Cornell AgriTech
New York State Agricultural Experiment Station

STRATEGIC PLAN

Building resilient and sustainable agri-food systems for New York state and beyond

2025-2030

Cornell CALS College of Agriculture and Life Sciences

OUR VISION:

Lead science-based innovation in specialty crops and their value-added products, in order to champion sustainability and resiliency in a rapidly changing world.

Introduction

Food insecurity, sustainable food production and environmental protection are major global challenges that require an integrative approach. By leveraging transdisciplinary efforts and embracing innovation, Cornell AgriTech aims to build a more resilient, sustainable food system for New York state and beyond.

AgriTech is uniquely positioned to tackle 21st-century agricultural issues. Our researchers advance understanding of climate-impacted agroecosystems, while our teaching and extension activities provide foundational skills and crucial resources.

With stakeholder input, we have identified six pioneering initiatives with specific solutions and indicators of progress, all emphasizing climate resilience and agriculture's pivotal role.

Our Values

Our values align with those of Cornell University.

- Purposeful discovery.
- Free and open inquiry and discussion.
- A community of belonging.
- Exploration across boundaries.
- Changing lives through public engagement.
- Respect for the natural environment.

Purpose

We improve the health of the people, environment and economy of New York state and beyond, through innovative food and agricultural science.

Mission

We transform scientific breakthroughs into practical solutions for growers, businesses and communities.

Pioneering Initiatives

- Advancing technology for specialty crop production
- Breeding, physiology and genomics for yield, quality and resilience
- Developing sustainable pest and disease management and production practices
- Driving innovation for food production, processing, and safety
- Supporting economic development, entrepreneurship and workforce development
- Expanding public access and outreach




How We Work: An Integrated Approach

Translational Research

Working closely with agriculture and food producers, we identify production challenges and opportunities. Our academic units, together with Cornell Integrated Pest Management and the USDA-ARS, perform the mission-driven science necessary to answer questions and develop solutions. Our research is performed on AgriTech research farms, in greenhouses, pilot plants and labs in Geneva, western New York, the Hudson Valley and Long Island. Our solutions are validated at our research farms and facilities as well as with producers across the state.

Our research is translated back to producers and policymakers through extension and outreach.

Growing Businesses in New York

Our efforts to drive economic development are integrated with our translational research. We bolster the development of agriculture and food enterprise through through the licensing of intellectual property (IP) generated by our research. Our IP portfolio includes new specialty crop cultivars and innovations for precision food and agricultural production.

In addition, dedicated economic development specialists on campus connect food and agriculture entrepreneurs with the resources and expertise they need to launch and thrive. We focus not only on growing New York businesses, but also on attracting companies to do business in the state.

Workforce Development

Cornell AgriTech supports today's workers and educates the workforce of tomorrow. We cultivate the career paths of graduate students and postdoctoral scientists by providing unique opportunities to participate in impactful research and outreach to agriculture and food producers. We also inspire K-12 and undergraduate students to pursue careers in agriculture and food science through hands-on internship opportunities.

We offer a variety of training and certificate opportunities for producers to advance their careers and grow their businesses.

Advancing technology for specialty crop production

Summary

Leverage artificial intelligence (AI), digital agriculture and novel technologies to enhance decision-making, optimize resources, and improve crop production and management.

Solutions

- Develop physical, chemical and biological sensors to measure plants, environments and their interactions.
- Deploy multi-modal, multi-scale sensing systems using in-plant sensors, lab and ground robots, aerial systems, and satellite platforms.
- Interpret multi-source data layers, unveil new knowledge of specialty crops and predict future trends via closed-loop generative AI and modeling systems.
- Address labor challenges through variable-rate mechanization, autonomous and swarm robotics, and embodied AI.
- Use AI to give technological, socioeconomic and environmental feedback to agri-food stakeholders, promoting long-term sustainability and resilience through shared governance.

Indicators of Progress

- Launch of the Cornell Center for Agricultural Intelligence and Robotics.
- Development of sensors, robots, models, and data management and analytical tools for specialty crops research and production.
- Integration of digital technologies into research programs resulting in paradigm changes at Cornell AgriTech and CALS.
- Demonstration of technological advances during outreach and extension events.
- Commercialization of innovations through licensing, IP protection and marketing.
- Adoption of technologies by New York growers for production improvements.

Breeding, physiology and genomics for yield, quality and resilience

Summary

Develop and deliver high-quality, climate-resilient, high-yield specialty crops with a focus on practical solutions that deliver profits to growers.

Solutions

- Improve the quality and nutritional value of specialty crops.
- Mitigate extreme weather impacts through physiology and breeding breakthroughs for specialty crop production.
- Advance the bioeconomy by replacing petroleum-based products.
- Breed to reduce pesticide input for disease and insect management.
- Expand gene mapping and capacity in the areas of controlled environment agriculture, plant protein yields and nutritious vegetables.

Indicators of Progress

- Support high-throughput phenotyping to aid in release of new specialty crop cultivars.
- Increase AI initiatives for genomic analysis, bioinformatics and physiology capacity.
- Support adoption and development of appropiate cutting-edge biotechnologies.
- Expand physical capacity for horticultural research.
- Develop new methods to mitigate flood, drought and pest issues.
- Study scion/rootstock interactions in crops where rootstocks are used.

Developing sustainable pest, disease management and production practices

Summary

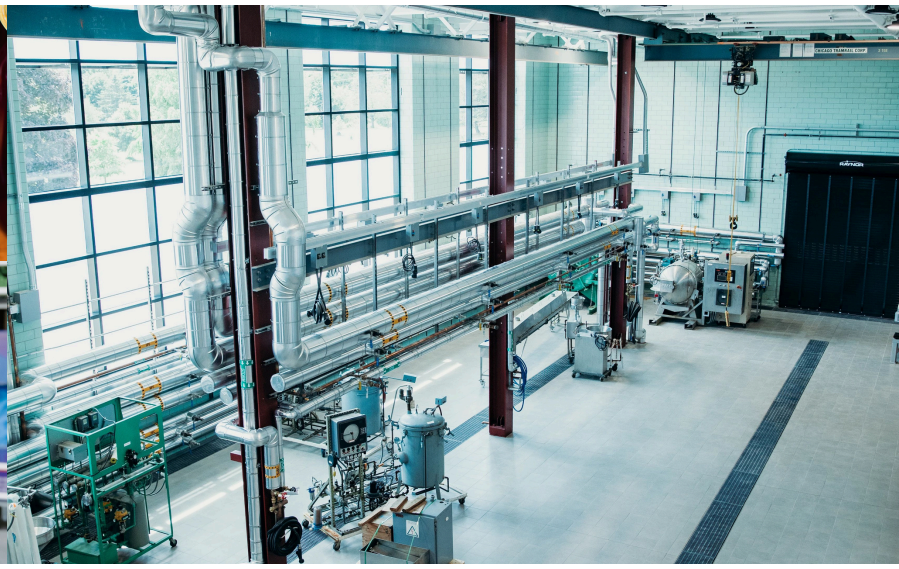
Implement pest management solutions that support healthy agroecosystems and communities across New York.

Solutions

- Innovate and translate biotechnological solutions for precision pest management.
- Detect early, identify, rapidly respond to and control invasive species.
- Develop novel, sustainable and integrated tools for crop management.
- Advance sustainable solutions for field, urban and controlled environment production systems.
- Promote healthy soils, regenerative cropping and diverse agroecosystems.
- Test low carbon production practices for improved profitability.

Indicators of Progress

- Demonstrate forward-thinking pest management initiatives during outreach events, emphasizing real-world applications and innovations.
- Proactively monitor and respond to new or invasive pests.
- Produce multimedia content to communicate solutions effectively, leveraging the expertise of students and extension/outreach assistants.
- Develop dynamic internal and external communication networks with growers and local communities.
- Create multidisciplinary teams to develop management solutions.



Driving innovation for food production, processing and safety

Summary

Providing national research and extension leadership in safe, sustainable food systems while fostering collaborations that address current challenges in food production and processing.

Solutions

- Lead the development and implementation of food safety practices for regulatory compliance of new food products.
- Utilize fermentation and value-added processing to support innovation in food production and entrepreneurship.
- Drive enhancement, education and quality improvement in the craft beverage industry.
- Improve sustainability of food processing systems through cellular agriculture, waste reduction and valorization.
- Support universal food safety education, research and risk assessment.

Indicators of Progress

- Develop workshops for food production businesses to conduct systems-based risk assessments.
- Establish a national program for research and extension in advanced food production biotechnologies.
- Contribute to the adoption of novel methods in food production by new and established businesses.
- Foster innovative intellectual property development through faculty and industry collaborations.
- Create learning modules on current regulatory requirements for agricultural producers.

Economic development, entrepreneurship and workforce development

Summary

Connecting businesses with Cornell research and expertise to grow New York's food and agriculture industries.

Solutions

- Enhance workforce development in agriculture, food and craft beverage production.
- Support businesses in their development of new food, beverage and agricultural products.
- Bolster the bioeconomy through developments in fiber and fermentation technology.
- Expand reach of Cornell resources statewide via the Center of Excellence for Food and Agriculture.
- Strengthen direct pipeline between plant breeders and producers.

Indicators of Progress

- Partner with industry and Cornell Cooperative Extension to increase workforce trainings across New York.
- Increase company utilization of AgriTech food and beverage programs and facilities.
- Construct a new processing facility for hemp and flax based fiber.
- Expand virtual, asynchronous and in-person educational offerings for entrepreneurs and producers.
- Strengthen AgriTech research and extension collaborations with Cornell and affiliated programs across the state.

Expanding public access and outreach

Summary

Improving accessibility for all stakeholder communities and supporting cultural foodways that reflect the changing face of farming in New York.

Solutions

- Expand methods of information dissemination to optimize knowledge transfer to specialty crop growers and producers.
- Enhance public access to Cornell AgriTech's campus and extension/outreach offerings.
- Support or establish educational programs that fill existing gaps for K-12 programs and professional degrees.
- Improve digital footprint to expand public reach.
- Strengthen relationships with Geneva, NY area communities.

Indicators of Progress

- Enhance social media and digital content for user discovery and experience.
- Increase training for intercultural competency to actively model belonging in science and agriculture.
- Expand support for agricultural workers and entrepreneurs, focusing on new and culturally significant crops.
- Boost awareness and enrollment in Summer Scholars programs.
- Launch hybrid MPS program in ag and food systems.
- Expand high school internships and develop elementary school programs.
- Improve campus map navigability.

Support mechanisms

The foundational support mechanisms listed below are critical components to all we do at AgriTech and will be key to advancing our six pioneering initiatives.

Strategic Communications

Strategic communications play a vital role in disseminating information about the impact of research, innovation, outreach and education happening at AgriTech to key audiences. Strong communication helps attract new talent, funding and partnerships to AgriTech while bolstering AgriTech's relationship with stakeholders and New York state communities. The impact of AgriTech and the importance of our partnerships with stakeholders is highlighted through storytelling.

Facilities

Laboratories, offices, greenhouses and research fields are critical to the success of AgriTech. Much of the research depends on infrastructure such as the Seneca Foods Foundation Pilot Plant, as well as the orchards, vineyards and annual crop fields. Over the next five years, a new building and many renovations are planned that will reinvigorate campus and expand research, teaching and innovation. Continued focus on modernizing the AgriTech campus and prioritizing climate resilient projects will be key to forwarding this plan.

Funding Portfolio

Faculty at AgriTech continue to identify new funding sources to diversify the overall research portfolio. Common funding sources include federal agencies, New York state, commodity boards and product testing agreements. New funding sources include expanded industry partnerships, and potential NIH funding associated with improving human health.

People

AgriTech retains employees in our campus community through a celebrated work culture that is committed to engagement, inclusion, well-being and opportunities for personal and professional growth.

Access and Community Empowerment

AgriTech provides resources and training to support our research and extension community in delivering accessible, tailored content that meets the needs of many different kinds of audiences in New York and beyond. We are also committed to supporting the talent and needs of our faculty, students and staff.

Grow with us.