

Cornell University Main Campus Research and Extension and New York State Agricultural Experiment Station Research Combined Plan of Work 2022-2026

Status: Final
Date: 06/10/2021

I. Plan Overview

1. Executive Summary

Cornell University Executive Summary

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

Cornell University Agricultural Experiment Station (Cornell AES), New York State Agricultural Experiment Station (AgriTech at 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 these two domains. The approach used to integrate the work of the two 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 Cornell AES, AgriTech at NYSAES, and CCE meet regularly throughout the year to discuss relevant issues, research and extension projects, and new opportunities.

Extension and research leaders communicate with stakeholders, who provide input and inform priority-setting for use of Federal Capacity Funds. 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 38 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. The Office of Engagement Initiatives (OEI) advances Cornell University's mission through community-engaged learning—preparing and inspiring students, faculty, staff and community partners to work together to solve the world's most difficult problems. OEI works closely with Cornell academic departments and Cornell Cooperative Extension to increase opportunities for community-engaged research, learning, and service projects. In 2016, a liaison position was created to strengthen the collaboration among Cornell students, faculty and staff, and the CCE association offices across the state—thus supporting the 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. In 2019, university-wide internships connected to Engaged Cornell were added to the annual CCE internship opportunities.

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 plan documents the intentionally planned program connected to Federal Capacity Fund projects, programs, and initiatives collectively considered by CCE, Cornell AES, and AgriTech at NYSAES.

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 (Cornell AES) – 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, Cornell AES improves people's lives and contributes towards Cornell's Land Grant mission of discovery, engagement, and advancement of learning.

Cornell AES 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, Cornell AES directs some of the most important projects in the state.

The station directly manages over 5,600 acres of farms, orchards, vineyards, and forests, and includes the university compost facility, eight farm operations, and over 127,000 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 and engaged, experiential student leadership 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 approximately \$6 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 a diverse portfolio of research that benefits residents of the state, region, and the nation.
- Employs over 50 full time staff—comprising, farm and plant growth facility managers, field staff, greenhouse workers, growth chamber workers, and administrative staff.
- Operates eight farms with agricultural production and forest acreage across the state, from Willsboro on Lake Champlain to Long Island on the Atlantic Seaboard.

AgriTech at New York State Agricultural Experiment Station

Agriculture and food are multi-billion dollar industries in New York, and to underscore the value that New York State Agricultural Experiment Station brings to improving the health of the people, environment and economy of the state and beyond. Established in 1880, AgriTech at NYSAES in Geneva, New York develops cutting-edge technologies essential to feeding the world and strengthening New York State economies.

From developing safe and nutritious foods to pioneering means to preserve the environment, AgriTech at NYSAES serves millions of New York consumers, agricultural producers, food businesses and farm families throughout the state. AgriTech at 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.

AgriTech at NYSAES:

- Operates a budget of approximately \$39 million—approximately one-third of which is funded through State University of New York'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. Annually provides opportunities for 25-30 undergraduate students to experience research projects during a nine week summer internship program.
- 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 AgriTech at NYSAES campus includes:

- Center of Excellence for Food and Agriculture – launched in September 2019; its mission is to grow NY’s food, beverage and agriculture economy by serving as a hub for NY businesses to connect with the expertise and resources they need to innovate, grow and thrive.
- 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 New York State Integrated Pest Management Program
- Cornell Agriculture and Food Technology Park adjacent to the main AgriTech at 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 (CCE) 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 agents for the state of New York. Extension work on and off-campus 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. CCE is connected to 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.

Cornell Cooperative Extension summary information (2020):

2020 was an unprecedented year for everyone – families, communities, farms, and businesses suffered both socially and economically. During this time, many CCE programs were able to shift to distance education and reach over 800,000 directly through online events and on-demand learning.

- 72+ educational outreach programs were offered per month in each county across New York State.
- Over 257,000 youth gained life skills, experiences & networks of career and developmental support through 4-H Youth Development.
- Over 13,000 volunteers were active - advising, planning, teaching, and mentoring in all program areas extending the reach of staff in communities.
- Connected 36 student interns in 2020 to internship opportunities that bridge research connected to faculty in the College of Agriculture and Life Sciences, the College of Human Ecology, and throughout the University with the assistance of the Office of Engagement Initiatives.
- 990+ local and regional staff and educators organized around program initiatives and local needs.
- Over 130 specialists provide programming in integrated pest management, dairy, grape, fruit, vegetable, and field crop production and management.
- 400+ Cornell University faculty and staff connected with local needs as a result of formal Extension responsibilities - primarily in the College of Agriculture and Life Sciences and the College of Human Ecology.

Collective, planned program areas are described below.

AGRICULTURE AND FOOD SYSTEMS: Projects support a NY food and agriculture industry that is diverse, sustainable, and profitable, and that produces a safe, reliable, and healthy food supply.

CLIMATE CHANGE: Projects develop and/or implement practices to reduce impacts to agriculture from climate change and/or use agriculture and forestry practices to mitigate climate change. Special consideration is given to projects that will develop implementable strategies, linked to agriculture and forestry, for meeting New York's new law on reducing use of carbon-based fossil fuels and lowering greenhouse gas emissions.

ENVIRONMENT, NATURAL RESOURCES AND SUSTAINABLE ENERGY: Projects lead to improved use of the state's available land resources for agriculture and forestry industries, renewable energy production from agriculture or forest resources, and energy conservation and renewable energy that benefits agriculture and food systems.

NUTRITION, FOOD SAFETY AND SECURITY, AND OBESITY PREVENTION: Projects lead to childhood obesity prevention; improved youth, family and community nutrition; and food security and food safety.

4-H YOUTH DEVELOPMENT/CHILDREN, YOUTH, AND FAMILIES: Projects focus on life skill development, STEM opportunities for youth, human development, and the quality of home and work environments. For Hatch or McIntire-Stennis supported research there should be a connection with agriculture and food industries.

COMMUNITY AND ECONOMIC VITALITY: Projects empower entrepreneurship and workforce development, agriculture and food systems development, community and economic development, and community sustainability and resilience. For Hatch and McIntire-Stennis supported research these activities must have a connection to agriculture and food industries.

2. FTE Estimates

Year	1862 Extension	1862 Research
2022	990.0	26.3
2023	990.0	26.3
2024	990.0	26.3
2025	990.0	26.3
2026	990.0	26.3

II. Merit / Peer Review Process

Cornell AES, AgriTech at 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 (2020) proposal cycle. Director-level staff from Cornell AES, AgriTech at NYSAES, and CCE meet regularly throughout the year 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 (PI's) 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.
- PI's 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 PI's department/unit chair, Extension Program Associate/Assistant Directors, and the agricultural experiment station directors (Cornell AES and AgriTech at 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 for approval. If approved 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:

- Alignment with NIFA priorities
- Alignment with internal priorities
- 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
- Strength of diversity statement

For FY20 a total of 137 pre-proposals were submitted to Cornell AES, Agritech at NYSAES, and CCE of which 76 were internally approved for funding.

III. Stakeholder Input

1. Actions to Seek

- 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 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.

Cornell AES, NYSAES and CCE leadership works to identify external stakeholders that provide guidance by reviewing funding support requests.

In addition, we have 38 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 research and extension leadership 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 1,400 individuals were involved in the work of these teams in 2020.

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 2020, more than 3,500 board and committee volunteers from diverse backgrounds participated and assisted in the direction, priority setting programs throughout the state, and over 13,000 enrolled 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 2020, more than 2,900 youth reported serving in appropriate leadership, governance and program delivery roles statewide.

2. Methods to Identify

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

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 extension and research leadership, 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 2020 reporting year, over 22% of the 480+ 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.

3. Methods to Collect

- 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

All of the techniques listed were used in 2020 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 responses to social media also provide programmatic feedback.

4. How 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

The stakeholder input process for statewide program development jointly utilized by Cornell AES, AgriTech at NYSAES and CCE was established in February 2001.

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. Stakeholders provide input that informs decisions around funding of current extension and research projects, contributing ratings of perceived relevance to New York State 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.

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.

IV. Critical Issues

1 Agriculture and Food Systems

Description:

Projects support a NY food and agriculture industry) that is diverse, sustainable, and profitable, and that produces a safe, reliable, and healthy food supply.

Programmatic outcomes for this issue are organized around: Business Management, Agriculture/Natural Resources Enterprises Labor, Producer Alternatives/New Ventures, General production Practices, and Agricultural Environmental Management.

Term: Long

Science Emphasis Areas

Sustainable Agricultural Production Systems

2 Climate Change

Description:

Projects develop and/or implement practices to reduce impacts to agriculture from climate change and/or to use agriculture and forestry practices to mitigate climate change. Special consideration is given to projects that will

develop implementable strategies, linked to agriculture and forestry, for meeting New York's new law on reducing use of carbon-based fossil fuels and lowering greenhouse gas emissions.

Programmatic outcomes for this issue are organized around: Climate Change, Water Resources, Biodiversity and Natural Resource Protection.

Term: Long

Science Emphasis Areas

Agroclimate Science
Environmental Systems
Sustainable Agricultural Production Systems

3 Environment, Natural Resources, Sustainable Energy

Description:

Projects lead to improved use of the state's available land resources for agriculture and forestry industries, renewable energy production from agriculture or forest resources, and energy conservation and renewable energy that benefits agriculture and food systems.

Program emphasis areas include: Bioenergy, Producer Energy Alternatives/Conservation, Consumer energy Alternatives & Costs, Community Energy Planning, Waste Management and Energy, Environment & Natural Resources

Term: Long

Science Emphasis Areas

Bioeconomy, Bioenergy, and Bioproducts
Environmental Systems

4 Nutrition, Food Safety/Security, Obesity

Description:

Projects lead to childhood obesity prevention; improved youth, family and community nutrition; and food security and food safety.

Program emphasis areas include: Healthy eating and Active Living, Food Resource Management, Decision Makers/Policy Education, Food Security and Hunger, Food Safety and Consumers, Food Safety and Producers/Processors/Retailers/Food Service Providers, and Food Safety and Decision Makers.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences
Food Safety
Human Nutrition

5 Youth Development/Children, Youth, Families

Description:

Projects focus on life skill development, STEM opportunities for youth, human development, and the quality of home and work environments. For Hatch or McIntire-Stennis supported research there should be a connection with agriculture and food industries.

Program emphasis areas include: Youth Competence, Youth Contribution, Youth & Volunteer Leadership,

Parenting, Human Development (Individual and Community), Economic Security, and Indoor Environment.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences
Youth Development

6 Community and Economic Vitality

Description:

Projects empower entrepreneurship and workforce development, agriculture and food systems development, community and economic development, and community sustainability and resilience which address social determinants of health. For Hatch and McIntire-Stennis supported research these activities must have a connection to agriculture and food industries.

Program emphasis areas include: Community and Economic Development, Community Capacity Building, Community Sustainability and Resiliency Decision-Making, Land Use and Energy, Land Use and Public & Residential Spaces, and Agriculture and Food Systems Development.

Term: Long

Science Emphasis Areas

Education and Multicultural Alliances
Environmental Systems
Family & Consumer Sciences
Human Nutrition
Sustainable Agricultural Production Systems
Youth Development