Farm Viability: The Foundation of a Strong Food System

At the New York Farm Viability Institute we believe that a strong food system starts with strong farms. Our organization supports the food system by strengthening New York's farms. At its core, **our mission is to build knowledge that helps New York farms become more viable.**

The New York Farm Viability Institute was created in 2005 as an outgrowth of a USDA Agricultural Innovation Center grant to Cornell. Created as an independent nonprofit, the organization was designed to represent the wide range of New York agriculture. Seven agricultural organizations nominate farmers to serve on the board, and three other seats are for at large members to ensure a diversity of perspectives.

From the beginning our focus has been on funding projects that create and share knowledge that improves the economic viability of New York farms. We remain committed to economic viability because without it, nothing else is possible.

Farm Viability currently runs three programs and is managing around 85 active projects worth about $6.5 million. The NYFVI board is confident that our organization's programs are connecting ag research and education dollars with the highest priorities of New York's farmers.

The nomination process for board members from NY ag organizations, the structure of our grant application and scoring system, and our use of farmer review panels all ensure our program is designed to deliver results for New York's agriculture community. We would like to thank the farmers that have collectively read and evaluated more than 1.000 proposals on behalf of the agricultural community over the years. Your expertise and service are much appreciated.

Led by Farmers, Focused on Farm Viability.

Our mission is to help New York farmers become more profitable and improve the long-term economic viability and sustainability of our state's farms, the food system, and the communities which they serve. We strive to achieve our mission through a **farmer-driven** grant making process connecting **farmer-identified** needs to practical research and education solutions.

We amplify our efforts and the efforts of others through leadership and collaboration. This creation and sharing of knowledge results in positive **farm-level impact.**

Farm Viability: Small Organization, Big Impact

At its core, Farm Viability's mission is to help New York farms become more viable. We do this through strategic management of our grant program, seeking farmer input at every step in the process to ensure the projects we fund will create and share knowledge that will quickly and directly benefit farmers.

FVI Program

Our core program, known as "FVI" is a competitive grant program. Projects are between $25,000 and $125,000 and have two years to complete their work.

The RFP is open to all organizations with ideas that will improve the economic viability of New York's farms. It is not restricted to any specific commodity group, nor are the funds awarded by quota. This allows us to fund the work that is considered to have the most potential in any given year.

Our core program seeks to fund work that will create economic impact for New York farmers. A few years ago we developed five strategic priorities for our program. They help us consider how close to near term impact a project might be. Work in the "Improving Operations" and "Route to Market" priority areas should deliver a return within the life of the grant. Other areas, such as "Incubating New Ideas" are earlier stage work.

To evaluate how we and our projects are performing we track our "return on investment". As part of the final report, project leaders tell us:

Did the farms that participated in the project show an increase in gross revenue, a reduction in operating expenses, or did they make new capital investments? If so, how much?

We know that not every project is going to have a great pay-off, and that's okay. Sometimes research needs to play defense against pests, and sometimes the work is at an earlier developmental stage. That said, overall the most competitive proposals are going to be the ones that are able to deliver measurable farm level economic impact.

So how are we doing? The system is working. For every dollar invested in a project that has completed, nearly $7 dollars has gone back to the agriculture community.

The total economic return from the last 15 years of funding is now just over $149 million. That's why we have such confidence in our program.

Economic Impact of Completed Projects

Strategic Priorities

- Improving Operational Practices
- Fostering Industry-wide Innovation
- Incubating New Ideas
- Building Routes to Market and Improving Marketing Practices
- Developing Human Capital

Measurable Outcomes

- Increased Revenue
- Reduced Input Costs
- Capital Investments
- Jobs

2020 FVI Projects

Title	Organization	Award
Understanding Apple Fruit Growth Dynamics and Water Stress to Manage Irrigation to Maximize Fruit Size and Crop Value	CALS Cornell University	$ 100,000
Biological Control of Seed Corn Maggot and Cabbage Maggot with Persistent Biocontrol Nematodes	CALS Cornell University	$ 79,336
Managing Herbicide-Resistant and Other Difficult-to-Control Weeds in Field and Vegetable Crops Using Electrical Discharge Systems	CALS Cornell University	$ 71,866
Determining the Efficacy of Cuticle-Enhancing Products to Reduce Cluster Rots and Fruit Fly Damage in NY Vineyards	FLGP Cornell University	$ 110,068
Introduction and trialing of newly developed impatiens plants that are resistant to Impatiens Downy Mildew	LIHRC Cornell University	$ 109,000
Implementation of automated premilking stimulation on NYS dairy farms - Stage 1	CVM Cornell University	$ 49,991
Producer Driven Parasite Control for New York Small Ruminant Producers	CCE Ulster County	$ 10,494
Phase 2 Squash Dragon: Optimizing UV-treatment for reducing downy mildew, powdery mildew and angular leaf spot disease on cucurbits with leaf agitation	Rensselaer Polytechnic Institute	$ 119,854
MyCow$: a novel tool to improve dairy farm business decision-making through real time	CALS Cornell University	$ 60,239
Laser Technology Aided Agricultural Wildlife Damage Management	CCE Cornell University	$ 102,549
Accelerating Adoption of Cover Crops and Advanced Soil Regenerative Practices in New York	American Farmland Trust	$ 67,264
In-field study to optimize UV-treatment for reducing downy mildew, powdery mildew and angled leaf spot disease on cucurbits with the addition of leaf agitation	Icahn School of Medicine at Mount Sinai	$ 111,634

The 2020 FVI program was highly competitive. 56 proposals were received and resources allowed for 12 projects to be funded. The board was particularly pleased to see that three proposals, benefiting multiple commodities, were well received by the farmer review panels. Exciting work to evaluate a nonchemical approach to weed management, biological control of corn and cabbage maggots, and a DIY laser light scarecrow to keep birds out of valuable crops will help fruit, vegetable, and field crop farmers.

David Ryan, NYFVI Chair
Rare Earth Nursery
NYS Nursery and Landscape Association

Cost Effective, Multi-Crop Research

Typically, multi-crop proposals don't fare well with reviewers. In 2020 these projects cracked the code.
Often times when applicants believe their proposal will help "every NY farmer" the proposals are broad and don't always build a reviewer's confidence. The three projects described below are focusing on tools that will be effective in field crops, vegetable crops and fruit orchards. All developed strong research plans that will provide added value, and are saving valuable time in extending their knowledge across commodities.

Julie Kikkert is a Team Leader for the Cornell Extension Vegetable Program. She has successfully led a number of NYFVI projects. We are appreciative she was able to lead this work when Dr. Nafchi left Cornell.

Laser Technology Aided Agricultural Wildlife Damage Management. Scarecrows are an iconic symbol of agriculture; however, the historical model isn't very good at preventing wildlife damage in crops. Cornell Cooperative Extension specialist Ali Mirzakhani Nafchi and his colleagues have designed a modern day scarecrow, using easily available materials and laser lights for use in vegetable fields and fruit orchards. This project will support Nafchi in his efforts to evaluate and refine the new laser light scarecrow on 8 farms and conduct extensive outreach about its effectiveness among the farming community. Best of all, just like the old type of scarecrow, this one can be built by farmers. It is estimated that one laser scarecrow will deter wildlife on a full acre at a cost of about $500-$700. Commercially available laser products cost around $10,000.

Dr. Lynn Sosnoskie recently joined Cornell University as an Assistant Professor. The Electrical Discharge System project was her first NYFVI proposal.

Managing Herbicide-Resistant and Other Difficult-to-Control Weeds in Field and Vegetable Crops Using Electrical Discharge Systems. Farmers fight weeds for good reason. They compete with crops for resources, may harbor pests and pathogens and reduce harvest efficiency. Herbicide resistance is becoming increasingly common and creating an urgent need for new management tools to control unwanted vegetation. This project will evaluate the efficacy and economics of a commercially available weeder that uses an electrical discharge system (EDS) as its control mechanism. Crop health and soil microbiome will be evaluated to understand any unintended consequences. Led by Lynn Sosnoskie at Cornell University, research will take place on commercial vegetable and field crop farms and at the research station. Producers will be directly involved in the development, implementation and evaluation of the technology.

Cornell Professor and Entomologist, Dr. Elson Shields, has a long history of projects that have helped NY farmers. This is his 8th project selected by the farmer review panels and funded by NYFVI.

Biological Control of Seed Corn Maggot and Cabbage Maggot with Persistent Biocontrol Nematodes. Since the late 1990s, the use of neonic seed coatings has allowed growers to evolve their management practices and adopt cover crops without the risk of seed corn maggot (SCM). In this project, Entomologist Elson Shields with Cornell University will learn if persistent biocontrol nematodes can manage seed corn and cabbage maggot as an alternative approach to treated seed. Nematodes can be used in conventional and organic systems and have proven to be an effective solution for the alfalfa snout beetle, corn rootworm and black-vine root weevil in strawberries. They are also being researched to fight the Colorado potato beetle, onion maggots, and aphids in greenhouses.

Before I became an apple grower, I received a masters degree at the University of Minnesota. From there, I became the State Fruit Specialist for the Minnesota Extension Service bringing academic research to growers.

Now, I enjoy reading the FVI proposals because it lets me connect my interest in research with the real world needs of New York's ag community.

Jill MacKenzie
Two of Clubs Orchard
NYFVI board member

Apples, Grapes and Green Industry

Understanding Apple Fruit Growth Dynamics and Water Stress to Manage Irrigation to Maximize Fruit Size and Crop Value. Apple crop value depends on yield and fruit size and fruit quality. Through precision crop load management growers attempt to optimize yield, fruit size and fruit quality. However, even when growers control the number of apples per tree by precision thinning, fruit size can be negatively affected by plant water stress and dramatically reduce crop value. This project, led by Terence Robinson at Cornell University will use sensors (micro-tensiometers) developed at Cornell, as well as sensors from Italy to determine a threshold of stem water potential which maximizes fruit growth rate. The long-term plan is to use this knowledge to create automated apple irrigation systems that will optimize fruit size in any given year to maximize crop value. Near term, the work will inform and improve the Cornell irrigation model which currently guides apple irrigation and was developed with support from NYFVI a few years ago.

Evaluating New Fungicide Options for Control of Colletotrichum Fungi Causing Apple Fruit Bitter Rot in New York. Increasingly hot weather and intense summer rains are contributing to a rising incidence of apple fruit bitter rot in NY orchards. This disease is caused by fungi, Colletotrichum fioriniae, C. chrysophilum anda recently identified new species C.novaboracense. Since different Colletotrichum species can differ in fungicide sensitivity, virulence, life cycle and temperature requirements for infection and survival, better understanding of which species cause apple bitter rot in NY will allow growers to preserve classic fungicide options and utilize new control options. The project, led by Srdan Acimovic at Cornell's Hudson Valley Research Lab, will evaluate efficacy and economic benefit of new fungicides, as well as the current management practices against the various Colletotrichum species. If successful, the project will increase the number of options that growers can use to prevent resistance of Colletotrichum species to the currently overused Group 11 fungicides. *Note: This work started in 2020, but unfortunately the Project Leader left Cornell's Highland Research Lab and has not been replaced. We will put the funds to good use in the next grant round!*

Determining the Efficacy of Cuticle-Enhancing Products to Reduce Cluster Rots and Fruit Fly Damage in NY Vineyards. In Eastern US vineyards, late season rainfall often promotes the development of cluster rots, which can substantially reduce yield and quality. The organisms that cause sour rot, a particular form of cluster rot, infect berries through cracks in the skin and are then spread rapidly by fruit flies. Insecticides are used for fruit fly control, but pesticide resistance to some of these options has recently been found in the Finger Lakes. Two recently developed products, Parka and Hydroshield, are designed to enhance (thicken) the waxy cuticle of berries. This could reduce berry splitting and fruit fly activity, which would in turn minimize sour rot development and yield losses. Cornell Cooperative Extension Specialists Hans Walter-Peterson with the Finger Lakes Grape Program (FLGP) and Alice Wise with Suffolk County Extension are working with growers to trial this new approach. If proven to be effective, these materials could increase grower revenue by hundreds of dollars per acre each year.

Introduction and trialing of newly developed impatiens plants that are resistant to Impatiens Downy Mildew. Consumers love impatiens. The plant's ability to grow and flower in full shade or sun, as well as the presence of a wide range of color forms, led to a large following among consumers, greenhouse growers, and garden centers. In 2011, the devastating fungal disease, impatiens downy mildew (IDM) entered the U.S. and the infection created havoc in the marketplace. In a decade, New York sales of the plant plummeted from $10 million to only $1 million. With NYFVI support in 2018, Mark Bridgen with Cornell's Long Island Horticultural Research and Extension Center has developed a line of seed propagated impatiens hybrids that are resistant to IDM. Further work is still needed to introduce these colorful, disease-resistant lines to the commercial market and bring back this valuable plant.

Dairy, Field Crops and Livestock

Dr. Mattias Wieland a Research Professor with the Cornell School of Veterinary Medicine struck a chord with the dairy review panel with his first NYFVI proposal. They are eager to learn if this task can be automated without any detriment to udder health.

Implementation of Automated Pre-milking Stimulation on NYS Dairy Farms. Automation on New York dairy farms has become increasingly common over the last decade. However, not many producers have opted to use the automated pre-milking stimulation (APS) feature that is available with conventional parlor systems and used widely in other countries. Matthias Wieland with the Cornell College of Veterinary Medicine thinks it may be a missed opportunity. His project will demonstrate that the important effects of the physiology of milk letdown are achievable by automation. A controlled trial will be conducted and data on milk production, milk flow parameters, teat tissue condition, and udder health will be collected over the 4-month study period comparing the automated system to manual stimulation. Statistical models will compare the efficiency and effectiveness of both approaches to evaluate if APS is a good choice for NY farmers. Based on the results at the first farm, the team will validate the efficiency of APS with 5 different systems on additional farms. Extensive outreach to other farms with the results will be conducted. It is estimated that about 25% of the States dairy farms could benefit from this work.

Dr. Julio Giordano has a strong track record with NYFVI funded projects. He has optimized reproduction practices, evaluated novel new products, and explored whether Automated Health Monitoring Systems can perform as well—and cost effectively—as trained labor.

MyCow$: a novel tool to improve dairy farm business decision-making through real time estimation of dairy cow profitability. Every day producers are faced with important decisions related to culling or keeping, breeding, grouping, treating, and feeding cows among many others. Unfortunately, despite the many technologies and data available to dairy farms today, producers continue to lack tools that provide an accurate and detailed account of individual cow profitability. Consequently, producers make individual cow decisions based on herd averages or gut instincts. Julio Giordano, with Cornell University wants to change the paradigm. His project will leverage existing precision technologies to calculate in detail and automatically the profitability of individual cows in real time. Long term he hopes to demonstrate the value of improved decision-making based on individual cow profitability and foster development and deployment of the MyCow$ tool to the dairy industry.

Accelerating Adoption of Cover Crops and Advanced Soil Regenerative Practices in New York. The ecological benefits of cover crops are numerous and have been well documented, and conceptually farmers agree that they are a good idea. However, there are production challenges that prevent many farmers from adopting the practice and some are concerned that it won't pay off. This project, led by Aaron Ristow at American Farmland Trust (AFT), will provide direct technical assistance and economic analysis for 20 farms as they implement new soil generative practices. The resources will also increase the scale of AFT's Genesee River Demonstration project and support the evaluation of planting varying cover crop seed mixtures and rates that facilitate planting cash crops into living cover crops (planting green) and maximize ecosystem functioning. Efforts will include on-farm demonstrations and robust outreach to provide farmers the information they need to adopt this beneficial practice.

Aaron Ristow with American Farmland Trust (AFT) is leading the organization's second NYFVI-funded project to drive adoption of strong soil health practices. The New York Corn & Soybean Growers Association knew how important this work was to their members and are co-funding this effort.

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Small, Smart and Scalable: Producer Driven Parasite Control for New York Small Ruminant Producers. In a recent survey, New York state small ruminant producers indicated "internal parasites as the most costly pests affecting both sheep and goat operations." Work by Jason Detzel with the CCE office in Ulster County has shown that producer driven intervention can work to improve sheep and goat production and profits, to decrease resistance to dewormer drugs, and empower and connect local farmers to other producers. Now Detzel will lead a project to provide eight counties with the methods and materials to host a small ruminant parasite course, the equipment to start up a parasite and fecal count lab in their extension office, and instruction and support to offer the low-cost parasite lab to local producers in the coming years. The data generated by each lab will be collated and analyzed to identify the statewide parasite load, geographical hot spots, and identify where further intervention may be helpful.

Jason Detzel had a good approach to help livestock farmers in Ulster County. Now, thanks to his leadership, his approach has been shared with eight additional counties who have also implemented small parasite labs in their CCE offices.

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Vegetables

NYFVI's focus on applied research is well aligned with our interests and our work with NYFVI has been particularly rewarding. Fundamentally our center is dedicated to conducting translational research, bridging science to applications. Through NYFVI funding we have been able to apply our basic understanding of the germicidal effects of ultraviolet light on human pathogens to reducing plant pathogens infecting a variety of commercially important crops in NY state. This sustainable technology is not only economically attractive to growers, but reduces the environmental burden of pesticides.

Mark S. Rea, PhD
Professor,
Light and Health Research Center

Phase 2 Squash Dragon: Optimizing UV-treatment for reducing downy mildew, powdery mildew and angular leaf spot disease on cucurbits with leaf agitation.
UV-light is a compelling pest management tool to manage fungal and bacterial diseases. It offers growers more flexibility than pesticides as it can be used rain or shine and doesn't create the need to delay harvest. This project builds on prior NYFVI funded work to optimize the use of UV light in the field against squash powdery mildew, and to assess the efficacy against downy mildew and angular leaf spot disease in the same trials. The economics of the Squash dragon will also be evaluated. The project is led by Mark Rea with Mount Sinai Medical School and utilizes the expertise of farmers, extension professionals as well as the scientists and engineers at the Light and Health Research Center. Regional workshops will be held, and educational materials produced to allow farmers to build their own systems

USDA Specialty Crop Block Grant Program: Putting Farm Viability's Farmer Review Process to Work.

Since 2014, Farm Viability has worked in partnership with the New York State Department of Agriculture and Markets to administer the competitive grant component of New York State's USDA Specialty Crop Block Grant Program.

In 2021 the Farm Viability review panels and board scored and evaluated 13 proposals, six were recommended for funding.

Currently, 25 specialty crop projects are being administered by NYFVI, utilizing funds from multiple Specialty Crop Block Grant years.

USDA

NEW YORK STATE OF OPPORTUNITY. Agriculture and Markets

"New York State is ranked in the top 10 in the nation for dozens of specialty crops, from maple to grapes to cabbage, that contribute millions to our economy. Thanks to our long-time partnership with NYFVI, we have seen strategic and meaningful research and education projects come to fruition over the years. These projects are helping our farmers to overcome challenges, such as disease and pests, and to increase production."

Commissioner Richard Ball
New York State Department of Agriculture and Markets

NYFVI Helping New York's Dairy Farms Lead Antimicrobial Stewardship

Since its inception, Farm Viability's dairy program has supported both individual farm profit teams and Topic Specific Teams (TST) that have worked with more than 300 of New York's dairy farmers. The TST model asks educators to identify a common need among farmers in their region and develop a deep dive curriculum on the topic. The educational model includes focused training, the power of small peer-to-peer discussion group learning and individual on farm consultations.

The 2019 request for proposals expressed specific interest in receiving proposals that would help New York dairy farmers adopt Selective Dry Cow Therapy (SDCT) and reduce antimicrobial use. Three organizations were supported to lead SDCT work. The nonprofit organization, CADE has been working with 10 farms, Countryside Veterinary Clinic, and Dairy Health and Management Services are each supporting 15 farms. Although delayed by the pandemic, these projects are nearly complete.

In 2021, we issued a request for proposals seeking to support more veterinarians. We anticipate an additional 65 dairy farms, and around 30 veterinarians will be supported through this effort. Our hope is to have this SDCT approach become the new normal on New York's dairy farms.

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