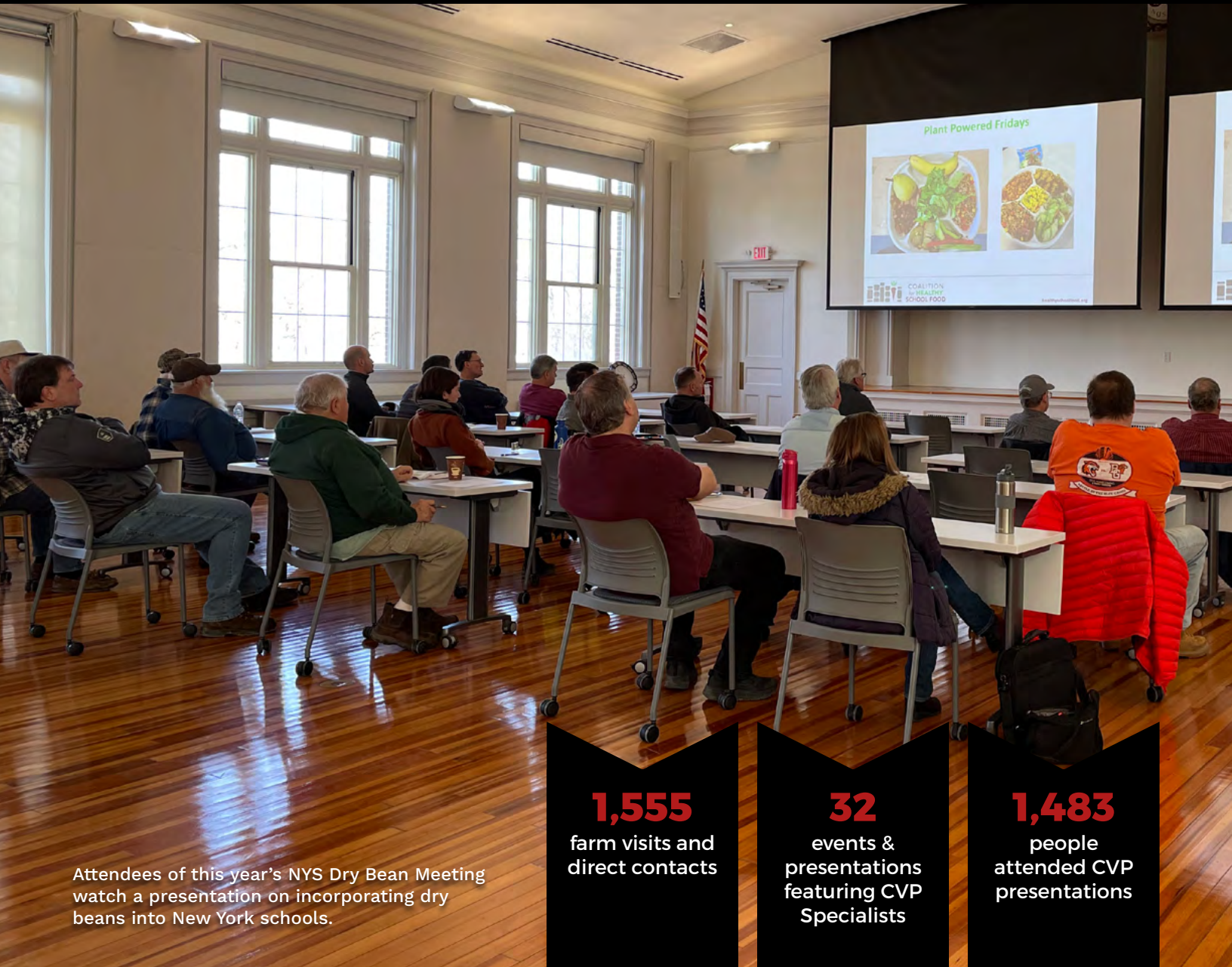


Q1 2023

Quarterly Highlights

The Cornell Vegetable Program (CVP) is a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties: Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Monroe, Niagara, Ontario, Orleans, Oswego, Seneca, Steuben, Wayne and Yates.

The team of Vegetable Specialists provides educational programs and information to growers, processors and agri-business professionals, arming them with the knowledge to profitably produce and market safe and healthful vegetable crops.



Attendees of this year's NYS Dry Bean Meeting watch a presentation on incorporating dry beans into New York schools.

1,555
farm visits and
direct contacts

32
events &
presentations
featuring CVP
Specialists

1,483
people
attended CVP
presentations

Cornell Vegetable Program Trials Aim to Improve Production Practices of Three Niche Crops in Response to Shifting Climatic Opportunities

The climate in the Northeast is rapidly changing which presents production opportunities and challenges for specialty crop growers. Sweet potatoes and okra are crops for which the warming climate presents an opportunity. While the plants do well in our hotter summers, production remains challenged by the short growing season. Finding ways to speed crop establishment and reduce the days to maturity would directly translate into improved yield and profitability. On the contrary, warmer conditions are threatening asparagus production in the Northeast. More and more, we are experiencing wild swings in spring weather, with days above 60°F in April followed by freezes. Warm spring temperatures stimulate asparagus to emerge from the ground too early, increasing the chance of a ruined crop if it is struck by frost. Abnormal May temperatures in the 70s increases the rate of asparagus growth, forcing a condensed harvest. Under these conditions, farmers often do not have enough labor to harvest all of the crop before it becomes over mature.

Comparing Sweet Potato Varieties

The Cornell Vegetable Program will compare emerging, regionally adapted sweet potato varieties with the southern-bred varieties that local growers currently use. This work will quantify varietal performance in our fresh market production systems, provide growers a chance to see new varieties, and allow for economic comparisons.

Exploring Row Cover in Okra Production

Okra tends to be grown on bare ground from transplants in WNY. Using black plastic to warm the soil is likely to benefit okra by allowing for earlier transplanting and fruiting. Row cover could raise the air temperature around the young transplants without requiring growers to transition to a plastic mulch production system. The two techniques will also be paired to test the effect of raising both soil and air temperatures while the crop establishes in the field.

Evaluating Heat Tolerant Varieties of Asparagus

In asparagus, the Cornell Vegetable Program will characterize the phenological development and heat stress tolerance of ten varieties. The variety trial includes regional standard, improved northern, and southern adapted varieties. Tying development to growing degree days, instead of the calendar, will allow us to examine the suitability of varieties for projected future climate conditions.

This research is grant supported by Northeast Sustainable Agriculture Research and Education (NESARE).



Picture Perfect Weed Control in Cabbage Taking Shape

Growing cabbage in New York has tight margins. Weeds can directly reduce cabbage yield and quality by competing for sunlight and nutrients with the cabbage crop and/or by contaminating the marketable heads with weed seeds. Weeds that belong to the same family as cabbage can spread diseases to cabbage and further reduce yield and quality. Weeds that escape herbicide programs must be hand weeded at great expense and with increasing issues in labor availability.

New York's cabbage grower research grant program has funded the Cornell Vegetable Program to explore methods to optimize weed control and crop safety with herbicides in transplanted cabbage since 2019. Every year, Vegetable Specialist Christy Hoepting and her team have conducted one to two small-plot on-farm herbicide trials focused on herbicides with pre-emergent activity (kill weeds as they emerge) that are already labeled on cabbage, as well as a few herbicides that could potentially be labeled in cabbage. In Winter 2023, Hoepting gave two presentations to 135 brassica growers and allied industry representatives that showed the results of this research project.

Cabbage Industry Impacts

- Strategic herbicide programs have been designed that will eliminate or at least drastically reduce the need for costly hand weeding.
- Research results have clearly demonstrated that overall weed control, and especially control of ragweed, could be improved by using Goaltender and Dual Magnum at planting. Similarly, control of Lamb's quarters could be improved by using Prowl H2O.
 - After learning Hoepting's research, one of the largest cabbage growers in New York, Lynn-Ette & Sons, plans to drop Treflan and add Goaltender and Prowl H2O to their herbicide program.
- A strategy has been identified to extend weed control through harvest by applying pre-emergent herbicide(s) 21-35 days after planting, after last cultivation and nitrogen application and before row closure. In 2023, Hoepting will be collaborating with the herbicide company that owns the generic formulation of Prowl H2O to get this novel application timing added to their Satellite Hydrocap label.
- The Cornell Vegetable Program is collaborating with Valent to develop the use of the novel herbicide Chateau for cabbage in New York.

Plans for 2023 trials include in-depth testing of the top performing herbicide programs for crop safety under different growing conditions with on-farm trials scheduled for early-May, early-June and late-July.



Cornell Vegetable Program Technician Sarah Caldwell incorporating pre-plant herbicide treatments into a cabbage weed control trial.



Cornell Vegetable Program Specialist Christy Hoepting is conducting research to find a cabbage herbicide program that is excellent at killing weeds but does not reduce cabbage yield or quality.

Preliminary Cover Crop Microbial Data is Promising

Prolonged, intensive use of soils in imported urban profiles and rural high tunnel production restricts yield and profitability while compromising soil and microbial health and other environmental parameters. The Cornell Vegetable Program, in collaboration with 10 urban and rural producers, is currently investigating three management approaches for vegetable farmers with high organic matter soils: pH adjustment, cover cropping, and calibrating soil test results to account for bulk density.

In conjunction with researching the nutrient implications of these practices, soil microbial activity and diversity associated with the adoption of these techniques is also being researched. We hope this research will contribute to:

- **Improved farm economics through improved crop health, increased yields and quality, reduced nutrient application, and decreased farm labor;**
- **Enhanced ecosystem services through healthier soil for filtering rainwater, improved pollinator habitat, and improved soil microbial health; and**
- **Improved community wellbeing through increased capacity of urban farms to provide culturally appropriate food.**

Our preliminary data on soil microbial health is giving us some promising results. For example, at an Erie County farm, we have documented higher carbon microbial biomass in cover cropped soils, when compared to bare ground control plots (Fig. 1).

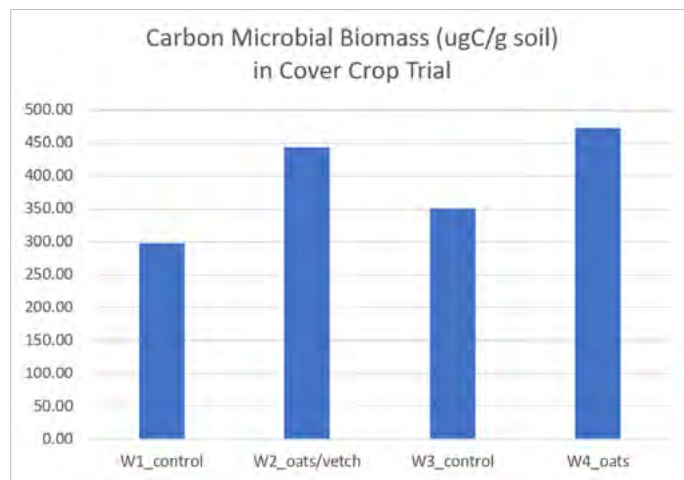


Figure 1. Carbon microbial biomass in an Erie County soil with bare ground plots compared to cover crop plots containing oats and an oats/vetch mixture.

What does this mean for farmers?
Cover cropping can help us sequester carbon in the soils, and by increasing the microbial population we can improve nutrient cycling and crop health.

Stay tuned for more updates as Vegetable Specialist Judson Reid and Program Assistant Lori Koenick work with farmers this spring.



Processing Vegetable Industry Convenes at In-Person Roundtable Meeting

Seventy-five members of the processing vegetable industry who grow, manage or support crop production for Nortera (formerly Bonduelle North America), Seneca Foods and/or Love Beets USA met at the NYS Processing Vegetable Industry Roundtable Meeting on March 15, 2023 in Batavia, NY. The 3-hour morning session started with a general industry roundtable where growers shared production challenges for green peas, snap beans, spinach, and sweet corn. Research presentations followed and included topics on insect management in sweet corn and snap beans, and nitrogen management in snap beans. Novel technologies presented included lasers to deter birds from sweet corn fields, drone-based precision agriculture, and novel weed control technology on the horizon.

The mid-day lunch break provided plenty of networking opportunity. The two-hour afternoon session focused on table beet and carrot production, again starting off with a grower/processor roundtable. Research presentations included results of electrical weeding in beets, potential of a plant growth regulator to manipulate table beet and carrot growth and yield, and optimizing control of Cercospora leaf spot in table beets with improved scouting and disease forecasting. The meeting was organized by Julie Kikkert, Processing Vegetable Crops Specialist for the CCE Cornell Vegetable Program.

“Great meeting today! Bringing science and technology together creates a great platform for the future of vegetable production as well as growers seeing the future. Providing apps that are easily usable are important take aways for attendees. You did set the stage!”

– Francis Domoy, Processing Vegetable Grower, Oakfield, NY

Sampling is an iOS app developed by Cornell University researchers to assist with sequential sampling of pests in the field. Dr. Sarah Pethybridge explained the use of the app to know whether Cercospora leaf spot of table beet has reached a management threshold in a field.



Formation of Research/Extension Educator Controlled Environment Agriculture (CEA) Working Group

Controlled Environment Agriculture started with greenhouses and high tunnels but has expanded to indoor facility production for an assortment of crops. Over the last few years, the calls from produce farmers and small companies looking for information on the production of microgreens (indoors under lights) has really jumped. At the same time, hydroponic greens production has increased with new businesses starting in the cities. Aquaponics have also become popular, especially in urban areas.

When it comes to vegetable production in any environment, food safety should be at the forefront of concerns. This becomes especially important when production occurs indoors, where water becomes a big part of the medium for growth. Contamination is an ever-present threat. Unfortunately, the science of food safety for indoor systems has lagged behind entrepreneurs racing forward.

To facilitate the needs of this burgeoning industry to produce safe food, the Cornell Vegetable Program, partnering with Texas Tech University, has been instrumental in organizing a national working group for CEA. There are nearly 40 active members representing the research side of CEA production, Extension educators trying to provide programming for the enterprises, and USDA and FDA officials learning about what is needed on the regulatory end. The short-term outcome for the working group is to develop checklists and factsheets based on sound science to guide the educational aspects needed for the various enterprises that make up CEA. The long-term goals are to help direct new research, respond to emerging issues, and foster collaboration with research, educational outreach, regulatory, and industry.

Dry Bean Industry Comes Together for Multiple Events at Cornell AgriTech

Dry bean growers and industry members met in-person in Geneva, NY this March for a bean focused day, involving the 2023 NYS Dry Bean Meeting and the annual Dry Bean Cutting event.

Attendees met in the morning for the Dry Bean Meeting to discuss research results and production outcomes for the 2022 season. Industry members and Cornell faculty and staff shared results from 2022 projects funded by the NYS Dry Bean Endowment, which were addressing the needs of NY dry bean farmers. Presentations included market updates across New York and other dry bean regions in the country from Matt Stawowy at Steele and Co, white mold management and sclerotia survival from Cornell Plant Pathologist Sarah Pethybridge, western bean cutworm pressure from the 2022 season from Cornell Vegetable Program Specialist Margie Lund, techniques for soybean cyst nematode monitoring from NYS IPM Educator Marion Zuefle, dry bean breeding updates and possibilities for future growth in specialty varieties from Cornell Plant Breeder Phillip Griffiths, updates from the 2022 dry bean variety trial from Michael Rosato, and incorporating dry beans into NY school lunches from Amie Hamlin and the NY Coalition for Healthy School Food.

After lunch and mingling, attendees had the opportunity to attend the annual Dry Bean Cutting event, where canned beans from the 2022 dry bean variety trial were opened to see how different varieties performed through processing. This year's trial included light and dark red kidney beans, black beans, cranberry beans, and adzuki beans. This event allows growers and industry members to observe, taste, and rate bean varieties, and provides insight on how different varieties perform when grown in NY State.

Dry bean growers and industry members assess different varieties of black beans at this year's Dry Bean Cutting event.



Newly Funded Grants & Projects

Your Trusted Source for Research-Based Knowledge

Enhance Western Bean Cutworm Trapping Methods for Accurate Monitoring and Management in Major New York Dry Bean Production Areas

New York Farm Viability Institute, 5/1/2023 - 10/31/2024, \$46,424 (Lund, Zuefle).

Determine the Magnitude and Distribution of Western Bean Cutworm and the Risk to Dry Beans in the Major Production Areas in New York

New York State Dry Bean Endowment, 7/1/2023 - 6/30/2024, \$3,217 (Lund, Zuefle, Wise).

Evaluate *Pediobius foveolatus* Parasitoid Wasps for Biological Control of Mexican Bean Beetle in Commercial Organic Dry Bean Systems

Toward Sustainability Foundation, 2023, \$9,963, (Lund, Zuefle).

Optimizing Herbicide Weed Control and Crop Safety in Transplanted Cabbage

New York Cabbage and Research Development Program (NY CRDP), 4/1/2023 - 3/31/2024, \$11,000 (Hoepting).

Towards a Durable Management Strategy for Foliar Diseases of Processing Carrots in NY: Phase 1

New York Vegetable Research Association, 4/1/2023 - 3/31/2024, \$26,272 (Pethybridge, Kikkert).

Development of a Preparedness Strategy for Tar Spot of Processing Sweet Corn in NY

New York Vegetable Research Association, 4/1/2023 - 3/31/2024, \$11,834 (Pethybridge, Kikkert).



Fresh Market Specialists Robert Hadad, Elizabeth Buck, and Judson Reid (left). Processing Crops Specialist Julie Kikkert and Dry Bean & Potato Specialist Margie Lund (middle). Cabbage & Onion Specialist Christy Hoepting (right).

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