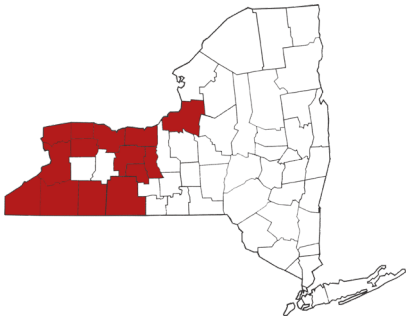
Regional Commercial Vegetable Specialists

The Cornell Vegetable Program is a Cornell Cooperative Extension partnership between Cornell University and County Associations in 14 counties – Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Monroe, Niagara, Ontario, Orleans, Oswego, Seneca, Steuben, Wayne and Yates – serving the commercial vegetable, greenhouse, potato and dry bean industries in New York.



Cornell Cooperative Extension
Cornell Vegetable Program
14-County Region

This region accounts for **more than half of all vegetable acres** in the state with **1,229 farms**, and a farm gate value **exceeding $200 million**[1].

4,622
farm visits and crop consultations made by the Cornell Vegetable Program team

91
educational meetings and presentations given by Cornell Vegetable Program Specialists

2,712
people increased their knowledge by attending presentations given by the Cornell Vegetable Program

39
research grants and projects managed by the Cornell Vegetable Program

[1] 2017 Ag Census

Emerging Pest Poses Threat to NYS Dry Bean Industry

While the soybean cyst nematode (SCN) is the number one pest concern for soybean in the U.S. causing millions of dollars in damage annually, it also infests the roots of dry bean plants. Little work has been conducted previously to determine the abundance and impact of SCN in dry beans. In 2021, Cornell Vegetable Program Specialist Margie Lund along with NYS IPM Educator Marion Zuefle continued their recent SCN sampling efforts in NYS dry beans.

New York State produces over 12,000 acres of dry beans annually, with over half of those acres in the Cornell Vegetable Program region. Soil samples were collected from thirteen dry bean fields in major dry bean production areas across western NY and tested for SCN presence in 2021. Of these thirteen fields, four fields showed no presence of SCN, seven fields tested positive for SCN at low levels, and two fields tested positive at moderate levels. Additionally, this year's sampling efforts marked the first positive samples of SCN in Genesee and Yates Counties for any host crop. These results add to the growing understanding that SCN is present and a concern for NYS growers, in dry beans as well as soybean. The Cornell Vegetable Program along with the NYS IPM Program intend to continue work in dry beans to learn more about the threat of SCN to the NYS dry bean industry.

Laser scarecrow being tested in a sweet corn field to deter birds. Photo by Julie Kikkert, Cornell Cooperative Extension

Evaluation of Emerging Technologies on Local Vegetable Farms

The CCE Cornell Vegetable Program partners with Cornell University faculty and other institutions to bring new technology to local vegetable farms to keep the NY industry on the cutting edge. Goals are to improve production efficiency, save labor and other inputs, and improve crop management abilities. On farm evaluation with our grower-cooperators puts technology to the test in the New York climate and production system and can help inform equipment design. In some cases, growers see an immediate benefit and adopt the technology and in other situations the technology is not beneficial. One grower commented "you just saved me a lot of money" when he observed through a research test that a particular piece of equipment did not work on his farm.

In 2021, Cornell Vegetable Program Specialist, Julie Kikkert, collaborated on the following projects to test emerging technologies for New York farms:

1. Ultraviolet-C light to manage Cercospora leaf spot in table beets - Cornell University and Mount Sinai Light and Health Research Center.
2. Decision Support Network (DSS) for forecasting and management of Cercospora leaf spot in table beets - Cornell University, NYS Integrated Pest Management Program (IPM) and USDA ARS Sugar Beet Research Lab, Michigan.
3. Electric discharge devices for weed management – Cornell University.
4. Remote sensing with drones for disease management and crop growth modeling and harvest maturity detection - Cornell University and Rochester Institute of Technology Center for Imaging Sciences.
5. Laser beams to deter birds in sweet corn fields (laser scarecrow) – NYS IPM Program; CCE Eastern NY Commercial Horticulture Program, University of Rhode Island.

A wagon that houses lamps that emit ultraviolet-C light is positioned over table beet plants during the night to test the effect on *Cercospora beticola* that causes devastating leaf spot disease. Photo by Julie Kikkert, Cornell Cooperative Extension

Strengthening Local Produce Markets through Data Analytics

Development of Non-Digital Tools and Techniques for Organizing, Analyzing, and Extracting Valuable Information from Each Auction's Market Report Data

Marketing your produce is a necessity, but it can be a time consuming and costly activity. Small growers located in more rural or economically struggling localities can struggle to find robust direct-to-consumer marketing venues that allow farmers to sell their produce for a decent margin above the cost of production. These individual small farms are often overlooked by wholesale vegetable purchasers because they lack the land base, labor, or equipment to meet the supply needs of large volume buyers.

Produce auctions provide an answer to these challenges. By allowing many farmers to aggregate their crops, the auctions assemble produce in large volumes and attract many wholesale buyers. The grower enjoys increased marketing efficiency and reduced labor costs, limiting valuable time spent off-farm to only the time it takes to deliver and off-load the produce.

Produce auctions publish market reports after each auction that list the volume and sales price range for almost every commodity sold, often broken out by sales packaging size (i.e. bin, box, each). These reports contain a wealth of economic information that can help the produce auction business better market their strengths to recruit new buyers, analyze market dynamics, identify trends in price according to calendar date or sales packaging unit, recognize opportunities for product line growth, and reveal produce varieties that have fallen out of favor. The auctions are uniquely positioned and motivated to share all this detailed marketing information with their growers through their regular summer and winter meetings. Growers can then adjust their crop/variety selection, planting timing, marketing volume, and product mix to realize higher sale prices.

There's just one problem – this is a lot of bulky, unwieldy digital data.

CCE Cornell Vegetable Program teamed up with CCE Eastern NY Commercial Horticulture Program's Liz Higgins, a Production Economics Specialist, the Genesee Valley Produce Auction, and the Chautauqua Produce Auction to cooperatively develop non-digital tools and techniques for organizing, analyzing, and extracting valuable information from each auction's market report data. The project is finishing up the computer-based analysis of 2021 market reports and a review of historical documents and best practices for auction business management predating the advent of computers and digital calculators. We will share the marketing insights with growers during the winter and spring of 2022. The main focus will be to develop a digital-free method to conduct the same analytical process, create a teaching tool-kit, and train auction staff on how to use it.

This work, funded by the Northeast Extension Risk Management & Education program, also focuses on helping the auctions realize efficiencies in their record-keeping processes and improve understanding of what wholesale buyers want in terms of both produce and an auction buying experience. At the end of the project, the Genesee Valley and Chautauqua Produce Auctions will be well-positioned to undertake detailed end-of-year business analysis and to share their market opportunities findings with the nearly 100 growers who rely on these important sales outlets. The teaching toolkits developed during the project can serve as templates for other produce auction businesses in NY and beyond.

This material is based upon work supported by USDA/NIFA under Award Number 2018-70027-28588.

NORTHEAST EXTENSION RISK MANAGEMENT EDUCATION

USDA National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

Go-To Insecticide Banned in New York

Cornell Vegetable Program Seeks Alternatives to Chlorpyrifos for Cabbage Maggot Control

Conventional cabbage growers relied almost exclusively on chlorpyrifos for cabbage maggot control until July 31, 2021 when this insecticide was banned in New York. Cabbage maggots feed on the stems of young cabbage plants causing them to die or be stunted, resulting in losses exceeding 50% when the pest is uncontrolled. Cornell previously recommended chlorpyrifos as a protectant for cabbage maggot for all spring-planted cabbage (e.g., plantings from April until mid-June), which accounts for approximately 30% of the New York cabbage acreage or 3,420 acres. For every 5% crop loss due to cabbage maggot during this period, damage results in $1.1 million in lost profits in New York's $72.5 million cabbage industry.

In 2021, the Cornell Vegetable Program conducted an on-farm trial to investigate alternatives to chlorpyrifos for control of cabbage maggot in spring cabbage. Eighteen treatments were evaluated. Rate, application technique (directed spray at plant base vs. in transplant water) and application timing (at or immediately following planting vs. 18 days after planting) was also explored. A special kind of nematode species known to attack and kill maggots was even trialed as a possible novel approach. Treatments were designed with affordability in mind as some of the alternatives may cost 10-15 times more than chlorpyrifos.

First year results revealed an affordable alternative to chlorpyrifos that resulted in 93% control of cabbage maggot. Unfortunately, this treatment also stunted young cabbage plants. Although none of the other treatments had significantly lower cabbage maggot infestation than the nontreated, most of them had numerically less damage. The results showed trends regarding which application techniques were most effective, an aspect which will be explored thoroughly. Cornell Vegetable Program Specialist Christy Hoepting is a collaborator on a 2-year project (2022-2023) with Cornell Entomologists Brian Nault, Daniel Gilrein, and Faruque Zamen that seeks to identity affordable alternative(s) to chlorpyrifos suitable to the New York cabbage industry. Stay tuned – there will be much more new information to come!

Breaking Down Food Safety Barriers through Unique Educational Approaches

A series of six twilight virtual workshops used one-on-one and small grower group interactions to develop new, long-term interactive farm food safety trainings and educational resources. Grower participants in the workshops were asked what barriers they see as causing them the most trouble and, through individual assistance and input from small farmer groups, solutions were found that are backed by real-world experience.

The virtual workshops were recorded and posted online to make them available to a wider audience. To date, over 450 views have been tallied. Additionally, the Cornell Vegetable Program has been contacted by more than 60 New York farmers looking for resources or wanting to discuss problems they were able to solve by attending the twilight Zoom meetings or watching the videos. More than 16 growers said they attended the meetings AND watched the videos to gain more information.

These workshops were offered as part of multi-state, three-year grant project, SCRUB (Sanitizing & Cleaning Resources for yoUr Business), which focuses on small group farmer wash/pack food safety training. The Cornell Vegetable Program is proud to collaborate with University of Vermont, Michigan State University, and the National Farmers Union – Georgia branch on this project. Evaluation of the project is almost immediate as farmers report back their upgrades and integration of new equipment, and changes in practices for washing produce hygienically. Plus, the farmers are doing a better job of cleaning/sanitizing their facilities and equipment which is important to food safety, as well.

Scouting Program and On-Farm Research Combine to Improve Onion Thrips Control in Muck-Grown Onions

Onion thrips is the most economically damaging insect pest of onion in New York State and are especially problematic in the Elba muck where over one-third of the state's onions are grown. Uncontrolled, thrips can cause yield losses of 50% or more. Furthermore, when onion leaves are ravaged by excessive thrips feeding, the plants fail to lodge and become more prone to bulb rot. To protect plants against onion thrips, the first line of defense is the use of insecticides. Sustainable insecticide programs are developed from on-farm research trials, which consider strategic rotation of products to prevent insecticide resistance and make use of spray thresholds to limit overall insecticide application.

Through the CCE Cornell Vegetable Program onion scouting program, onion thrips pressure and insecticide efficacy are measured in real time. The scouting program has allowed muck onion growers to skip insecticide sprays when thrips pressure in their fields is below established spray thresholds. Unfortunately, in recent years growers have not been able to effectively keep thrips pressure below economically damaging levels (i.e. < 3.0 thrips per leaf). For example, in 2020, onion thrips exceeded 3.0 per leaf in 5 out of the 8 (= 63%) of the onion scouting fields in Elba. Insecticide products Agri-Mek SC 3.5 fl oz/A and Exirel 13.5 fl oz/A were especially unsuited for keeping heavy thrips pressure under control. In 2020, Exirel was used in only 2 out of the 8 (= 25%) of the scouting fields. Radiant 10 fl oz/A was the only insecticide that could control a high thrips population (e.g. 5 thrips per leaf), but can only be used twice per growing season for resistance management. Clearly, another effective insecticide treatment was needed.

In 2020, Onion Specialist Christy Hoepting and her Program Assistants, Emma van der Heide and Sarah Caldwell, took advantage of a field with heavy thrips pressure (e.g. 20 thrips per leaf) and conducted an insecticide trial. Results from this trial showed that the high rate of Exirel (20.5 fl oz/A) was the most effective single product treatment in the trial, which controlled thrips significantly better than Radiant 10 fl oz/A. Minecto Pro 10 fl oz/A, a pre-mix of Exirel 13.5 fl oz and Agri-Mek, controlled thrips significantly better than Agri-Mek alone and was as good as Radiant 10 fl oz/A. Hoepting shared these exciting results with the Elba growers who made some adjustments to their thrips management plans.

In 2021, 7 out of 8 (= 88%) scouting fields used Minecto Pro 10 fl oz/A instead of Agri-Mek and added high rates of Exirel 16-20.5 fl oz/A to their spray programs. Consequently, onion thrips only exceeded 3.0 thrips per leaf in two fields (= 25%) and 7 out of 8 scouting fields lodged properly. We estimate that the new thrips program improved yields by 20% or more in 2021.

Onions green to the tip — no thrips allowed here!
Photo by Emma van der Heide, Cornell Cooperative Extension

Winter-Grown High Tunnel Cover Crops May Reduce Fertilizer Inputs and Contribute to Soil Health and On-Farm Nutrient Cycling and Economics

High tunnels soils need help! The intensity of tillage, fertilization, and perpetual cropping requires intervention for long term soil viability. In greenhouses and high tunnels composts and fertilizers are applied annually. This results in nutrient imbalances, disease and decreased yields. CCE Cornell Vegetable Program research revealed 94% of tunnels had excessive phosphorus and 66% with soil pH greater than 7.0! The problems don't end in the soil. A majority of foliar analyses indicated excess nitrogen. This problem is particularly acute on farms with limited land base with no opportunity for movable tunnels such as urban farms. Cover crops, an essential practice in other vegetable systems, could play an important role to reduce these challenges, but in a recent survey less than 10% of high tunnel farms were implementing cover crops. We've embarked on research to better understand how to implement cover crops indoors and hopefully increase on-farm adoption.

Our hypothesis is the integration of winter cover crops in high tunnels will decrease nitrogen demand of the tomato crops, leading farmers to apply less fertilizers and compost. To study this, we are growing winter cover crops at a cooperating commercial farm in Yates County. We are growing a mix of triticale and Austrian field peas with two different planting dates and the addition of row cover.

Early data shows:

Triticale + Austrian Field Peas Mix Often Yields Slightly More Cover Crop Biomass
Across both planting dates, we documented triticale and field pea mix outperforming the triticale alone in both row covered and uncovered settings.

Row Cover Can Increase Biomass
At both seeding dates, all treatments that had row cover yielded more biomass. The impact of row cover on biomass production was much greater in the later seeded planting.

Plant Early
The earlier planting produced almost 4-5X more biomass than the treatments in the later planting, emphasizing the importance of establishing a cover crop early in the season, soon after tomato production ends for the year.

Nitrogen Contributed by Cover Crops = Less Need for Fertilizer Inputs
We estimated the pounds of nitrogen contributed on a per acre basis using the end of season biomass measurements and the corresponding foliar nitrogen percentage. In the early planting we observed that the triticale treatments (with and without row cover) contributed more nitrogen compared to the triticale plus Austrian field pea treatments. The triticale treatments in the early planted tunnel produced ~72 lbs. of nitrogen/acre!

In short, these findings offer the promise of reduced fertilizer inputs for farmers with high tunnels, or potentially other high organic matter soils, such as the compost based beds found in urban agriculture.

A video that describes the work has been posted to the Cornell Vegetable Program YouTube channel and was submitted to the Northeast Cover Crops Council 2021 Annual Conference.

Partners in this project include Maple Lane Farm, Cornell Vegetable Program, Harvest NY, and our funding sources USDA NRCS Conservation Innovation Grant and Federal Capacity Funds.

GROWER SUPPORT

Abe Datthyn Farm – Kevin Datthyn, Mike Johnson

Alan Tomion Farms – Alan Tomion, Paul Tomion

Amos Zittel & Sons, Inc. – Mike Wright

Ben Girod Jr.

Bezon Farms – Joe Bezon

Bickford Farms – Bob Bickford

Big O Farms, Inc. – Max Torrey

Bob-Mar Farm Inc – Phillip White

Bodine Farms – Robert Bodine

Bourbon Shack Farm – Terry Bauer

Bowman Farms – Larry Bowman

Brewster Street Farm – Lauren Dawes and others, Journey's End Refugee Service

Brubaker's Produce – Arlan Brubaker

Bushart Farms – Brent Bushart

C. Mark Farms – Cory Mark

Chautauqua Produce Auction – Chester Bricker, Crist Byler

Common Roots Farm

CY Farms – Chuck Barie

Dale Martin

Dan Dunsmoor Farms – Joe Burghart

David Swarey

Decker Farms – Jeff Decker

Dewey Produce – Mark Dewey

Dirt Rich Farm – Laura Colligan

Duyssen Farms – Dan Duyssen

Edgewood Farms – Clay Phelps

Evergreen Farms – Eugene Hoover

Farm Fresh First – Mike Gardinier, Roger Ward, Buzzy Lowe, Steve Lashbrook, Mike Lynch

Fenton's Produce – Paul Fenton

Fraser Garlic Farm – Ed Fraser

G. Mortellaro & Sons – Matt Mortellaro

Gakwi:yo:h Farms – Michael Snyder

Gary Patterson

Genesee Valley Produce Auction –Emma and David Nissley, Ben Girod

Gianetto Farms – Nick Gianetto

Green Heron Growers – Steve and Julie Rockcastle

Gregg Rush Farms – Gregg Rush

Groundwork Market Garden – Mayda Ponzatides

Harrington's Produce – Andy Harrington

Henderberg Farm – Charles Henderberg

Henry W. Agle & Sons, Inc. – Jon Agle, David Agle

Huntington Farm Market – Dan Huntington, Carl Huntington

J. Hurtgam Farms – Jeff Hurtgam

Jacob Hertzler

Jacobson Farms – Adam Jacobson

John and Carolyn Nolt

John Dunsmoor Farms – John Dunsmoor

John E. Miller

John R. Wallace Farms – John Wallace

Johnson Creek Produce – Levi Stauffer

Johnson Potato Farms – Eric, Mark, and Jack Johnson

Joseph DiSalvo Farms – Joe Jr., Joe III, and Rick DiSalvo

K.S. Datthyn Farms – Eric Tuttle

Kirby's Farm Market – Chad Kirby

Kludt Farms – Russ Levett

Kreher Family Farms – Brett Kreher, Mike Kreher, Josh Jurs, Peter Martin

KSD Onions LLC – Eric Tuttle

L-Brooke Farm – Grady Vincent, Patty Kent, Joe Augello

Leverenz Farms – Dave Leverenz Sr. and Jr.

Love Beets – John Henderson, Daniel Cross, Simon Wood, Robin Leous

M&W Seed Co – Michael Murphy

Mahany Farms – Gary Mahany

Mahlon C. Byler

Maple Lane Produce – Nelson and Ruth Hoover

Martens Farm – Peter Martens

M-B Farms – Dave Paddock

McCollum Orchard – Bree and Rich Woodbridge

McCracken Acres – Eric McCracken

Mele Garlic Farm – Mike Mele

Melvin Hostetler

Mike Chiavetta

Morgan Brothers Farm – Mark Morgan

Mose Miller

Munsee Farms – David Munsee

My-T Acres – Jason Gaylord, Pete Call

NY FarmNet Consultant – Karen Baase

Oles Family Farm – Jane Oles

Pedersen Farms – Rick Pedersen

Pleasant Valley Farm – Paul and Sandy Arnold

Providence Farm Collective – Beth Leipler

R. L. Jeffres & Sons – Tom Jeffres

Reeds Farm – Bruce Reed

Reeves Farms LLC – Mark Reeves

Reukauf Farm – Charles Reukauf

Robinson Farms – Greg Robinson

Root Brothers Farms – Robin Root

Russell Farms, Inc. – Peter Russell

Sam Kostarellis

Seneca Foods – Jeff Johnson, Jay Westfall, Jerome Kingston

Sorbello & Sons – David, Dylan, and Rane Sorbello

Spoth's Farm Market – Kevin Spoth, Edward Spoth

Triple G Farms – Guy Smith

Urban Fruits and Veggies – Allison DeHonney

Voelpel Farms, Inc. – Kassie Voelpel

W.D. Henry & Sons, Inc. – Ryan O'Gorman

Walnut Hill Farm – Darvin Weaver

Walstead Farms – William and Donna Walz

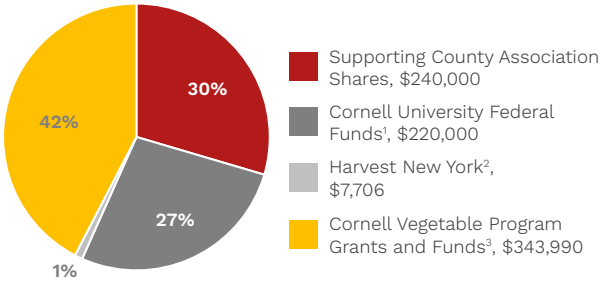
Williams Farms, LLC – John, Mike, and Garett Williams

Windy Valley Farm – John Girod

Woody Acres Farm – Dave Woodward

The Cornell Vegetable Program works with Cornell faculty and Extension educators to address the issues that impact the New York vegetable industry. The team offers educational programs and information to growers, processors and agribusiness professionals in pest management, variety evaluation, cultural practices, market development, and farm food safety.

2021 OPERATING BUDGET



[1] USDA National Institute of Food and Agriculture Smith Lever Funds

[2] New York State funds

[3] Includes funds from industry, state and federal grants, event registrations, sponsor support, and Cornell Vegetable Program reserve accounts

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