

# 2023 ANNUAL REPORT



## *Real-World, Field-Tested Results for New York's Farm & Foods Economy*



Funding for the Northern New York Agricultural Development Program  
is supported by the New York State Legislature and administrated by the NYS Department of Agriculture & Markets.  
Research • Reports • Resources • Videos • [www.nnyagdev.org](http://www.nnyagdev.org)



## New York State Legislature Agriculture Committees

### New York State Assembly Ag Committee

**Chair: Donna A. Lupardo**

*"The Northern New York Agricultural Development Program is widely recognized as a leader in the development of New York's agricultural industry, producing quality research with statewide and national significance. Northern New York is critical to our state's thriving food economy."*  
— NYS Assemblywoman Donna A. Lupardo, Assembly Agriculture Committee Chair

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Michael J. Fitzpatrick • Christopher S. Friend • Aileen M. Gunther • Stephen Hawley  
Billy Jones\* • Anna R. Kelles • John Lemondes • Brian D. Miller • Steven Raga • Linda B. Rosenthal  
Angelo Santabarbara • Amanda Septimo • Al Stirpe • Chris Tague • Jaime R. Williams • Carrie Woerner • Stefani Zinerman

*\*Special thanks to Assemblyman Billy Jones for advocating for NNYADP funding.*

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*\*\*Northern NY Legislators above and William A. Barclay, Scott Gray, Joseph A. Griffo, Matthew Simpson, Daniel G. Stec*



## Northern New York Agricultural Development Program

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Jon Greenwood, Canton, 315-386-3231

Jon Rulfs, Plattsburgh/Peru, 518-572-1960, 518-643-7958

<https://www.nnyagdev.org>

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• Tony LaPierre, Chazy • Al & Cindy Mulbury, Peru • Tom Remillard, Peru • Dan Tetreault, Champlain • Shannon Wilkins, Peru

**Essex County:** Ian Ater, Keeseville • Lucas Christenson, Keeseville • Tony Corwin, Lake Placid • Henry Drinkwine, Ticonderoga  
• Craig DuMond, Ray Brook • Lee Garvey, Willsboro • Pierre-Luc Gelineau, Willsboro • Shaun & Linda Gilliland, Willsboro  
• Adam Hainer, Wadhams • Rob Hastings, Keene Valley • Kristen & Mark Kimball, Essex • Bernard Leerkes, Ticonderoga  
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• Mike Murphy, Malone • Randy Ooms, Constable • Jo Ellen Saumier & Kirby Selkirk, Chateaugay • Norm Shipman, Burke  
• David Stauffer, Brushton • Peter & Suzanne Zelinski, Moriah

**Jefferson County:** Dani Baker, Wellesley Island • David Belding, Wellesley Island • Jay Canzonier, Belleville • Dennis Forrester,  
Henderson • Bruce Gibson, Lacona<sup>1</sup> (main farm in Jefferson County) • Delta Keeney, Watertown • Mike Kiechle, Philadelphia  
• Patsy Makuch, Carthage • Greg Mason, Cape Vincent • Gail Millard, Watertown • Lynn Murray, Copenhagen  
• Doug Shelmidine, Belleville • Nathan Smith, Evans Mills • Ed Walldroff, LaFargeville • Steve Winkler, Rodman

**Lewis County:** Emily Beller, Carthage • Violet Colwell, Glenfield • Larry Herr, Lowville • Nadeen Lyndaker, Croghan • Jake Moser,  
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**St. Lawrence County:** Kevin Acres, Madrid • Bob Andrews, Gouverneur • Dan Chambers, Heuvelton • David Fisher, Madrid  
• Rich Hamilton, Hermon • Andy Hurlbut, Canton • Brian Knight, Lisbon • Jim Sheehan, Potsdam • Kenneth Tupper, Canton  
• Bob Zufall, Lisbon

**Adjunct: Oswego County:** Mark Savage, Boonville • **Oswego County:** Bruce Gibson, Lacona, (sister farm in Jefferson County)

*"We thank the New York State Legislature, particularly the Assembly Agriculture Committee, for recognizing the value of the NNYADP's prioritized research to our farms and the financial sustainability of our communities." — NNYADP Co-Chair Joe Giroux*





# NNYADP: GROWING NY'S FARM & FOODS ECONOMY

The Northern New York Agricultural Development Program steadily returns on the commitment made by the New York State Legislature to grow the farm and foods economy represented by the northernmost part of the state. The NNYADP has become a research leader recognized by the agricultural industry, conservationists, and media for real-world, field-tested, data-based results beneficial to regional, statewide, and national interests.

**Legislative funding of the NNYADP** makes possible the research needed for farms to continually adapt to such challenges as weather extremes, emerging crop and livestock pests and diseases, rising labor and production costs, new regulatory requirements, and the "unexpected".



**Examples of NNYADP return-on-investment** in this report include:

- helping farms respond to new state & federal green energy goals, with two case studies on the feasibility & economics of the co-digestion of dairy manure and food waste for NNY dairies
- unprecedented farm-based water quality/tile drainage research
- northern climate-adapted "Superfruits," non-maple tree syrups, year-round greens production research
- E-learning modules for the dairy workforce
- updating whole farm & precision nutrient management practices
- evaluating ways to manage emerging pests and diseases
- investigating natural ways to enhance young animal health
- sustainable cropping trials and regenerative ag practices
- enhancing the use of the NNY-pioneered nature-based solution to NNY's #1 alfalfa pest; this biocontrol is now applied to also reduce corn rootworm in multiple states.

Also see page 11 for Northern NY ag industry growth indicators.

The **NNYADP Farmer Committee** is a diverse group of astute agricultural business owners and entrepreneurs. Members include large & small farm operators, young & veteran farmers, father-daughter and husband-wife teams, State & county Farm Bureau presidents, and dairy, crops, vegetables, fruit, nursery, and maple producers. Their mix of experience, enterprises, and approaches guides the NNYADP's precisely-targeted small grants funding decisions.

Learn more at [www.nnyagdev.org](http://www.nnyagdev.org).

## NNYADP Hallmarks



### • Fiscal Efficiency:

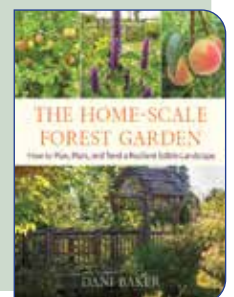
98.5% of funding goes to research & results transfer

- **Publicly-accessible NNYADP project results:** [www.nnyagdev.org](http://www.nnyagdev.org)
- **Water quality/tile drainage research results** sought by farmers and conservationists in NYS, Northeast, nationally
- **Timely & anticipatory research**, e.g., food hub potential, co-digestion feasibility/economics, animal & crops climate adaptability
- **NNYADP funding by NYS Legislature** recognized in NNYADP materials
- **Highly visible research results** through conferences, Extension, webinars, media...
- **NNYADP research serves:**
  - #2 region for total agricultural sales
  - #2 region for total farm acres:
    - 1.1+ million acres, only region to gain agricultural acres 2007-2017
  - #1 region for maple production
  - #1 Christmas tree-producing county
  - . 692 young farmers <35 yrs old
  - . 2018 new & beginning farmers
  - . 2,578 farmers w/179 or fewer acres
  - . female farmers: 37% of all farmers in Northern New York (Census of Ag)
- **Fosters local food security**

## CONGRATULATIONS!

### NNYADP Farmer Committee Member Dani Baker

2023 GardenComm Gold Laurel Award winner for her book *The Home-Scale Forest Garden, How to Plan, Plant and Tend a Resilient Edible*



# NNYADP WATER QUALITY RESEARCH

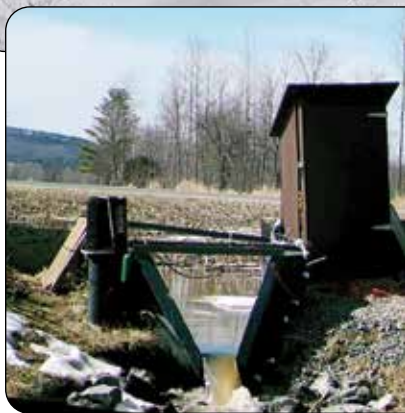


*“This NNYADP-prioritized research is developing a real-world database for creating and refining best management conservation and agricultural guidelines that can work in tandem to protect both water quality and crop production success.”*  
— NNYADP Co-Chair Jon Greenwood

## Creating a Real-World Best Management Database

### Key Points

- **NNYADP tile drainage research** is now building a foundational, year-round understanding of how farm tiling impacts the complex movement of water and nutrients into, across, and through soil, and how it impacts water quality, crop production, and agricultural environmental stewardship goals.
- **Field trials in the Lake Champlain watershed:** first (2012) on NYS DEC land near Chazy; now on a working dairy & crop farm with tile-drained & non-drained fields in Peru, NY.
- **Project is applying edge-of-field monitoring technology:** Project is applying edge-of-field monitoring technology that enables 24/7 monitoring capabilities across all weather conditions.
- **This NNYADP research draws widespread interest:** The progressive data and results of this research have been presented at conferences of farmers, agronomists, soil health specialists, natural resource conservation professionals, and national soil & crop science associations.
- **April 2023: The results of this research** were presented in New York’s Finger Lakes region at the *Managing for Water Quality & Soil Health* workshop by project leader/Miner Institute Research Scientist Laura Klaiber. Workshop was sponsored by Partners for Healthy Watersheds, the Cayuga County Soil & Water Conservation District, and local, state, and regional agricultural organizations.
- **The progression of this NNYADP research quantifying the long-term agronomic & environmental aspects** of tile drainage usage, including edge-of-field trial data on surface & subsurface water and nutrient movement, is posted at <https://www.nnyagdev.org>.



NNYADP year-round tile drainage research is producing data showing seasonal impact.

*185 people representing 31 New York State counties participated in the first NNYADP Co-Digestion Project Webinar.*



Researcher Laura Klaiber checks the on-farm tile drainage monitoring equipment for her NNYADP research project.



# INNOVATING RESEARCH FOR GREEN ENERGY FARMING

*"Many do not realize that innovative agricultural research is happening right here in the North Country. As dairy farmers across the country continue to face challenges, the Northern New York Agricultural Development Program's projects provide vital data and insights to help our local agricultural industry not only adapt the most recent green technologies, but also be a leader in groundbreaking research." — New York State Assemblyman Billy Jones*

## The Economic Feasibility of Co-Digestion of Manure & Food Waste

### Key Points

- **The U.S. dairy industry** has a goal to be carbon neutral by 2050.
- **New York State Law** requires food waste producers of more than 2 tons/week to divert that waste from landfills if there are accepted options with 25 miles for fees not exceeding 10% above landfill tipping rate.
- **In 2022, the farmer-driven NNYADP prioritized an economic feasibility study** of the co-digestion of dairy manure and food waste to produce electrical or renewable gas (RNG) energy.

*"Although manure management in New York state contributes less than 2% of total greenhouse gas emissions, and solid waste management contributes approximately 5%, implementing their removal through anaerobic digestion will have near-term positive action for mitigating climate impacts,"*

*— Lauren Ray, Cornell University  
Agricultural Engineering Specialist*

- **Two NNY farm case studies were showcased** at a June 30, 2023 NNYADP Media Day at Adirondack Farms, Peru, NY. Speakers included farm owners Jon Rulfs and Shane St. Cyr, New York State Assemblyman Billy Jones, and project leader Lauren Ray. Ray highlighted the resources, costs, and revenue aspects of:
  - 1) adding co-digestion of food waste to a digester currently turning dairy manure into electrical energy, and
  - 2) installing a new co-digestion system to generate RNG.The studies evaluated system needs and costs, tipping fees, and regional food waste sources.

**A farm tour** by Rulfs and St. Cyr provided media the opportunity to see the farm's current manure-only digester that has produced electrical and now RNG energy. A byproduct of the digestion process provides soft, dry bedding fiber for the farm's dairy herd.

*"Through manure digestion, we can be part of the solution in our nation's response to climate change.*

*Through this NNYADP research, we are working to bring carbon neutral farming to our region and the state."*

*— Adirondack Farms owner Jon Rulfs*

*Farm owner Jon Rulfs and Assemblyman Billy Jones examine digestate fiber bedding.*



### NNYADP Media Day at Adirondack Farms

*Top: Lauren Ray, farm co-owner Shane St. Cyr, and NYS Assemblyman Billy Jones.*

*Center: Shane St. Cyr points out the farm's digester building.*

*Above: St. Cyr answers media questions near a truck loading RNG.*

# KEEPING NORTHERN NEW YORK DAIRY STRONG



## Enhancing Young Dairy Animal Health

### NNYADP Dairy Calf Probiotic Research Meets International Need

*Left: Graduate student Taylor Turney and Miner Institute Research Technician Salim Jones weigh a calf in the NNYADP kefir project. Photo: Cari Reynolds*

**Background:** 2018: USDA attributes 56.4% of pre-weaned dairy heifer mortality on U.S. dairy farms to diarrhea or digestive issues. 2020: NNYADP research identifies most prevalent enteropathogens contributing to diarrhea in neonatal calves on NNY farms. 2022-23: NNYADP-Miner Institute project evaluates kefir, a fermented probiotic beverage traditionally made with cow's milk, as a calf health aid.

### Key Points

- **January 2023:** Results of NNYADP research testing kefir as a probiotic aid to dairy calf health presented at Dairy Days in Watertown and Lowville.
- **March 2023:** Kefir project co-leaders Cari Reynolds and Sarah Morrison, Ph.D. of Miner Institute, Chazy, NY, shared project results at 2023 Smart Calf Rearing Conference in Germany.

***"Earlier that morning at the conference, Dr. Renaud discussed the need for more science to support the growing number of antimicrobial alternatives. I was glad to have that very (NNYADP project) data to share, and to be on the forefront of this approach to antimicrobial stewardship."***

***— Carl Reynolds, Miner Institute***

- **May 2023:** "Hoard's Dairyman, The National Dairy Farm Magazine," Fort Atkinson, WI, and Ag Weekly, WWNY TV, Watertown, NY, recognized NNYADP's kefir research results.
- **June 2023:** Kefir project results presented at the 2023 American Dairy Science Association meeting held in Ottawa, Ontario, Canada.
- **While this single trial with 140 calves** did not show the hoped-for management of diarrhea in young dairy animals, the calves fed kefir at all three farms were more likely to double birth weight by weaning time than the calves not receiving the kefir. Learn more at [www.nnyagdev.org](http://www.nnyagdev.org): Investigating Kefir as a Probiotic Supplement NNYADP dairy research project results report.

***"The use of E-learning systems can serve dairy farms as a tool for developing an on-farm learning culture that incorporates effective training programs to support employees, management, cow health, quality milk production, and sustainable farm businesses."***

***— Paul D. Virkler, DVM, QMPS***

### DAIRY WORKFORCE: E-Training Project Presented to National Mastitis Council

February 2023, National Mastitis Council Annual Meeting, Atlanta, Georgia: NNYADP-funded "Assessing the Effect of E-Learning Training Systems on Milk Quality and Dairy Parlor Performance" project, conducted by Quality Milk Production Services (QMPS), presented. Project results are globally available via open-access JDS Communications Journal of the American Dairy Science Association.



*Left: Beech syrup made with reverse osmosis (RO); right: without RO.*



*Research canisters on beech trees.*

## NNY Tree Syrup & Forest Research

### Product Innovation & Forest Conservation

- **Early 2023:** NNYADP research shows the potential for tapping American beech trees for syrup production.
- **Beech syrup production** would utilize a tree that currently has low economic value and foster forest biodiversity.

***"There is a market for beech syrup, even a beech beverage, with the potential for value much higher than maple... This early research is a first step toward determining whether the abundant beech saplings with prolific root sprouts could yield enough sap for profitable syrup production for northern New York maple producers."** — Adam D. Wild, Director, Uihlein Maple Research Forest, Lake Placid*

### International Maple Grading School Comes to NNY

NNYADP collaborated with the International Maple Grading School & Quality Control Program (International Maple Syrup Institute & North American Maple Syrup Council) to provide beginning and advanced producers with day-long science-based instruction and hands-on activities in September 2023.



## APPLYING AGRICULTURAL TECHNOLOGY



### Whole Farm Sustainability, Manure Management, Satellite-Based Mapping

**Farming requires management of and adaptability** to a complex mix of factors: animals, water resources, soil types, crops, topography, micro-climates, weather extremes, markets, technology, regulations, transportation, costs... NNYADP precision agriculture research is helping farmers find ways to be more efficient with on-farm resources and innovative in turning waste into assets, and making technology accessible by more farmers at less cost. With NNYADP grants funding, preeminent nutrient management researcher Quirine M. Ketterings, Ph.D. is developing and testing opportunities to apply technology to support precision production on a whole farm basis that is also good for the environment.

### Whole Farm Nutrient Mass Balance Research

- **NNYADP-funded whole farm nutrient and carbon footprinting research** is working with farmers to identify opportunities to reduce the differences in nitrogen, phosphorus and potassium imported on-farm in feed, fertilizer, animals, and bedding vs. that exported off-farm in milk, crops, animals, and manure.
- **Farm-specific data and benchmarks** help farmers maximize nutrient applications and improve operational efficiency, while also enhancing environmental stewardship.

- **Enhancing on-farm efficiency** can reduce costs of production and greenhouse gas inventories, and direct better distribution of manure to advance soil health and on-farm carbon sequestration over time.
- **Ketterings' research** is applying proven and developing technologies, e.g., Geographic Information System data mapping, a Cool Farm Tool, Manure Value & Cost Calculator Tool, and a phone-based app, for in-field calculation of manure nutrient benefits.

### The Value of Manure: It's Not Waste

**Advances in feed management, animal health and nutrition, and whole farm management** have prompted a new look at the value of manure. Ketterings and her research team are working to evaluate nitrogen credits from manure to help farms more precisely adjust for varying manure types (liquid, solid, anaerobic digestate...), application rates and timing, and crop needs.

*"Manure is a tremendously valuable nutrient source (containing all of the 17 essential nutrients for crop growth and production) that can help build soil organic matter, enhance nutrient cycling, and in general improve soil health and climate resilience." — Quirine M. Ketterings, Ph.D., Director, Cornell University, Nutrient Management Spear Program*

### Satellite-Based Farm Mapping

- **Yield stability zone-based field management** is being enhanced by evaluating how accurately and effectively freely-accessible satellite imagery can be applied to help farmers build yield maps.
- **62-84% accuracy levels** for the different evaluating approaches tested: farm fit, year fit, classification...
- **Work continues to refine** the use of machine-learning models to improved the accuracy of satellite-derived yield stability mapping for farmers in NNY & statewide.



### Industrywide Project Collaborators with NNYADP

- Northern New York dairy farms • Certified crop consultants
- Nutrient management planners • Field crop and forage specialists
- Cornell University • Miner Institute • Rochester Institute of Technology

# STRENGTHENING NNY AG'S CLIMATE ADAPTABILITY



*"Due to the regional climate and soil variability within New York State, it is critical to expand cereal rye variety development to northern New York where fall and spring growing conditions vary from other parts of the state."*

*— Virginia Moore, Ph.D.,  
Cornell University & Cover Crops Breeding Network*

*Left: Early growth of rye cover crop that will enhance soil quality and conservation.*

## NNYADP Cereal Rye Cover Cropping Research

**Dr. Virginia Moore leads** a new Cornell University research program focused on breeding plants to support sustainable cropping systems in colder climate regions. She is also a project director with the nationwide Cover Crops Breeding Network, the largest effort of its kind in the U.S.

**Cereal rye can provide several benefits to growers in northern climate areas** including its cold tolerance and ability to suppress weeds. It also helps filter surface and groundwater, adds organic matter to support soil health, reduces soil erosion, and sequesters carbon in the soil.

### **A regional focus group identified the challenges for growing cereal rye in Northern New York:**

- limited availability of varieties suited to the region and the need for more cover crops that can survive winter in NNY
- a short planting window for cover crop seeding after fall harvest
- need for cover crops that provide more consistent and/or earlier growth in spring.

This NNYADP research is helping to address these challenges, which all impact the potential of cereal rye as a double forage crop.

**Working farms** in Croghan, Mooers, and Plattsburgh, and research farms in Canton and Chazy hosted Dr. Moore's cereal rye initial field trial planting in fall 2022.

**The first-year trials' data** show excellent emergence and plant vigor with all 6 varieties at all farm sites. Most plots, regardless of any of 4 planting dates, reached 100% emergence before onset of winter.

**The second-year (fall 2023) trial planting results** with additional data on winter survival, cereal rye stand quality, maturity, termination, and biomass metrics will be available in spring 2024 at [www.nnyagdev.org](http://www.nnyagdev.org).

### **This NNYADP Cover Crops Project is contributing data to:**

- New York State farmers
  - Northeast Cover Crop Council
  - National Cover Crops Breeding Network
- in support of sustainable cropping systems development in colder climate areas.**



*Right: Mature crop of cereal rye in NNYADP trial.*



# BEST PRACTICES: NNY CROP PRODUCTION & NUTRITIONAL QUALITY



Left: WBC damaged corn; right: protection-traited corn.

*“Few controlled studies have been done under northern New York conditions to examine how damage done by Western bean cutworm impacts the aerobic stability of corn silage that in turn influences the forage quality of the silage fed to dairy cows here.” — Allen Wilder, Miner Institute Forage Agronomist*

## WBC Impact on Corn Silage Nutritional Quality & Aerobic Stability

### Key Points

- **Populations of Western bean cutworm (WBC)** were first confirmed in New York state in 2009.
- **WBC can cause significant economic & quality losses** in field corn harvested for grain. NNYADP research fills the knowledge gap on how WBC damage impacts the nutritional quality and aerobic stability of corn silage.
- **Miner Institute Forage Agronomist Allen Wilder** compared silage yield and 25 quality metrics of silage from 2 corn hybrids that differed only by genetic insect damage-protection traits.
- **WBC pressure was high** in the research plots. More than half of the WBC-susceptible plants showed signs of infestation in the corn ear tips; the protection-traited hybrid showed negligible feeding by WBC larvae.
- **The damaged corn** in this trial showed numerically higher levels of mold colony-forming units. Higher yeast count in the damaged corn may have influenced a longer duration of heat development in the ensiled corn. The damage also showed a yield difference of almost 2 tons less of as-fed silage/acre.
- **Although aerobic stability differences** were not noticeable in this single trial, Wilder cautions that palatability differences may impact cow performance. Palatability differences might result from yeast content.

## NNY-Native Biocontrol Protocol Now Easier for Farmers, Custom Applicators

NNYADP-funded trials enhanced the mass rearing & delivery of persistent biocontrol nematodes (PBN) for farmers & applicators.

The research extended the PBN shelf-life in a holding solution that makes planning field applications more convenient.

*“The much-improved delivery method & extended holding capacity allowed us much more flexibility in applying around the local weather constraints.”*

— Dean Wheeler,  
D&D Spray Service, Mannsville, NY



Dean Wheeler, right, with AJ Goblewski, D&D Spray Service

Biocontrol impact on corn rootworm is an unexpected benefit of the NNYADP Farmer Committee’s steadfast commitment to initially developing a solution for alfalfa snout beetle.

*“As a result of the field trials in 2022, I have now adopted the new rearing and delivery protocols, which are more convenient, less costly, and less labor-intensive”*

— Mary DeBeer, DeBeer Agri Service, Moira, NY

**This project prompted 2 new businesses:** DeBeer’s enterprise in Northern New York and a PBN supplier now with offices in Texas and Colorado, helping Midwest corn growers and other crops’ producers.

NNYADP-funded research by entomologist Elson Shields and research support specialist Tony Testa pioneered the use of the NNY-native PBNs as a nature-based pest management solution. Their techniques allow the NNY-native PBN strains to retain their genetic ability to persist in soil for multiple years. Larger funders are now extending this research nationally.

### Research Responds to Horseweed

Since 2019, when multiple resistant (MR) marestail (horseweed) was confirmed on farms in northern NY, it has been rapidly spreading across the region. In 2020, MR marestail contributed to significant soybean losses. This weed’s increasing resistance to the primary control product prompted a need for alternative management options. With an NNYADP small grant, Cornell Cooperative Extension Field Crops Specialist Mike Hunter conducted on-farm trials to test 12 products as applications and mixes.

**The Result: 8 of 12 showed control ratings of greater than 90%.**

Full report at [www.nnyagdev.org](http://www.nnyagdev.org).



# GROWING LOCAL FOODS SECURITY



## NNYADP “Superfruits” Research: Building a Field-Tested Database

### Key Points

- **NNYADP “Superfruits” research** nursery established in 2013 with Juneberry (above) now includes 4 high-value, high-antioxidant fruits: Juneberry, honeyberry, aronia, and elderberry.
- **2022: first outbreak of** spongy moth caterpillar (SMC), which occurs cyclically about every 10-15 years.
- **SMC defoliated** the nursery’s 11 commercial and 9 wild varieties of Juneberry; 4 ornamental varieties were not damaged and flowered profusely.
- **SMC did some damage** to 4-year-old aronia trial, but did not defoliate the plants. Rose chafers and Japanese beetles plus caterpillar impact in 2022, and dry growing conditions in 2021, may all have influenced unproductive fruiting by the aronia in 2022.
- **None of the 20 varieties** of blue honeyberry (added 2018) experienced SMC damage; however, cedar waxwings negatively impacted opportunity for fruiting.
- **SMC did not harm** the 5 American or 2 European varieties of elderberry added to the NNYADP trials in 2020.
- **2023 “Superfruits” trial** results coming in early 2024.

## Precision Apple Orchard Management: Efficiency, Profitability, and Natural Resource Stewardship

**Crop load management** is the single most important practice affecting orchard crop value, and is challenged by NNY’s relatively cool temperatures during primary orchard thinning times.

**NNYADP trials at regional orchards** are 1) evaluating new materials for early bloom thinning to reduce cropload early on to improve fruit size and improve return bloom, 2) evaluating computer-based crop thinning models, including Pollen Tube Growth and Fruit Growth Rate models, and 3) evaluating newly-released commercial products to improve late season thinning.



## Growing Greens Year’round in NNY: Production & Marketing Potential

**Winter greens can bring significant financial return to NNY growers.**

**NNYADP-funded trials** have evaluated 20 varieties of mustard greens with a diversity of leaf colors, textures and flavors for salad mixes.

**Data results on growth rate, yield, quality, taste, and pest/disease susceptibility** help growers select the best mix for their cropping plan and market audiences.

**A survey identified key characteristics of NNY growers** successfully growing winter greens, challenges, and effective marketing strategies.





# NORTHERN NEW YORK AGRICULTURAL ECONOMIC GROWTH INDICATORS



**New Facility for Calf Research, Chazy:** Miner Institute invested in a new transition calf barn that increases animal comfort and expands animal health and growth research



**Frozen Corn for Farm-to-Schools:** Will Trithart, Big Spoon Kitchen, Potsdam, trialed freezing 7,000+ ears of locally-grown corn to expand product line in 21 area schools in partnership with Cornell Cooperative Extension of St. Lawrence County and St. Lawrence-Lewis BOCES



## **Dairy Adds Technology, Burke**

Peterson Dairy Farm installed robotic milking system; from left: Lucas Peterson; Lely Technician Paul McAdam; Keith, Jakob, Erica & Taner Peterson



## **Planting for the Future, Adams Center**

Dave & Chris Loomis, and their 3 grandchildren, added 1,000 firs at Cobbville Farm this spring



## **Coming Soon to NNY's Maple Industry, Colton**

Micah, Corey and Kyle Murray, and Jason Hill will open a maple equipment sales & all-brands service shop in early 2024



**Key Crops Added, Wadhams:** Juniper Hill Farm added no-till perennial asparagus & blueberries, cover crops & irrigation

**Lewis County Ice Cream Trail** completed 2nd year with 13 businesses, 6 communities plus Lewis County Fair on map



**Apple Grower Opens New Cider House, Canton**

**\$30 Million Agri-Mark Dairy Plant Modernization Completed, Chateaugay**  
Franklin County's sole major industry directly supports 100 jobs + 500 ancillary jobs

Photo Credits: Cover: Brian P. Whattam (BPW), Casey Havekes, CCE, Michael Davis, BPW, "Opportunities for Food Hub Development in NNY" report, Lindsay Ferlito; p3: BPW, Dani Baker; p4: Miner Institute; p5: Constance Mandeville; p6: Cari Reynolds, Adam Wild; p7: Stephen Ausmus/USDA, Scott Bauer/USDA; p8: Joe Lawrence, Virginia Moore; p9: Allen Wilder, Mike Hunter, BPW; p10: Michael Davis, Jim Ochterski, Elisabeth Hodgdon, Michael Basedow; p. 11 Miner Institute, CCE St. Lawrence County, Small Town Cultures, Peterson Dairy Farm, BPW, Juniper Hill Farm, CCE Lewis County, North Country Maple Sales & Service LLC, Peggy Greb/USDA; back cover: BPW/Brian P. Whattam.  
Special Thanks: Bill Woodruff & Windsong Farm





## **NORTHERN NEW YORK AGRICULTURAL DEVELOPMENT PROGRAM**

*Established by New York State Legislature to Grow NY's Farm & Foods Economy*

*Funding for the NNYADP is supported by the New York State Legislature  
through the New York State Assembly  
and administrated by the NYS Department of Agriculture & Markets.*

**Farmer-Driven • Real-World, Field-Tested Research • [www.nnyagdev.org](http://www.nnyagdev.org)**