patronage, resulted in an additional \$93 million in labor income and 455 jobs in New York State relative to an identical level of economic activity incurred by traditional investor-owned firms.

More detail about this PI and project can be found at:

- <http://dyson.cornell.edu/people/todd-schmit>
- <http://cooperatives.dyson.cornell.edu/>
- <http://www.farmlandinfo.org/economics-local-food-systems-toolkit>
- http://www.researchgate.net/profile/Todd_Schmit2

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

Childhood Obesity (Outcome 1, Indicator 1.c)	
83832	Number of children and youth who reported eating more of healthy foods.
Climate Change (Outcome 1, Indicator 4)	
0	Number of new crop varieties, animal breeds, and genotypes with climate adaptive traits.
Global Food Security and Hunger (Outcome 1, Indicator 4.a)	
2404	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
Global Food Security and Hunger (Outcome 2, Indicator 1)	
0	Number of new or improved innovations developed for food enterprises.
Food Safety (Outcome 1, Indicator 1)	
0	Number of viable technologies developed or modified for the detection and
Sustainable Energy (Outcome 3, Indicator 2)	
0	Number of farmers who adopted a dedicated bioenergy crop
Sustainable Energy (Outcome 3, Indicator 4)	
0	Tons of feedstocks delivered.