



“PRO-DAIRY has created critical partnerships with regulators and farmers to mitigate the environmental impacts of the dairy industry. Karl Czymmek provided leadership and education to regulatory agencies and to the dairy industry about our best management practices, what we do, and what we have done to protect water quality. PRO-DAIRY fills a role no other group has and is second to none in the industry.

PRO-DAIRY has also contributed to our farm business’s financial success. We and our farm personnel participate in PRO-DAIRY programs for professional development. My junior partners and I are Dairy Executive Program graduates. Our farm also participates in dairy discussion groups. Through Dairy Profit Monitor our management team has developed a platform to monitor profitability parameters. Strategic planning through the Dairy Acceleration Program has had a significant impact on the viability and vision of farms in our county. No other organization has contributed to the growth of the dairy industry like PRO-DAIRY.”

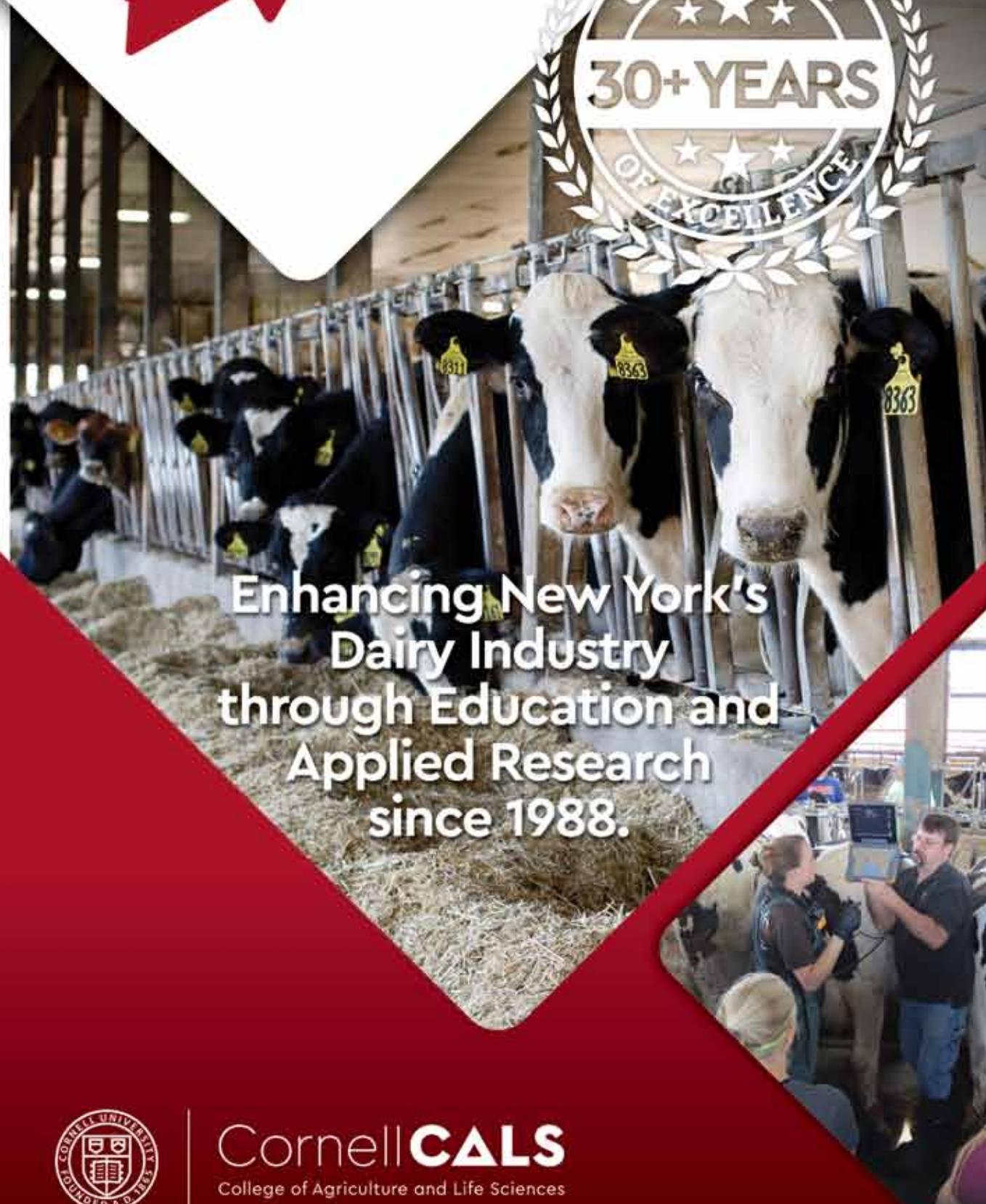
- John Dickinson, IDEAL Dairy Farms Inc.



“We appreciate PRO-DAIRY because they are a strong advocate for the dairy industry and they provide professional support for our business.”

- Glenn and Emily Beller and their son Jon Beller, Beller Family Farm

The Bellers have participated in the Academy for Dairy Executives, the Dairy Executive Program, the Dairy Farm Business Summary and the Dairy Profit Monitor.



Enhancing New York’s Dairy Industry through Education and Applied Research since 1988.

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Cornell CALS
College of Agriculture and Life Sciences

The past 30 years have been a time of tremendous change for the dairy industry in New York, and the next 30 years promises to bring even more change. All along the way, PRO-DAIRY has been there to develop the management skills of our farm owners and managers, help dairy farm businesses hone in on opportunities to improve their profitability and family livelihoods, provide technical expertise on many aspects of environmental stewardship, forage and crop production, cow health and management, facilities and dairy systems engineering, and help to attract our young people to opportunities to continue their education and find professional opportunities in the dairy industry. As described throughout the rest of this report, these are actualized through educational programs in both large and small group settings, applied research when needed either independently or in collaboration with faculty in Cornell CALS and beyond, and longstanding relationships with our dairy farms and allied industry professionals.

Just as the New York dairy industry has evolved, so has PRO-DAIRY. From its initial focus on management education and curriculum development to the recruitment and deployment of statewide specialists with excellent technical expertise in key areas, the PRO-DAIRY team is committed to anticipating how the New York dairy industry will need to evolve to remain competitive in the global dairy economy and to helping our dairy farms and allied industry professionals achieve excellence.

With many thanks for your continued support and partnership.

- Dr. Thomas R. Overton
Director, PRO-DAIRY

Dr. Tom Overton is Professor of Dairy Management at Cornell and Director of the PRO-DAIRY program since 2010. Tom is a native of Northern NY where members of his family dairy farmed for nearly 150 years. He has a BS from Cornell University and an MS and PhD from the University of Illinois before joining the Cornell Dairy Management faculty in 1998.



Facilitate New York State economic development by increasing the competitiveness and sustainability of New York's dairy farm businesses through industry-applied research and educational programs that enhance farm profitability while advancing dairy producers and agribusiness professionals' knowledge, skills and enthusiasm.

For 30 years PRO-DAIRY has dedicated itself to one goal: to foster a progressive New York State dairy industry through its programming and leadership. Through results-driven education and research, PRO-DAIRY specialists have contributed to the technical knowledge, management skills and economic strength of New York's dairy industry since 1988.

Progress

The dairy industry is not static, nor is PRO-DAIRY. As New York's dairy farms have changed over time, so has PRO-DAIRY. The program has added specialists, programs and research that target industry areas and issues important to keeping New York dairies competitive in today's market-oriented environment. PRO-DAIRY features programs that span the industry, including environmental management; crop, manure and nutrient management; business performance; herd health and management; and youth education.

Profit

While looking forward to where New York's dairy industry must be to remain competitive, PRO-DAIRY attends to the basics of dairy business profitability. Through programs and research, it targets business management, cow care, nutrition, facilities, dairy replacements, and manure management, to name a few.

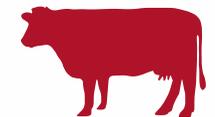
Partnerships

In today's business climate, partnerships are essential to success. PRO-DAIRY, a joint venture of the New York State Department of Agriculture and Markets and Cornell University's College of Agriculture and Life Sciences, has a long history of partnering with dairy organizations. Key collaborators include dairy producer groups, Cornell Cooperative Extension, and numerous agribusiness and state government agencies.

2016 NY Dairy Stats



5,000
dairy farms



620,000 cows



3rd nationally in
milk production



14.8 billion
pounds of milk
annually



\$2.5 billion (est.)
in farm-gate milk
revenue annually

PRO-DAIRY programs are well-received by the dairy industry.

Program	Approximate Annual Number of Cows Represented and Attendance
Cornell Dairy Farm Business Summary and Analysis Program	120,641 cows, 122 farms (direct PRO-DAIRY contribution).
Cornell Dairy Executive Program Management Symposium	73,564 cows (53 producers, 82 participants).
Dairy Profit Monitor (monthly benchmarking tool)	95,917 cows (104 dairy farms).
Academy for Dairy Executives	21,125 cows (20 dairy farms, 2 agriservice).
Operations Managers Conference	107,000 cows, 192 attendees.
Winter Dairy Management Series	125 attendees (mostly producers) across 9 sites.
CAFO Off-Road Show Programs	4 live sites, 1 webinar, 475 participants. On farm programs – 125 participants (dairy farmers, 1 contractor and their staff) representing 27,000 cows.
Winter Forage Meetings	3 sites, (2 NY, 1 PA), 286 total participants, including 209 dairy producers.
New York State Corn Silage Hybrid Trials	2016 results presented at various locations and meetings across the state with 1,000 in attendance. Hybrid entries and company participation roughly doubled from 2016 with 72 hybrids from 16 companies for 2017.
Herd Health and Nutrition Conference (with Northeast Agribusiness and Feed Alliance)	229 total attendees at the NY site, 9,837 cows (12 producers), and 217 agribusiness professionals representing the majority of the New York dairy industry.
CAFO Engineer Training Program	Continuing education workshop in two sessions with 48 continuing education certificates given out to participating engineers, each with 6.8 credit hours.
Northeast Dairy Producers Conference (with Northeast Dairy Producers Association)	414 attendees, 115,671 cows (133 producers), 8,192,273 cows (204 agriservice).



“Cornell’s PRO-DAIRY program has been critical to the success of New York’s dairy industry for decades, empowering our farmers to use educational programming and cutting-edge research to grow their business and remain leaders in the production of high quality milk and dairy products. We are proud to be a partner with PRO-DAIRY and support its mission to help our dairy producers address challenges and realize new opportunities that will increase their competitiveness and sustainability for future generations.”

– Richard Ball, State Agriculture Commissioner
New York State Department of Agriculture and Markets



“PRO-DAIRY is at the forefront of innovation, development and education when it comes to New York’s dairy industry. I am proud to support PRO-DAIRY, which is helping our state’s hardworking dairy farmers grow their businesses, and also boost New York’s economy as a whole.”

– Patty Ritchie
Chair, Senate Agriculture Committee



“Our dairy farms face mounting challenges such as climate shift, protecting soil and water, animal and crop health, fluctuating milk pricing, as well as business issues and labor regulations. PRO-DAIRY is there for our farmers with a strong support system of programs and extensive outreach providing guidance and instruction. I wholeheartedly support the programs and people that bring the PRO-DAIRY partnerships together to assist these farm businesses and the families that operate them.”

– Bill Magee
Chair, Assembly Agriculture Committee



“We celebrate Cornell CALS PRO-DAIRY’s 30th anniversary and the *Life. Changing.* impact it has on the dairy industry. PRO-DAIRY leads education and applied research vital for dairy farmers to innovate and thrive amidst constant change.”

– Kathryn Boor
Ronald P. Lynch Dean, Cornell College of Agriculture and Life Sciences



“New York Farm Bureau congratulates PRO-DAIRY on its 30 years of professional service to the dairy community throughout New York. In that time, the program has helped farmers navigate business, environmental and management decisions on their farms. The expert guidance is essential at a time when the business and regulatory climate family farms are facing continues to change. We are proud of our long collaboration with PRO-DAIRY and look forward to the next 30 years of working together to provide a better future for agriculture in New York.”

– David Fisher
President, New York Farm Bureau



“On behalf of NEDPA’s members, we would like to extend our sincere thanks to PRO-DAIRY’s current and past team members for three decades of dedication to the NY dairy industry. PRO-DAIRY has helped our farms become leaders in environmental stewardship and farm business management, and PRO-DAIRY’s support through education and outreach continues to assist the dairy industry tackle challenges it faces.”

– Jon Greenwood
Chair, Northeast Dairy Producers Association



PRO-DAIRY started with an initiative from NY Governor Mario Cuomo in partnership with Cornell College of Agriculture and Life Sciences (CALs) Dean Emeritus David Call and the NYS Department of Agriculture and Markets. CALs professor Andrew Novakovic, now a Dyson faculty member, had completed a sabbatical at the University of Wisconsin, where he worked with producers to identify milk production per cow as an opportunity area.

A NYS Dairy Farm Productivity and Profitability Project was created that included a network of faculty and Extension educators who crafted educational content in a high-profile project for CALs. Bob Milligan, Agriculture Economics Professor Emeritus, and Terry Smith, Animal Science Assistant Professor, became co-directors of what would become PRO-DAIRY.

A seven multi-session professional development curriculum, beginning with Managing for Success, encouraged farmers to become better operational managers, guided by mission statements, and focused on cows, crops and finance, was delivered by PRO-DAIRY staff and Extension educators in five regions.

“We were a tactical think tank. It was an innovative group of people with a common mission to bring dairy management to farmers and to get them to think more as managers and less as workers.”

– Robert Milligan
PRO-DAIRY Director, 1988–1997

On average, 1,000 farmer students participated in the initial years, and business summary data showed that those participants saw significant production increases on their farms.

Smith left to continue his career at the University of Wisconsin, and Milligan became the sole director. Under Milligan's leadership PRO-DAIRY staff met regularly with an advisory committee for tactical decisions and to maintain a close connection to the pulse of the industry. Milligan credits the combination of the right subject matter and the credibility of the staff who taught the programs with PRO-DAIRY's success.

“I really think the combination of content and staff had a profound impact on the industry. I am most proud that PRO-DAIRY has continued and that innovation has come from the programs. We built something that was sustainable. PRO-DAIRY has a record of achievement with clear goals and accomplishments.”

– Robert Milligan
PRO-DAIRY Director, 1988–1997

Transition to Specialists

In 1997 Animal Science Professor David Galton became PRO-DAIRY Director and he worked with David Smith, CALs Extension, to expand the program and nearly doubled the budget. NYS Department of Agriculture and Markets helped secure funding and Managing for Success was expanded to include the technical and applied industry research that the NY dairy industry was looking for. Nutrient Management and Environmental Management was the real driver and PRO-DAIRY served as a conduit between the dairy industry and regulators to implement manure management strategies.

Technical-based knowledge specialists, located in their respective college departments, were hired to address the challenges of the industry and to interact with faculty, including current PRO-DAIRY staff Jason Karszes, Karl Czymmek, Curt Gooch and Debbie Grusenmeyer. John Conway and Lee Telega continued as regional specialists and served as a bridge between Extension educators and PRO-DAIRY specialists.

“In my opinion, PRO-DAIRY is one of a few programs in the country that is not only education, but also uses applied research, to address current challenges and issues.”

– David Galton
PRO-DAIRY Director, 1997–2010

The program strengthened the identity of the Cornell dairy program and the identity of the industry. State resources and industry partnerships have helped keep the program growing and innovative.

In 2010 Thomas Overton became Director and has continued to strengthen and expand PRO-DAIRY. Under his leadership the budget has increased to \$1.2 million and he has added program areas and specialists: Dairy Production Education (Kathy Barrett), Dairy Industry Communications (Julie Berry), Dairy Forage Crop Production Systems (Joe Lawrence), Dairy Herd Health & Management (Rob Lynch) and expanded the Dairy Farm Business Management program (Anna Richards and Ashley Howlett). PRO-DAIRY also coordinates the Dairy Acceleration Program (Caroline Potter).

PRO-DAIRY Staff Alumni

Directors

Robert Milligan (1988–1997) and David Galton (1997–2010).

Original PRO-DAIRY Staff (1988–1997)

Lee Telega, John Conway, Jonas Kauffman, Clint Young, Nate Leonard, Guy Hutt and Elizabeth Claypoole.

PRO-DAIRY Specialists (1997–2017)

Bill Stone, Dairy Herd Health & Nutrition; Griffen Moag, Kyle Getty, Kim Skellie, and Betsey Howland, Farm Business Management; David Grusenmeyer, Human Resource Development; Tim Shepherd, Manure Management; John Conway and Lee Telega, Regional Extension Specialists; and Sam Steinberg, Dairy Facilities.

“PRO-DAIRY continues to be a flagship program for the College of Agriculture and Life Sciences. It has huge stakeholder buy-in. It's nimble and innovative. If you didn't have PRO-DAIRY you would see a different industry.”

– Julie Suarez
Associate Dean, Cornell College of Agriculture & Life Sciences



PRO-DAIRY Specialists



Jason Karszes is a Senior Extension Associate and specializes in dairy business management. His focus areas are in management education, financial analysis, decision making, budgeting and business planning. Some of the programs he coordinates include: the Cornell Dairy Executive Program, Dairy Farm Business Summary, Discussion Groups and Activity Cost Analysis Studies.



Anna Richards joined the PRO-DAIRY team in 2016 as a Dairy Business Management Specialist, focusing on succession planning, business transfer, entity structure, and tax and estate issues. She works with the Business Management team in administering business discussion groups, activity cost analysis studies, and the Dairy Profit Monitor.



Ashley Howlett began as a student worker in the spring of 2015 and joined PRO-DAIRY in 2016 as a Dairy Management Specialist. She is the administrator of the Dairy Profit Monitor Program, which focuses on income over feed costs and operational analysis. She assists in facilitating business discussion groups, and preparing and analyzing data for activity analysis studies and producer meetings.

The impetus of PRO-DAIRY was a business focus, leading off with the Managing for Success financial program. The Farm Business Management program area has expanded and now impacts nearly every farm in the state and includes business analysis, discussion groups and personal growth programs, including:

Dairy Farm Business Summary and Analysis Program (DFBS), is a 60-year-old program directed by Dr. Wayne Knoblauch that uses on-farm data over time to drive programming. Farms report their annual production over a web-based system housed at Cornell and receive business analysis reports and comparisons for their dairy. Participants use the individualized information to monitor their performance from year-to-year and to benchmark their performance against other dairies. PRO-DAIRY plays a central role in collecting, analyzing and disseminating data and over 120 farms, representing over 120,000 cows, participate in DFBS through direct PRO-DAIRY engagement.

In 2016 those farms reported:

- Average herd size increased by 4.3%.
- Milk production per cow increased 3.4%.
- Milk sold off the farms increased by 7.8%.
- Labor hours increased by 2.2%.
- \$90,347,543 was invested back into the businesses.

Dairy Profit Monitor was a natural next step from DFBS. It is an online business analysis tool that provides a monthly snapshot of key operating parameters and farm-level efficiencies. It supports and encourages farmers to monitor their businesses in a more-timely manner and helps answer the question: Are we improving every month? Farmers can create customizable benchmark reports to track progress and trends, assess the impacts of management changes and highlight areas for improvement.

Over 100 farms, representing nearly 96,000 cows, use this tool each year.

Dairy Profit Discussion Groups create an environment for farmers to learn from each other, and are focused on business performance data and management practices. Participants indicate as a result they make changes that increase income or decrease costs. The network developed is a resource they continue to use.

Currently 11 groups statewide focus on business management education and share business performance data at their meetings, including the Dairy Farm Business Summary and the Dairy Profit Monitor data. PRO-DAIRY specialists facilitate these business focused groups, prepare reports and support additional groups that are facilitated by local Extension and agriservice personnel, representing nearly 90,000 cows.

"It's not possible to put a dollar value on my participation. When I started we milked about half of the cows we are today. Production per cow per day is up 20%+. Our cost of producing a unit of milk has decreased by 10%+. It's a very valuable program."

"We have grown substantially and were looking at building new facilities and a parlor and solicited advice from other members. We really are challenged by their cost controls and production. We have had great discussions about what works and what doesn't, and nuances that need to be addressed when making changes. The group is a great resource as well as great friends."

"It is valuable to benchmark against other top dairy farms of similar size and complexity. Also, the group has become very close so topics discussed outside of the formal meetings are very in depth about operations and problems. The complete trust and openness of the group in sharing and analyzing is invaluable."

Activity Analysis Projects are an outgrowth of discussion groups and focus on development of cost and performance calculators for key management areas. For example, the 2016 focus was total cost of labor and labor effectiveness. Also, a summary of the costs of delivering feed on the farm and key factors impacting these costs was published in 2017.

Cornell Dairy Executive Program (CDEP) is a multi-session executive level management development training program for dairy farmers and managers in related agribusiness to improve business management and leadership skills over three one-week sessions during one year.

Nearly 30 people, representing around 50,000 cows, typically participate in the program, and over 300 alumni have completed the program.

Additionally, a Cornell Dairy Executive Program Management Symposium is held. It offers continuing education to Cornell Dairy Executive Program alumni and other progressive dairy producers on key business management topics facing the industry. Topics have included milk pricing, joint ventures and collaboration, activity management, and servant leadership.

Attendance is typically up to 100 people, representing up to 100,000 cows.

Academy for Dairy Executives was started in 2010 and targets the next generation. Curriculum includes Managing with Finance and Managing with Success topics and learning through peer to peer discussions. Typical participants are the junior generation who network with other program participants in similar situations and return home to more effectively communicate and coordinate with senior farm owners.

Participation typically includes 27 attendees and 20 farms, representing over 20,000 cows.

Benefits from Participating in Business Discussion Groups:

- The group discussions help me think more critically before making decisions.
- Feed cost evaluation and labor efficiency evaluation provided insights on where to improve the business.
- It moved our management to a higher level by learning from other farms that have been successful.
- Visiting fellow group member's farms has helped us with planning for expansion in our herd.
- We have more aggressive reviewing of cost controls.

PRO-DAIRY Specialist



Karl Czymmek uses his background in production agriculture and legal training to work on nutrient management, environmental, and other regulatory issues of importance to the NY dairy industry.

PRO-DAIRY provides expertise on a multitude of environmental programs and issues. Program specialists have developed the scientific and technical tools dairy producers need to ensure continuous improvements of their environmental performance.

The Nutrient Management program covers practical topics in crop production, soil fertility, nutrient management and environmental regulations. Program focus is on helping farms to optimize crop yields while minimizing off-farm impacts from nutrients. Dairy farms must be profitable and take care of the environment. PRO-DAIRY's goal is to help farmers and advisors find ways to meet both requirements. Economic impact and environmental impact are not mutually exclusive.

Core programming efforts are highly integrated with the extension and research efforts of the Nutrient Management Spear Program at Cornell. PRO-DAIRY also partners extensively with many NY dairy farmers, Certified Nutrient Management Planners and other farm advisors as well as state and federal agencies, such as USDA-NRCS, Soil and Water Conservation Districts, NYS Departments of Agriculture and Markets and Environmental Conservation.

The first NYS CAFO permit was issued in 1999, the same year that the PRO-DAIRY Nutrient Management program started. Over time, several hundred NYS dairy farms entered the permit program. Since 1999, there has

been a continuous flow of issues that need solutions, and PRO-DAIRY has been at the core of many of them. One early issue related to the Phosphorus Index (PI). The PI is a very sensible tool that uses chemical and physical properties of a field to assess potential for phosphorus runoff loss. The problem was that NY did not have a PI, so PRO-DAIRY staff went to work to pull together the researchers and agency staff to develop a PI for NYS. This was published in 2003 and has been used in all NY CAFO plans since that time.

Weather records show that NYS is receiving more rainfall and more intense storms than it has in the past decades. These conditions are making it harder to keep soil and nutrients on crop fields, reducing crop yields and increasing water quality challenges. These challenges must be resolved if we are going to continue to have a successful dairy and other agricultural enterprises in NYS.

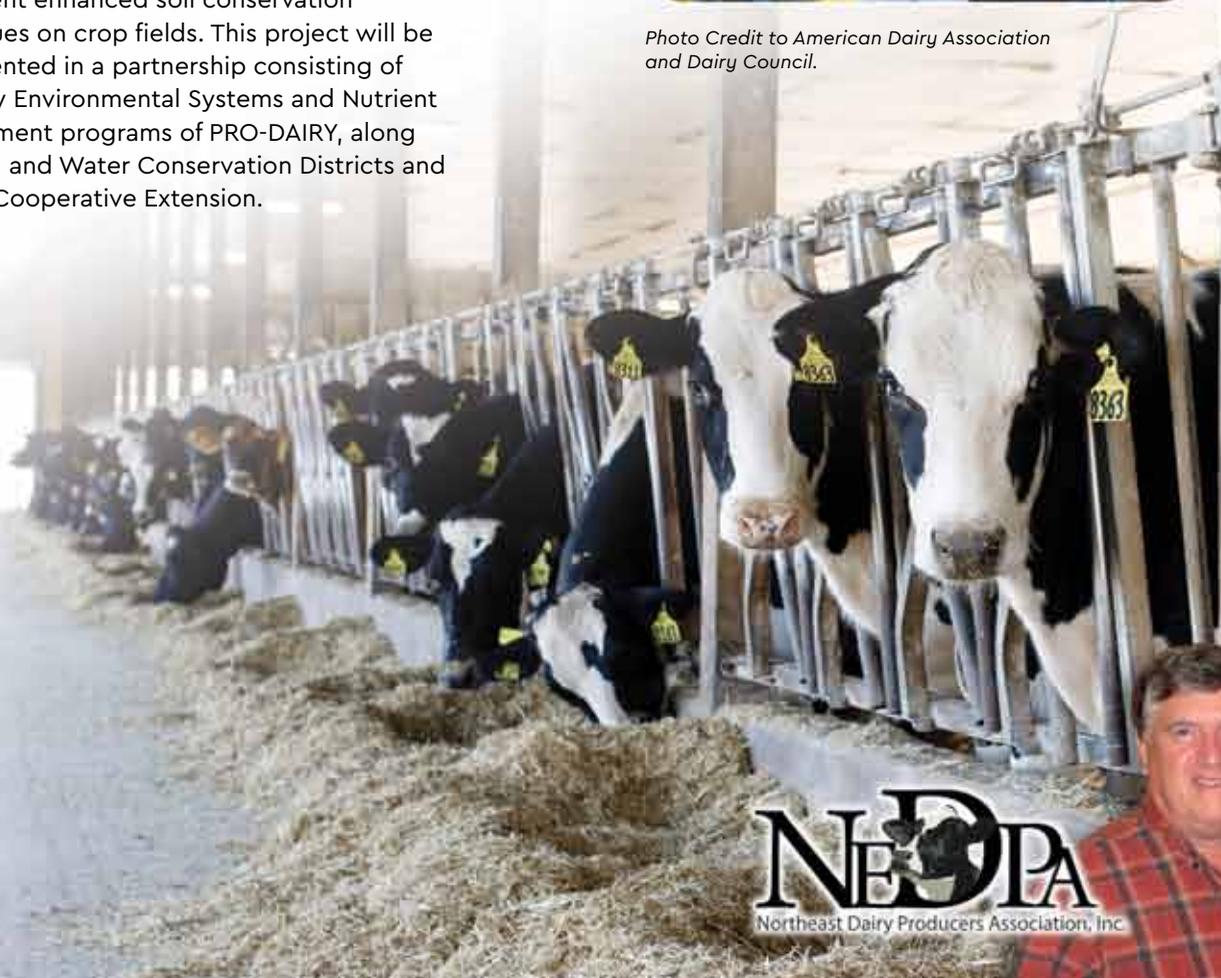
In spring 2017, Governor Cuomo announced funding for a project in the Owasco Lake Watershed that will use novel tools to implement enhanced soil conservation techniques on crop fields. This project will be implemented in a partnership consisting of the Dairy Environmental Systems and Nutrient Management programs of PRO-DAIRY, along with Soil and Water Conservation Districts and Cornell Cooperative Extension.

This project is expected to demonstrate the utility of the software tools and efficient design of engineered conservation practices and can serve as a model for statewide implementation.

Another area that is evolving relates to educating local officials and members of the non-farm public. As more people become interested in farming activities, more time is spent by PRO-DAIRY staff to help educate the public on farming and nutrient management topics, especially CAFO, and what is required in a Comprehensive Nutrient Management Plan (CNMP).



Photo Credit to American Dairy Association and Dairy Council.



"The Northeast Dairy Producers Association (NEDPA) members and the NY Dairy Issues Management Team are grateful for the leadership that Karl Czymmek provides as we work on environmental issues. With the release of the new CAFO permits in January of 2017 came the need for education and clarification about new regulatory requirements. Karl was part of the team who presented at CAFO Roadshows across New York State. He also presented a follow-up webinar at the request of NEDPA to highlight the differences between the CWA and ECL permits.

Karl Czymmek has been a valuable resource to our dairy industry throughout the CAFO permit writing process. Karl's knowledge and ability to communicate to farmers the science behind both guidelines and regulatory change helps dairy producers and industry consultants understand the 'why' certain language changes are necessary.

Over the past year, we have had a focused effort in the Owasco Lake Watershed. Karl was instrumental in facilitating two public forums to talk with community members about modern practices implemented on regulated dairy farms to help manage nutrients for both farm and field practices. Karl's expertise was valuable as materials were created for newspaper, radio, and social media posts to educate the public about good practices that farmers are using. Additionally, research by Karl and fellow Cornell University researchers shows the science of how conservation practices in the region contribute to clean water, which is the ultimate goal for everyone living in the watershed."

– Jon Greenwood, Chair
Northeast Dairy Producers Association

PRO-DAIRY Specialist



Joe Lawrence joined the PRO-DAIRY team in 2016 in a newly created Dairy Forage Systems Specialist position. He focuses on dairy forage systems management, drawing from his experience working with the NY dairy industry as a private sector certified crop advisor (CCA) and as a Field Crops Educator for Cornell Cooperative Extension. The program works to integrate agronomic management of forage crops with harvest and feeding practices to optimize the use of forages in the dairy ration. He leads a multi-disciplinary team to implement the annual Commercial Corn Silage Hybrid Testing program in NY and Vermont with additional regional collaborations with Penn State and the University of Vermont.

The PRO-DAIRY Forage Quality and Cropping Systems Program focuses on improving forage quality and land use on New York dairy farms to enhance economic and environmental outcomes. It has built and continues to foster key collaborations with dairy producers, industry groups, university partners, agribusiness, and government organizations. The program addresses emerging needs of important practices, including harvest and storage management, double cropping, tillage and conservation to promote soil health, and hybrid/variety selection to optimize crop yield and quality.

Over 2,000 people directly interacted with the program through participation in educational meetings, discussion groups and farm visits.

NYS Commercial Corn Silage Hybrid Trials

The PRO-DAIRY led initiative to reinstate the yearly New York State Commercial Corn Silage Hybrid Trials was well received in year one in 2016 and grew rapidly in year two. The program offers valuable information on the rapidly changing options related to corn hybrid selection, addressing both agronomic and nutritional aspects of corn silage to the dairy industry. The 2016 trials introduced a new method for forage quality analysis and reporting, utilizing cutting edge research on forage fiber digestibility.

The 2016 trial results were presented directly to over 1,000 participants at numerous winter programs in addition to a recorded webinar as part of the PRO-DAIRY Dairy Webinar Series.

In addition to providing valuable information to producers, it has proven a valuable collaboration with seed industry representatives to advance the understanding of corn silage forage quality.

The 2017 program expanded the number of field locations for evaluation, including entering into a collaboration with the University of Vermont, to expand the program with field locations across both states. Hybrid entries and company participation roughly doubled from 2016 with 72 hybrids from 16 companies for 2017.

Management of Forage: Harvest and Storage

A key focus of the program is on the critical nature of forage harvest and storage management, which has profound impacts on overall farm sustainability and profitability. PRO-DAIRY staff worked closely with county and regional Extension staff on a number of on-farm programs and peer to peer discussion group meetings throughout the year. These programs addressed harvest decision making strategies, evaluation of storage structures and management opportunities for winter cover crops as double crop forages.

Winter programs reached over 700 producers and agribusiness professionals.



The program also works closely with county and regional Cornell Cooperative Extension Specialists to expand ongoing first cutting forage quality monitoring programs. These programs offer timely information for producers to optimize the quality of first cutting forages each spring. This partnership offers the opportunity to incorporate additional data collection and analysis as an enhancement of localized efforts to monitor and report this critical information. Through a collaboration with Dairy One, additional samples were collected and analyzed for key forage quality parameters and these efforts are anticipated to continue.



Feed Costs

Feed costs are the top input cost on dairy farms. High forage diets are proven profitable but can be difficult to achieve. The farm's ability to feed cows a high forage diet is often hindered by either inadequate supply or inconsistent quality, which can be impacted by weather (mostly out of our control) and management (in our control). Overcoming these obstacles requires a multifaceted cohesive approach.

"Take Your Feeding and Forage Program to the Next Level!" meetings focused on the growing and feeding of forages beyond the parameters of tonnage, quality, and the basic high forage ration, and reached over 200 dairy producers.

PRO-DAIRY's Forage Management Program also actively educates through a PRO-DAIRY Forage Management online newsletter. Additionally, Cornell Cooperative Extension newsletters, popular press publications and a number of email listservs and websites have used articles from the program.

Photos are from the NYS Commercial Corn Silage Hybrid Field Trials, which provide important data that drives management and decision making on farms.

PRO-DAIRY Specialists



Curt Gooch is a Dairy Environmental Systems and Sustainability Engineer with PRO-DAIRY and leads the Dairy Environmental Systems group. This group conducts applied research, develops and delivers extension materials, and performs farm consultations for a range of topics, including cow comfort and well-being; ventilation and heat stress mitigation; dairy facilities; manure and byproduct management; renewable energy; odor and air emissions; and farm safety. Gooch also works nationally on critical topics with National Milk Producers Federation Environmental Issues Committee and Environmental Task Force.



Peter Wright is a professional engineer. He retired from the Natural Resources Conservation Service (NRCS) where he developed and implemented manure management policy. Previously he led the PRO-DAIRY manure management team from 1994 to 2004. He earned a BS and M. Eng degree from the agricultural engineering program at Cornell University and then began work as an agricultural engineer for the Soil Conservation Service.

The Cornell PRO-DAIRY Dairy Environmental System (DES) program was established in the early 2000's after an initial focus in 1998 on cow comfort in dairy cattle housing and farm facilities and the resulting return on investments. In the early 2000's, the CAFO system was initiated and that, along with the need to educate on how to best manage sand-laden dairy manure, because many cows were bedded with sand to increase comfort, broadened the focus of the program to the development and delivery of educational information on dairy cattle housing and dairy farm facilities, dairy manure handling systems, management and on-farm renewable energy.

The DES program team works closely with other PRO-DAIRY specialists, faculty and staff at Cornell, and other collaborating institutions, and appropriate state, national, and international dairy industry leaders to identify, develop, document, introduce and disseminate innovative methods in dairy housing and byproduct management systems to enhance animal performance, animal well-being, system efficiency, environmental compliance and stewardship, and overall farm profitability. Efforts focus on furthering individual farm and industry-wide growth and movement towards sustainability.

Program efforts have been accomplished by conducting sponsored and core-funded industry-applied research with the objectives of furthering the understanding and development of dairy housing and waste management systems (with current focus on anaerobic digestion) and by monitoring relative research and Extension work performed by nationwide and international counterparts.

Findings are disseminated by conducting on-farm trainings and demonstrations of new technologies and by developing and delivering written, oral, and web-based materials. Additionally, expertise is provided through educational programs offered by county and regional Cornell Cooperative Extension educators and agriservice and agribusiness entities.

Program initiatives have resulted in dairy producers and their advisors being better positioned to make informed business decisions in the areas of cow comfort/well-being, renewable energy, waste (nutrient) management/treatment, air emissions, and farm safety. Impact indicators are testimonials from dairy producers and their advisors and

observed changes in business behavior. At a US dairy industry level, impacts include providing specific information on key industry items to national industry leaders on greenhouse gas emissions, renewable energy, manure treatment systems, water use footprint, and overall dairy industry sustainability.

Future DES efforts will be to continue to work proactively on topics, issues and items of importance for farms, the dairy industry as a whole, and especially society, as the dairy industry needs society to be engaged and educated about how farms house and care for their cows and calves, how they manage their byproducts, and how they are working to minimize their environmental footprint while maximizing their food value output.

A 2016 industry evaluation of the DES program indicated that the traditional and ongoing focus of the program remains important, as well as expanded focus into additional areas. DES will continue to build on our ongoing theme of a system-oriented approach to solve industry challenges and materialize opportunities, to maximize the overall dairy food production system per unit of input.



PRO-DAIRY Specialist



Caroline Potter is the Dairy Acceleration Program Coordinator and works closely with the PRO-DAIRY Director and Specialists to develop and deliver educational programs, and coordinate specific initiatives within PRO-DAIRY. She is an experienced professional who has served in key leadership positions in the dairy industry. She earned her Associates Degree in Agricultural Economics from SUNY Cobleskill and her BS in Agricultural Economics from Cornell University.

The Dairy Acceleration Program (DAP) under the leadership of Governor Cuomo and in partnership with the NYS Department of Agriculture and Markets and the NYS Department of Environmental Conservation is designed to enhance long-term viability of New York dairy farms while maintaining a commitment to environmental stewardship. The program is coordinated through Cornell PRO-DAIRY and delivered to farms in partnership with Cornell Cooperative Extension and other agriservice professionals.

Awarded funds may be used for one or a combination of the following:

- a.) creation of strategic business plans for long-term viability, design of new or remodeled facilities;
- b.) environmental planning via a farm Comprehensive Nutrient Management Plan (CNMP); and
- c.) design of Best Management Practices (BMPs) to assist with implementation of their CNMP.

Since its inception in 2013 nearly 400 dairy projects have been awarded funding, focused on small and mid-size farms across NY.

An estimated \$18 million has been reinvested as a result of these projects.

The business plans have assisted these owners with making sound business decisions for their dairies. Farms are analyzing options to enhance profitability and modernize facilities, from replacing an aging parlor with robotics, to building a brand-new facility. Many of the farms awarded business planning funds are using the plans to achieve the family goal of bringing in the next generation.

The CNMP results in nutrient management planning that identifies best management practices for implementation to optimize water quality around the farmstead. Farmers using DAP funds for CNMPs note that the plan allows for maximized use of nutrients from the farm and reduced cost of fertilizer inputs as well as proper timing of nutrient application and planting of crops. A number of farms have used DAP funds to augment other sources of funds such as the Environmental Quality Incentives Program (EQIP) or Ag Nonpoint Source (AgNPS) funds, facilitating the implementation of the farm CNMP.

More than 50 professionals assist with Dairy Acceleration Program projects, including Extension Educators, farm business consultants, facility planning professionals, AEM Certified Planners and Professional Engineers (PEs).

David LeFever first participated in the Dairy Acceleration Program for business planning and analysis with Farm Credit East, which he realized the value of and continued after the grant ended. As part of the business plan and after a 100-year storm event in 2014, LeFever recognized the need to complete his CAFO practices to be in environmental compliance with state standards. He used DAP funding to engineer a concrete storage for milk house waste, silage leachate collection and to discontinue daily manure spreading. A topographic survey and long-term farmstead planning completed by and with Tim Terry, Harvest NY, provided the necessary groundwork for engineer Aaron Weiss to design the storage. LeFever received EQIP funding to construct the storage and implement erosion control practices. With these practices implemented, and a strong milk market, available water, and good soils, LeFever is looking forward to attracting a new generation to the 250-cow dairy.

"I'm now positioned for the future. This farm wouldn't be a sustainable business without implementation of these practices."

– David LeFever,
Livingston County Dairy Farmer
and Avon Town Supervisor



PRO-DAIRY Specialist



Robert Lynch, DVM, joined the PRO-DAIRY team in 2016 in a newly created Dairy Herd Health and Management Specialist position.

Lynch was a senior industry veterinarian, where he provided technical support to dairies across the Northeast US. He also helped develop educational programs and resources focused on management of the replacement dairy heifer. Prior to that he was a managing partner at Willow Creek Animal Hospital in Leesport, PA. His areas of expertise include transition cow health, milk quality, reproduction, replacement management, genomics, housing, lameness prevention, immunology, obstetrics and neonatal care.

The PRO-DAIRY Herd Health and Management program supports New York State dairy producers by leading educational programs, integrating research results, identifying research needs, collaborating on-farm with advisors, and participating in industry-wide initiatives. Dairy farmers take their responsibility to provide good care for their cattle very seriously and are always looking for new ways to keep the herd healthy. Current areas of focus include fresh cow management, prudent use of medications, calf health, and reproductive management.

Research

Cornell University conducts a great deal of research focused on herd health and PRO-DAIRY's statewide outreach to share the results of this research is critical. PRO-DAIRY also supports applied research at the college, including: Selective Dry Cow Therapy, Separated Manure Solids for Bedding, and USDA funded Veterinary Feed Directive (VFD) Case Studies.

Programming

The Herd Health and Management Specialist is engaged with a number of educational program development planning committees, including Northeast Dairy Production Medicine Symposium (Co-Chair), Operations Managers planning committee, Cow Comfort Conference planning committee, Summer Dairy Institute Board of Directors, NEDPA Conference planning committee, and the Northeast Dairy Nutrition Conferences planning committee.

Recent programs include:

- Online Dairy Reproductive Management Course
- Summer Dairy Research Update Meeting Series
- Winter Dairy Management Series
- Dairy Discussion Groups: Transition Cow Management, Dairy Reproductive Analysis
- CCE Catskill Regional Ag Conference: Managing the Immune Response of the Dairy Cow for Great Lactations
- Cow Comfort Conference: Working With What You Have and Looking Towards the Future
- Empire Farm Days: Enhanced Herd Health through Effective Protocol Management
- Cornell Cooperative Extension Ag & Food Systems Inservice: Voluntary Wait Period Study Findings & Reproductive Management Update
- PRO-DAIRY Webinar Series: Applied Dairy Immunology & Vaccination Protocol Management

Partnerships

PRO-DAIRY's Herd Health Specialist is also poised to engage on the state and national level with dairy herd health issues and actively works with and is a member of the American Association of Bovine Practitioners, the NYS Beef Quality Assurance Committee, and the Northeast Dairy Producers Association (NEDPA) Animal Well Being Work Group. Lynch also serves on the Summer Dairy Institute Board of Directors and is an instructor, is a co-chair of the Northeast Dairy Production Medicine Symposium, and is a member of the American Association of Bovine Practitioners Committee on Pharmaceutical and Biologic Issues.

Issue Awareness and Education

PRO-DAIRY is engaged with increasing the dairy industry's understanding of emerging current issues, including the 2017 Food and Drug Administration's Veterinary Feed Directive rule changes about judicious use of medically

important antimicrobial drugs. Improved understanding of appropriate antibiotic use in food producing animals improves animal health and reduces residue risk.

Another key emerging area is process verification, which improves day-to-day execution of management's protocols and provides validation of good health standards.



Robert Lynch, PRO-DAIRY Dairy Herd Health & Management, served as a volunteer veterinarian for the Dairy Birthing Center at the Great New York State Fair. Photo credit to the New York Animal Agriculture Coalition, which coordinates the Birthing Center.



Dairy Production Educational & Professional Development Opportunities

PRO-DAIRY Specialist



Kathy Barrett is a Senior Extension Associate with PRO-DAIRY. She draws on years of experience working directly with farmers through Cornell Cooperative Extension and a farmer-led board of directors. Her program focus is statewide dairy management programs, including providing leadership for dairy management education and coordinating statewide programs, including Winter Dairy Management, webinars and online courses.



This program area collectively reaches over 2,000 farmers each year.

In the future, Dairy Production Management education will continue to be a crucial component of the success of the NYS dairy industry. As knowledge is generated through research, and as farm practices adapt to change, education becomes vital for farm success. Although information is ever more accessible, the need to be able to critically assess that information is key. Technology also offers the opportunity to increase the accessibility of educational programs across the state. The Dairy Production Management program will continue to use a variety of outreach methods tailored to the needs of the NYS dairy industry.

Effective use of production management tools is a major barrier to profit and production growth of dairy farms in New York and impacts the profitability and quality of life for farm owners.

The focus of this program area is to promote use of these tools through creation of effective and accessible educational programs and trainings that reflect the diversity of geography and production management systems that characterize New York's dairy industry. The combination of cutting-edge research practices and tested best management practices enables farmers and their employees to make sound decisions for their farms and rural communities.

A variety of methods and technologies are used to implement educational programs that develop the knowledge base of farm owners and the agricultural workforce. Key programs include:

- Regional Shared Programs
- Dairy Update Webinars on Thursdays
- Webinars in Spanish on Wednesdays
- Winter Dairy Management
- Dairy Production Online Courses
- Agriculture, Food & Environmental Systems In-Service
- Empire Farm Days Dairy Profit Seminars



"Northeast Agribusiness and Feed Alliance proudly collaborates with PRO-DAIRY because we know the critical role it plays in helping the dairy industry reach its potential as a vibrant growing economic engine in the Northeast. We work together on programs and services that benefit the dairy industry, and thus return value to the agribusiness sector. The Agribusiness and Feed Alliance is bullish about the future of the Northeast dairy industry because we know that PRO-DAIRY will continue to serve the industry in effectively managing nutrients, maximizing renewable energy resources and achieving sustainable profitability."

– Andy Dugan
President, Northeast Agribusiness and Feed Alliance

Dairy Youth Programs



PRO-DAIRY Specialist



Debbie Grusenmeyer is a Senior Extension Associate in the College of Agriculture and Life Sciences, in addition to being part of PRO-DAIRY and the Dairy Management Group for over 19 years. She provides leadership for developing, coordinating, and implementing the NY dairy youth programs, which includes state level 4-H dairy programs, Dairy Discovery, and the dairy track of Animal Crackers. She is also the Director of the NY Junior DAIRY LEADER Program and the statewide Beginning Dairy Leader Program.

Mentoring dairy youth has been a flagship program area since the inception of PRO-DAIRY and is critical to build the next generation of farm owners and managers. The cornerstone of the program is the **Junior DAIRY LEADER Program**. Participation is highly competitive and 25 selected youth, ages 16 to 19, build enthusiasm for the dairy industry through a year of experiential learning, where personal and professional leadership is developed in a networking environment where the diversity of career options in agriculture are discovered.

Over the past 18 years, 98 percent of the over 400 Junior DAIRY LEADER graduates attend college, and many choose to study agriculture. Prior to participation, over half indicated that they were not planning to study agriculture, or, they were undecided.

"Debbie took a level of interest in the industry and made it explode," said Greg Porter, Porterdale Farms, whose daughter Casey graduated from the program in 2013 and then attended Cornell University. "They form future college friends and people they will work with in the industry. There is no greater recruitment for Cornell."

With the success of Junior DAIRY LEADERS and the increasingly competitive entry, the **Beginning DAIRY LEADER Program** was added in 2015. This program targets high school students entering at least their sophomore year, but who have not graduated, and includes five one-day workshops to explore postsecondary agricultural education and career opportunities in a networking environment with faculty, students and industry professionals, along with college planning and personal development.

Other key programs include:

- **Dairy Cattle Quiz Bowl**, a Jeopardy-like activity that attracts 450 youth yearly.
- **Dairy Discovery**, an annual hands-on workshop held at Cornell University, that attracts nearly 100 youth to learn about dairy careers and dairy cattle production.
- **Animal Crackers**, an annual event for 9 to 13 year olds to meet Cornell faculty and students, and learn about animal care, that attracts nearly 100 youth.
- **Dairy and Equine 101 Camp**, a two-day program held at Morrisville State College Campus for 13 to 19 year olds to learn more about species-specific areas while experiencing a college campus atmosphere.
- **Traditional 4-H Dairy Youth Programs** and **National 4-H Dairy Conference** provide learning opportunities for 9 to 13 year olds through activities such as dairy judging, showing cattle and dairy quiz bowl, and attracts up to 400 youth.



PRO-DAIRY Specialist



Julie Berry is PRO-DAIRY's Communications Manager. She edits *The Manager*, published in a national dairy magazine, coordinates annual report and promotes PRO-DAIRY's efforts. She is an experienced media professional, and has worked in Extension, journalism and marketing. She has a BS with honors in animal science from Cornell University and a MA in science writing from Johns Hopkins University.

Outreach and industry education are an important action of PRO-DAIRY and several avenues are used, including a 16 page "The Manager" insert in a national dairy publication. Through a useful combination of research updates, on-farm practices, economic analysis, how-tos and action steps on every aspect of managing a dairy business, PRO-DAIRY uses "The Manager" to strengthen New York's dairy industry and is a key method for PRO-DAIRY staff to share their expertise statewide.

Since 1999 PRO-DAIRY has partnered with DAIRYBUSINESS & HOLSTEINWORLD. In 2018 PRO-DAIRY will begin a new partnership and publish "The Manager" in Progressive Dairyman.

Timely news is delivered via e-Alerts and a monthly e-Leader newsletter to an email list of nearly 7,000 producers, agriservice and legislators. This list is also used for program, webinar and forage management updates. As farmers increasingly integrate technology into their farms, PRO-DAIRY has added new platforms to engage them with, including use of Facebook.

PRO-DAIRY on the Web

PRO-DAIRY programs are highlighted at the following websites:

- <http://prodairy.cals.cornell.edu>
- <http://prodairyfacilities.cornell.edu>
- <http://dairyprofit.cornell.edu>
- <http://manuremanagement.cornell.edu>

PRO-DAIRY specialists work closely with Cornell dairy industry related programs represented by the following websites:

- <http://nmsp.cals.cornell.edu>
- <http://dfbs.aem.cornell.edu>
- <https://fieldcrops.cals.cornell.edu>

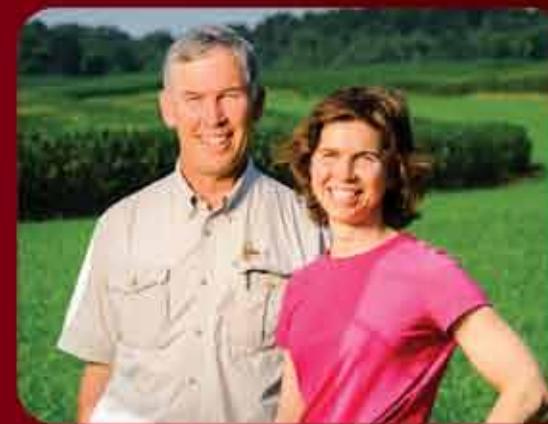
Over 50,000 people visit PRO-DAIRY's website annually.

"As we celebrate 60 prosperous years at Willow Bend we must give pause to reflect and thank all the wonderful people, employees, and organizations that have enabled our good progress. All along the way Cornell Extension and PRO-DAIRY have had an influence: 4H programs have greatly benefited our children; PRO-DAIRY Junior Dairy Leader, under Debbie Grusenmeyer, has benefited our children and high school part time workers; The Cornell Business Summary let us "benchmark" with other farms; Local farmer focus groups that brought in speakers and took us on information packed tours; Cornell Cooperative Extension helped us learn how to put our records on Cornell's computer record keeping system; LEAD New York, The Cornell Dairy Executive Program, and many informative meetings, including the NEDPA Conference and the CAFO Road Show. The list goes on and on! We congratulate PRO-DAIRY, started 30 years ago, and today stronger than ever under Tom Overton and his able staff!"

- George Mueller, Senior Partner, Willow Bend Farm



Three generations of Cornellians. George Mueller, Class of 1954; John Mueller, Class of 1986; and Thomas Mueller, Class of 2020.



"From crops to employees, from dairy to manure management, from public policy to public relations, PRO-DAIRY has impacted Table Rock Farm in countless ways. It's hard to imagine our farm without the improvements made through our relationship with PRO-DAIRY. Table Rock Farm would not be as well-informed, forward-thinking or competitive without the PRO-DAIRY team. They care as much about our farm as we do."

- Willard DeGolyer, Table Rock Farm

Willard DeGolyer and his daughter Meghan Hauser. Photo Credit to DFA.

"PRO-DAIRY's development was prompted by the early-on realization that the ongoing consolidation within the dairy industry, emerging communication technologies, and changing demographics in our rural areas, required a streamlining of information delivery to farmers as well as providing a forum by which validation and verification of on-farm practices can be demonstrated and discussed with non-farm stakeholders and regulatory agencies. 30 years into this effort, the growth and improvements made in the industry speak volumes of PRO-DAIRY's success."

- George Allen, Allenwaite Farms Inc.

