The PRO-DAIRY Mission:
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 information on the
PRO-DAIRY program, contact:
PRO-DAIRY
272 Morrison Hall
Cornell University
Ithaca, NY 14853
Dr. Thomas Overton
Director
tro2@cornell.edu
Tel: 607.255.4478
Fax: 607.255.1335
prodairy.cals.cornell.edu

ANNUAL REPORT 2016
Cornell University
College of Agriculture
and Life Sciences
GROWING PEOPLE TO
GROW AN INDUSTRY
THROUGH EDUCATION AND RESEARCH

ANNUAL REPORT 2016
GROWING NEW YORK’S
DAIRY INDUSTRY
THROUGH EDUCATION AND RESEARCH
PRO-DAIRY Mission
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.

Dr. Thomas Overton
Director PRO-DAIRY

2016 was a challenging year for the dairy industry in New York. Although the longer term outlook for our dairy industry is strong, low milk price trends, imbalances of production and processing, and increasing pressure on workforce issues only increase our farmers’ need to remain on the cutting edge.

For nearly 30 years PRO-DAIRY has linked New York’s dairy farmers and agribusiness professionals to critical research and resources, giving them the information they need to build and manage their businesses. PRO-DAIRY’s contributions to educational programming and applied research have helped New York farms continue to be leaders in cow, crop, and business management, with our dairy farm owners, employees, and agribusiness professionals second to none.

PRO-DAIRY is committed to excellence in educational programming and applied research for the New York dairy industry in: farm business management; field crops and nutrient management; manure handling and integrated waste management systems, including renewable energy; cattle housing; animal health, well-being and productivity; dairy youth and Extension educator programs.

PRO-DAIRY is particularly appreciative of the continuation of expanded funding from New York State in 2016-17, which enabled us to enhance our capacity in Dairy Herd Health and Management and Dairy Forage Cropping Systems. The latter program area proved especially timely because of drought issues during Summer 2016 that led to challenges with forage crops in many areas of New York.

In 2016 PRO-DAIRY:

- Worked directly, and/or with other Extension and agriservice professionals, through the Cornell Dairy Farm Business Summary and Analysis program. These efforts reached 120 New York dairy farms representing nearly 110,000 cows. These farms reinvested more than $128 million in their businesses and increased jobs by nearly 10% from 2015 to 2016.

- Managed the Dairy Acceleration Program, which is focused on the development of business plans and comprehensive nutrient management plans, to assist dairy farmers in strategic planning to enhance profitability of their dairies and facilitate continuous improvement in environmental stewardship. Approximately 265 farms were awarded funds to develop a business plan, complete a comprehensive nutrient management plan (CNMP), design best management practices identified in the farm CNMP, or both. Since the program was announced in August of 2013 more than $18 million dollars, including $2 million in environmental projects, have been reinvested by dairies that implemented their plans.

- Involved more than 298 dairy producers, representing more than 208,000 cows, in its Discussion Group program that was created originally as a funding partnership with the New York Center for Dairy Excellence and New York Farm Viability Institute. Groups are located across the state with several multi-county groups. Participants and group focus areas represent the diversity of the New York dairy industry.

- Held the 6th class of the Academy for Dairy Executives in Eastern NY in Winter 2015-16, which had 20 participants, representing 19 farms with over 11,000 cows, and 4 agriservice businesses. The majority of participants were the junior generation of their farm who will return to partner with the senior generation. Program planning was a collaboration with Cornell Cooperative Extension educators from the Capital Area Agriculture and Horticulture Team and staff from Farm Credit East.

- Initiated a Thursday webinar series in Fall 2015 with weekly webinars led by Cornell experts who focused on the latest dairy research and practical on-farm information for dairy producers. 15 webinars were held and attended by 378 people. The webinar recordings, posted on the PRO-DAIRY website, have been viewed over 1,500 times.

- Developed and conducted continuing education workshops for professional engineers who provide environmental and CAFO engineering services to...
New York State dairy farmers. Over 300 credits were earned in two sessions attended by 32 engineers in each through the Cornell School of Continuing Education, who collaborated in the workshops.

- Continued to work with the Department of Agriculture and Markets (DAM), the Department of Environmental Conservation (DEC), Northeast Dairy Producers Association (NEDPA) and NY Farm Bureau (NYFB) on the Water Quality Workgroup, which is focused on environmental and CAFO issues, particularly related to manure runoff and well contamination.

- Continued to work with NEDPA, NYFB, Cornell Cooperative Extension and New York Center for Agricultural Medicine and Health (NYCAMH) to educate producers about Occupational Health and Safety Administration (OSHA) farm safety inspections.

- Supported the efforts of NEDPA and other organizations to form the Agricultural Workforce Development Council (AWDC), a group devoted to working together to prepare and retain a skilled farm workforce.

- Continued participation/leadership with the NYS Agricultural Energy Task Force as the Anaerobic Digestion Workgroup Leader and member of the Steering Committee, providing technical assistance and policy education related to renewable energy and greenhouse gas mitigation for New York farms.

- Partnered with Northeast Agribusiness and Feed Alliance to develop and deliver the Herd Health and Nutrition Conference as a one-day program in Syracuse, NY and Burlington, VT. The Syracuse site was attended by 128 agriservice professionals, dairy producers, Cornell faculty and Cornell Cooperative Extension educators.

- Continued to partner with DAIRYBUSINESS Communications on PRO-DAIRY’s “The Manager” insert, which is delivered to a national circulation of over 32,200. The Manager is also mailed to about 4,000 additional farms in New York. In 2016, publication dates were switched to correspond with distribution of the magazine at premier farm shows in the US, including World Dairy Expo in Madison, WI and the World Ag Expo in Tulare, CA, which expanded PRO-DAIRY’s outreach, and the publication was expanded to national circulation.

- Published regular press releases about PRO-DAIRY programs and work in regional media outlets and a bimonthly column in Lancaster Farming. Also, published and distributed an online e-Alert for urgent notices and a monthly e-Leader newsletter, weekly webinar series updates, and with the hire of a new forage management specialist, initiated monthly forage management updates.

- Planned and presented the 2016 Winter Dairy Management program focused on transition cow nutrition and management at 8 sites to 146 farmers.

- Trained 29 youth through the statewide Junior DAIRY LEADER program. Many of these graduates will choose to pursue agriculturally related careers in college. Also, launched the Beginning DAIRY LEADER program due to overwhelming demand for the Junior DAIRY LEADER program, to reach more youth earlier in their high school careers.

Dr. Thomas Overton  
Director, PRO-DAIRY

Dean of the College of Agriculture and Life Sciences, Kathryn Boor and  
PRO-DAIRY Director Tom Overton
PRO-DAIRY is a valuable resource for New York Farm Bureau and our members. In order for their families to succeed and their businesses to thrive, our producers must skillfully navigate the constantly changing arenas of finances, competition, management, human resources, and conservation. The expert guidance and training that PRO-DAIRY uniquely provides plays a critical role. The long-standing collaboration between our two organizations helps to ensure that New York will remain a dairy leader into the future.

DEAN NORTON
President
New York Farm Bureau

The following 2015 - 2016 PRO-DAIRY programs illustrate the degree of participation by the dairy industry.

<table>
<thead>
<tr>
<th>Program</th>
<th>Approximate Number of Cows Represented (if available) and Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cornell Dairy Farm Business Summary and Analysis Program</td>
<td>109,852 cows, 120 farms (direct PRO-DAIRY contribution)</td>
</tr>
<tr>
<td>Dairy Profit Discussion Group Program</td>
<td>More than 208,800 cows on 298 farms</td>
</tr>
<tr>
<td>DAIRYBUSINESS &amp; HOLSTEINWORLD Magazine (quarterly)</td>
<td>Distributed to a national circulation of over 32,200 dairy farmers and agriservice professionals</td>
</tr>
<tr>
<td>Cornell Dairy Executive Program</td>
<td>39,900 cows (26 participants)</td>
</tr>
<tr>
<td>Dairy Profit Monitor (monthly benchmarking tool)</td>
<td>87,240 cows (92 dairy farms)</td>
</tr>
<tr>
<td>Academy for Dairy Executives</td>
<td>11,000 cows (19 dairy farms, 4 agriservice)</td>
</tr>
<tr>
<td>NEDPA Conference</td>
<td>414 attendees, 115,671 cows (133 producers), 8,192,273 cows (204 agriservice)</td>
</tr>
<tr>
<td>Winter Dairy Management Series</td>
<td>146 attendees (mostly producers) across 8 sites</td>
</tr>
<tr>
<td>CAFO Off-Road Show Programs</td>
<td>192 attendees (dairy farmers and their staff) representing 35,500 cows</td>
</tr>
<tr>
<td>Herd Health and Nutrition Conference (with Northeast Feed Alliance)</td>
<td>128 total attendees at NY site, 3,335 cows (5 producers) and 102 agriservice professionals representing the majority of the New York dairy industry.</td>
</tr>
<tr>
<td>CAFO Engineer Training Program</td>
<td>Continuing education workshop in two sessions with 45 continuing education certificates given out to participating engineers, each with 6.6 credit hours.</td>
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2015 - 2016 New York Dairy Industry

- 5,000 dairy farms, 620,000 cows
- 4th nationally in milk production
- 14.1 billion pounds of milk annually
- $2.56 billion (est.) in farm-gate milk revenue annually

New York’s nearly 5,000 dairy farms produce some of the top dairy products in the nation and are the backbone of the entire agriculture industry in the state. The PRO-DAIRY program is a critical component of that success. Through its key partnerships, outreach and programming, PRO-DAIRY connects New York’s dairy farmers and agribusiness to the research and educational resources that enable them to enhance their operations and grow their businesses. By increasing the competitiveness and sustainability of our dairy farmers, PRO-DAIRY is helping to build a strong agricultural industry for many years to come.

RICHARD A. BALL
State Agriculture Commissioner
New York State Department of Agriculture and Markets

The Northeast Dairy Producers Association members feel fortunate to have a unique program like PRO-DAIRY that offers assistance on a variety of needs the dairy industry has. Our partnership on the NEDPA Conference and the Operation Managers Conference brings valuable educational information to our dairy producers and industry partners. We are also grateful that PRO-DAIRY staff continue to provide support on the NY Dairy OSHA LEP, the farm business management analysis, to facilitate dairy discussion groups, and to offer other educational opportunities.

JON GREENWOOD
Chair
Northeast Dairy Producers Association

3
PRO-DAIRY specialists are directly involved with the statewide DFBS program, and work closely with Dr. Wayne Knoblauch, Director of the DFBS program, as well as Extension educators and producers statewide, to improve business success and increase program participation.

**Impact**

- For the 2015 business year, PRO-DAIRY specialists worked directly, and/or with other Extension and agriservice professionals, to conduct the DFBS with 120 New York dairy farms, representing 109,852 cows. 97.5% of farms that participated in the program in 2014 completed the DFBS for 2015.
  - Average herd size increased by 4.2%.
  - Milk production per cow increased 5.1%.
  - Milk sold off the farms increased by 5.2%.
  - Labor hours increased by 7.6%.
  - Cost per hired worker equivalent increased by 3.4%.
  - $128,031,083 was invested back into the businesses.

- DFBS information was used to develop and deliver 15 meetings for producers, students and agriservice personnel. DFBS benchmarks and trends were used in an additional 4 presentations. Focus was how to use the DFBS information to manage the business. DFBS summary data were also used to develop case studies, for individual farms to compare multiple years of data, and in Extension programs. Case studies and other relative educational materials helped train farm management and private consultants on how to use the DFBS to support farm businesses. With PRO-DAIRY involvement, DFBS has compiled business analysis summaries for small herds, large herds, and regional areas, which facilitates comparisons between similar farms.

**Dairy Profit Discussion Groups – Business Focused**

Through the efforts of the Dairy Profit Discussion Group program, 9 discussion groups focus on and share business performance data at their meetings, using both the Dairy Farm Business Summary and Dairy Profit Monitor data. PRO-DAIRY specialists directly facilitate 6 of these groups, prepare reports, and interact with 3 additional groups that are facilitated by Extension and agriservice personnel, which impacts 89 farms, representing 84,740 cows.

**Impact**

- Because of their participation in the program, participants indicate:
  - 95% made changes to some aspect of their business.
  - 93% felt that they had improved their business.
  - 52% positively changed income and/or expenses.
  - 95% stay in contact with other members of their groups outside of formal meetings.

"The group discussions, coupled with individual farm visits, to me are the most valuable. There are many ways to produce milk, and ultimately money, and this process makes you question your decisions. It challenges you to think about it differently," said a Business-focused discussion group participant.

"It has been a wonderful experience. It is always nice to get away from the farm and day to day operations and to have an opportunity to step back and reevaluate the business. We always feel refreshed and usually have a very productive conversation on our way home. The experience is extremely valuable," said a Business-focused discussion group participant.
Cornell Dairy Executive Program

The Cornell Dairy Executive Program (CDEP) is a multi-session executive level management training program for dairy producers interested in improving their business management skills in an increasingly complex business environment. Class 2014-2015 completed their program with session 3 in December 2015. 32 of 33 participants completed all three sessions of the program. Of the 33 participants registered for the program, 26 are dairy producers who own over 40,489 cows. Another CDEP class started in December 2015 with 26 participants, representing 39,900 cows. The program consisted of 3 one-week programs.

Impact

- Recent graduates indicated as a result of participation:
  - 90% felt that they improved some aspect of their business.
  - 95% made a change in their business as a result of attending the program.
  - 40% saw a positive impact to revenue and expenses while they attended the program.
  - 45% felt that 50% or more of the information and ideas presented during the program were new and useful.

Dairy Profit Monitor

The online business analysis tool, which provides a monthly snapshot of key operating parameters and efficiencies at the farm level, continues to be updated and improved. Farmers use the tool to track progress and trends over time, assess impacts of management changes, and to highlight potential areas of opportunity within the business. In addition, programming allows farmers and their consultants to create a customized benchmark report, where they can select a month and certain characteristics for comparison on the farm. The tool can also be used to compare individual farms with those of similar size, geographic area and similar management practices, providing farmers a way to benchmark their performance against other farms.

Impact

- In 2015, a new report was refined that allows farmers to identify how their performance on certain parameters changed from month to month, compared to how other farms changed. Also, another business focused discussion groups began using this report.
- In 2015, 92 dairies, representing 87,240 cows, entered information online to use the program’s report generating capabilities. Information from the DPM program has additionally been used in a variety of venues, including business-focused discussion groups, on-farm Dairy Profit Teams, management meetings set up by the farm to assess progress and goal setting, and case farm projects for college students. PRO-DAIRY staff presented educational programs using the Dairy Profit Monitor information and decision making to 15 different groups during the year.

Enterprise Analysis Project

The Enterprise Analysis Project for 2015 included total cost of labor and labor effectiveness, and cost of operating the feed center.

Impact

- 13 farms with over 12,000 cows participated in the labor studies. 16 farms, representing 20,800 cows, participated in the feed center cost study. PRO-DAIRY also collaborated with Diamond V to host a discussion with other professionals about the common areas of improvement for feed centers.

Academy for Dairy Executives

The Academy for Dairy Executives was started in 2010 to address the need for educational programs targeted at managing today’s modern dairy businesses.

Impact

- In November 2015, the 6th class started the Academy for Dairy Executives in Eastern New York, representing 19 farms owning more than 11,000 cows, and 4 agriservice professionals. The majority of the participants were the junior generation of their dairy farm who will use the training to effectively communicate and coordinate with senior farm owners. Training was completed in March 2016. Planning for this year’s program was a collaboration with Cornell Cooperative Extension educators from the Capital Area Agriculture and Horticulture Team and staff from Farm Credit East.
The Dairy Academy was initiated by PRO-DAIRY in 2012 as a management and leadership development program for the next generation returning to the farm. Today’s participants appreciate the opportunity to brush up on or learn new skills as they take on more leadership at their home businesses.

The program is offered in a different region of the state each year, in coordination with the local Cornell Cooperative Extension offices, and provides a forum for producers to learn and interact with faculty and each other, and the presenters, during three one-night sessions over four months.

Frank Albano of SRJF Inc., in Stamford, NY milks 170 cows and attended the program with his brother in 2013. They completed transfer of farm ownership from their uncle in January 2016 and credit the Academy with helping them to listen to each other and navigate the transition, as well as prepare for an expansion that is underway.

“We were going through a farm transition and I needed more business management skills,” Albano said. “It was a whole farm transition. We don’t know where the farm would have ended up without the skills we developed.”

Albano also values the network of colleagues he developed and the exposure to new technologies and ways of approaching managing the farm business.

“I grew up on a farm. I enjoy the challenges. Some days you’re a mechanic. Some days you’re a veterinarian. It’s not the same thing every day. And my family is working with me,” he said. His wife Jennifer and son Chris, age 14, also work on the farm. “The Academy brought a whole different mindset looking at challenges that came up on the farm. It was a different way of looking at the business aspect.”

After completing the Academy, Albano and his brother participated in a Dairy Acceleration Program grant where they hired Red Barn Consulting to create a business plan for construction of a 250-cow stall freestall and milking parlor. Milk production increased six pounds per cow with a remodel of stalls in the existing tie stall barn.

“We originally thought the business plan was optional, but it saved us from big mistakes,” Albano said. And, he said, with the value they’ve seen, the farm has hired the firm again for their next barn project that they will soon break ground on.

While thinking about the time commitment to the program initially was a challenge, they ended up wishing for more programs.

“We’ve maintained contact with the networks developed through the program and continue to challenge each other. Many say they don’t have the time, but it’s basically priceless,” he said.

Russ Kelly milks 475 cows at his Glenvue Farm in Fultonville. He valued opportunities to network during his generation and encouraged his sons Justin and Ryan to participate in the Academy.

“My kids both participated in the program,” he said. “There are no longer young farmer programs through Cooperatives that provide the chance to meet other people. Agriculture is important economically to the state, to the whole community. Let’s support the businesses that we have here. We’ve already invested millions of dollars.”

His son Justin studied agriculture at New Mexico State College before returning to the farm.

“I thought it was a good program. One of the best things was I could connect with people semi-local that I didn’t know, but who were in the same age group and situation. They’re a resource in the future. I was looking to do some professional development,” he said.

“PRO-DAIRY does a good job of keeping information out there, of letting us know what’s going on for a lot of different topics.”

Additional information is available on PRO-DAIRY’s webpage at http://prodairy.cals.cornell.edu/conferences/academy.

“One thing I noticed with participants was the chance to network and hear stories, which made them understand they are not alone. For many, they realize transition or communication challenges with employees, other generation or agribusiness, exist for others, too.

I have hosted the program twice because I know, and have a chance to see, some skills develop that will help the participants (next generation, owners or employees) be better and more effective in their position on farm.

While participants may know some of the information, they always see some new things and get new ideas. This is priceless.”

SANDY BUXTON, Senior Extension Educator, Cornell Cooperative Extension of Albany County
The PRO-DAIRY Field Crops/Nutrient Management Program provides nutrient management educational programs. Emphasis is on optimizing crop yields; reducing fertilizer costs; accounting for manure nutrients; identifying related environmental benefits; compliance with CAFO and nutrient management regulations; training for farm staff to increase awareness of regulations and requirements; and training for farm staff to reduce the risk of causing water quality problems. Programming efforts also continued to address Occupational Safety and Health Administration (OSHA) related worker safety in response to a dairy Local Emphasis Program (LEP). PRO-DAIRY also joined with Northeast Dairy Producers Association (NEDPA) and other organizations to address workforce development issues as farm workers become increasingly difficult to find. Overall, more than 1,000 people attended nutrient management and related programs that involved PRO-DAIRY efforts, including farm managers and staff, CAFO planners and support staff, and Natural Resources Conservation Service (NRCS) and Soil and Water Conservation District (SWCD) staff.

PRO-DAIRY in 2015 added to its capacity in Field Crops with a newly created position focused on Dairy Forage Systems Management. The focus of the Forage Crop Production System Specialist is on optimizing home-grown forage production for economic and environmental benefits. Programming will emphasize data-driven decision-making and may include elements of crop selection and rotation, fertilizer and manure management, forage evaluation including corn silage yield and digestibility, and precision farming techniques. The Forage Systems Management Program is building strong bonds with University and Industry partners to identify and address challenges and opportunities related to successful forage management on dairy farms.

CAFO Training in Nutrient Management
Significant effort continues with winter manure application and how to reduce runoff risk. The challenging weather of winter and spring 2014, along with similar challenges in 2015 and 2016, show dairy producers need to make additional changes to reduce risks.

Impact
- In addition to the PRO-DAIRY CAFO Off-Road Show offered directly to farm staff statewide, PRO-DAIRY continues to work with New York Farm Bureau (NYFB) and NEDPA to develop a Water Quality Work Group primarily comprised of farmers with organizational staff and technical advisors from PRO-DAIRY, the Department of Agriculture and Markets, and the private sector. The goal is to unify farmers and to develop and offer to regulators potential solutions and next steps to address environmental risk.
- Additionally, a campus academic group was formed that addressed technical aspects of winter manure application, and reviewed and updated existing guidelines based on the conditions experienced during winter 2014. Through PRO-DAIRY leadership this group completed and published revised winter wet weather manure application guidelines in December 2015. This document will be relied upon in the next CAFO permit to guide manure application decisions.
- The CAFO Off-Road Show continues to evolve and is an important programming effort as the draft CAFO Permit expands continuing education requirements for manure applicators. Training was provided to staff from more than 20 farms, reaching 50 individuals, and representing 15,500 cows. Additionally, assistance was provided to Dairy Support Services Co. and Department of Environmental Conservation (DEC) staff, to deliver CAFO Off-Road Show programming to 142 individuals representing many medium and large dairies in the Onondaga, Cortland and Cayuga County area, with at least 20,000 cows represented. The program emphasizes issues of
safety, regulations and the importance of following application rates, spreading setbacks, keeping records and knowing what to do in case of a spill or related emergency. Farm managers report that after this training staff ask more questions about setbacks and are overall more vigilant about potential manure related risks.

Nutrient Management SPEAR Program

PRO-DAIRY continues to work with the Nutrient Management Spear Program in a strong and productive partnership to develop and interpret soil fertility research data from commercial and research farms.

Impact

PRO-DAIRY continued work on the grant award designed to evaluate phosphorus (P) indices across the Chesapeake Bay Basin, submitted a grant for additional work to update the NY P Index, with an eye to revising P indices that can be used across state boundaries. Though a common P index appears unlikely, PA and NY P indices may become more similar. PRO-DAIRY continues to assist the Spear Program to support DAM staff (Greg Albrecht), DEC staff (Jacqueline Lendrum) and Upper Susquehanna Coalition staff to address nutrient management issues relating to implementation of NY’s Upper Susquehanna TMDL work plan. This effort continues to strengthen the case that NY’s broad AEM partnership is doing an excellent job of protecting our natural resources.

Groundwater Work Group

PRO-DAIRY staff continues to provide leadership to the Groundwater Work Group that investigates well contamination issues where dairy manure is a suspected contaminant, and makes recommendations regarding manure management practices to reduce risk of groundwater contamination.

Impact

In cooperation with USGS and Madison County SWCD staff, two training sessions were held in CNY for local agency staff and AEM planners on the local karst conditions. These meetings were attended by 50 people.

Dairy Issues Team

With increasing development of manure storage around the state and related public concern, PRO-DAIRY staff joined with NEPDA, the American Dairy Association and Dairy Council (ADADC), NYFB and NY Animal Agriculture Coalition staff to prepare a publication that helps farmers proactively plan through manure storage siting and to engage the public. The group also worked with Jefferson County farmers and local officials to address local concerns about manure storage. PRO-DAIRY staff made presentations to the land use planning committee of the Jefferson County legislature and to local agency staff at the Black River Watershed annual meeting.

First Cutting Forage Digestibility Survey (new in 2015 - 2016)

PRO-DAIRY collaborated with Cornell Cooperative Extension and Dairy One to survey the impact of weather and early spring growing conditions on the digestibility of first cutting alfalfa and grass forages harvested for dairy feed.

Impact

Provide producers with insight into what management factors are most critical to influencing forage quality and how management can be used to offset the impacts of environmental.

“The dedication and knowledge that Karl Czymmek provides to dairy farmers on environmental regulations and the communication bridge that Karl has fostered between dairy farmers and DEC is greatly appreciated by the industry.”

JON GREENWOOD, Chair, Northeast Dairy Producers Association
PRO-DAIRY has expanded its capacity with the hire of Joe Lawrence in a newly created Dairy Forage Crop Production System Specialist position. As Forage Crop Production System Specialist, Lawrence focuses on optimizing home-grown forage production and utilization for economic and environmental benefits, including use of impact evaluation tools such as whole farm nutrient balance assessments. Programming will emphasize data-driven decision-making and may include elements of crop selection and rotation, fertilizer and manure management, forage evaluation, including corn silage yield and digestibility, and precision farming techniques.

Lawrence connects and brings resources to the regional Cornell Cooperative Extension teams, in support of research and education, including coordinating idea sharing for regional winter programs. He supports both the Field Crops and the Dairy Management Extension specialist teams.

With the Field Crops team, Lawrence runs a corn silage hybrid trial that focuses on variety selection, crop rotation for forages, and grass-alfalfa rotation. For the Dairy Management team, Lawrence works on harvest and storage management, including a bunk silo management project.

Lawrence brings a boots on the ground approach and has a direct connection to what’s happening on farms and in the seed industry. His background includes work both as an Extension Specialist and as a private crop consultant.

One of his first projects was to re-start the corn silage hybrid trials, which had been discontinued following the 2013 season with the impending retirement of Bill Cox, Cornell School of Integrative Plant Science Professor in Soil and Crop Sciences. He used the opportunity of re-starting the trials to build a strong relationship and coordinated effort with Margaret Smith, Cornell School of Integrative Plant Science Professor in Plant Breeding and Genetics, who conducts grain research. “It has worked very well to pool resources to increase the efficiency of field work,” Lawrence said.

“New York State dairy farmers have long relied on the work of Cornell University as the only New York specific, comprehensive, unbiased resource for corn silage-making decisions. We consider Cornell corn hybrid trials a vital tool for farmer success and a fine way to demonstrate to farmers the importance of Cornell’s role in agricultural excellence. With corn hybrids changing at a rapid pace, with the mounting cost of seed and with the increasingly competitive nature of dairy farming, New York dairy farmers need every advantage available to make our businesses succeed. These trials both make and save money for farmers,” according to Meghan Hauser and her father Willard De Golyer, Table Rock Farm, Castile.

In the corn silage commercial hybrid trials, companies pay an entry fee and choose hybrids to be tested. Farmers use the results for yield comparison and purchasing decisions. In 2016 29 hybrids from eight companies were tested. “We hope to double this number as the trials will be expanded to include both shorter and longer season hybrids,” Lawrence said. The hybrids were planted at two locations in 2016. One is on a farm in Cayuga Country and the other is on a farm in St. Lawrence County. Next year’s trial will expand to include locations in West and Central or Eastern NY.

Lawrence has also begun collaborating on field research with Jerry Cherny, Cornell School of Integrative Plant Science Professor in Soil and Crop Sciences, in an alfalfa grass harvest management project approved for funding from a NY Farm Viability grant. The focus will include harvest management and variety selection.

“From our perspective it’s nice to have regional data. We conduct our own trials, but having the addition of data from a trusted resource is valued and trusted by the farmers. It’s extremely valuable for us to have PRO-DAIRY for this. They bring a level of testing that most companies are not able to achieve by running the data through the Cornell Net Carbohydrate and Protein System (CNCPST) model.”

JIM VALENT
2016 Corn Hybrid Silage Trial Participant
Channel Seed

“I love that PRO-DAIRY is conducting trials again. I think it’s necessary to have independent tests. And the trials are conducted in areas where we don’t have cooperating farms. We missed the last two years of trials.”

ADAM ROBERTSON
2016 Corn Hybrid Silage Trial Participant
Seedway
PRO-DAIRY expanded their program capacity with the hire of Robert A. Lynch, DVM as Senior Extension Associate in February 2016. As the Dairy Herd Health and Management Specialist, Lynch has established a statewide Extension program focused on dairy herd health and management for the New York dairy industry. Lynch leads educational programs, integrates research results, identifies research needs, collaborates with on-farm with advisors, and participates in industry-wide initiatives.

Research Involvement

Lynch links with faculty and staff in the Department of Animal Science and the College of Veterinary Medicine and works to translate research-based concepts to practice within the dairy industry. He has partnered with PRO-DAIRY, Cornell College of Agriculture and Life Sciences, and College of Veterinary Medicine staff to conduct dairy herd health related research, including research on dry cow therapy management and digested manure solids bedding management.

Education Based Management Strategies

Since Lynch’s hire, the PRO-DAIRY Herd Health and Management Program has provided education based on management strategies that enhance herd health, performance and profitability. Current areas of focus include fresh cow management, prudent use of medications and treatment protocols, calf health, and reproductive management. Some of these efforts have included:

- A series of dairy reproduction educational events was held statewide on the topic of dairy reproduction in coordination with Dr. Julio Giordano, DVM, MS, PhD, Cornell University Assistant Professor – Dairy Cattle Biology and Management. 36 farmers attended, representing 28,000 cows. Veterinarians and agriservice professionals also participated. 96% of survey respondents scored the overall meeting 4 or 5 out of 5.

- Dairy Discussion Group presentations were given to the: Tioga-Broome-Chemung County Discussion Group on Cow-side Diagnostics. Four farms attended representing 2,000 cows; Madison County Large Dairy Herd Discussion Group on Reproductive Management. Five farms attended representing 3,200 cows; Industry group meetings on Investigating Cow Mortality; and Update on Changes to the Veterinary Feed Directive.

Direct Farm Support

The PRO-DAIRY Herd Health and Management Program has had direct farm impact by working with multiple dairy farms, their veterinarians, and other advisors on specific health and productivity related issues.

“Having the resources of the PRO-DAIRY Team and the Herd Health and Management Specialist look at records, cases and situations from a fresh perspective has been instrumental in recognizing areas of concern on a dairy. These may be sensitive topics for the farm veterinarian to discuss and an outside, independent voice is sometimes better received than the voice clients hear, with the same message, week in and week out. I look forward to being able to utilize this resource in the future.”

DR. CARIE TELGEN, DVM
Co-owner and veterinarian
Battenkill Veterinary Bovine PC, Greenwich

“Dr. Lynch at his Empire Farm Days presentation provided stimulation for increased vigilance by dairy producers to attend to their role in the big picture of providing safe and affordable food products. The information was a timely reminder to those producers who may be to some degree aware of the issues in that big picture, but need to make on-the-farm decisions on a personal and daily basis. The urgency of some situations should not be compromised by making choices with long-term detriment.”

DR. CHUCK NYDAM, DVM
Dairy Profit Discussion Groups

Dairy Profit Discussion Groups continue to be an effective method to increase farm profitability and quality of life for farm families and rural communities and were established by PRO-DAIRY and the New York Farm Viability Institute. The program brings farmers together to share ideas, experiences, and to learn new ways to improve the profitability of their farms. The groups represent the diversity of the industry both in geography and production management systems. Each group has a targeted membership so that there is a shared commonality to ensure that the discussions are meaningful and valuable. Extension educators and agriservice professionals facilitate and coordinate the groups.

The Dairy Profit Discussion Group program has now completed its 8th full year. Effective use of business and production management tools is a major barrier to profit and production growth of dairy farms in New York. The focus of this project has been to promote more effective use of these tools by the dairy industry in New York through the creation of discussion groups that represent the diversity in both geography and production management system that characterizes the New York dairy industry. 12 discussion groups have been meeting across the state. Some of the commonalities the groups have formed around include: young farmer, dairy women, middle managers, grazing, large herd, mid-size herd, small herd, dairy managers in transition, and herd managers.

Farmers were surveyed and interviewed by group facilitators to determine changes in farm practices and adoption of production and management tools as a result of participating in these groups. All group facilitators reported that their discussion groups made progress towards the group’s goals of improving profitability and implementing appropriate technology.

Winter Dairy Management Program

The 2016 Winter Dairy Management program focused on transition cow nutrition and management. Dr. Tom Overton, Cornell University, and Dr. Sabine Mann, Cornell Veterinary College, shared how to feed cows to meet the unique metabolic challenges of the transition period, and along with Brittany Leno, Department of Animal Science PhD candidate, and Lindsey Collings, NNY Dairy Specialist, discussed what cows need from the environment during transition and how farms can meet those needs. Dr. Rob Lynch, DVM, Cornell PRO-DAIRY, and Dr. Mark Thomas, DVM, Countryside Veterinary Clinic, shared techniques on monitoring cow health before, during and after calving. They discussed new monitoring technology, cow-side practices and decision making.

The program was offered at 8 sites statewide and was attended by 146 farmers.

Thursday Dairy Update Webinar Series (new 2015 - 2016)

A new webinar series was launched in 2015 to 2016 and was offered every Thursday from 1 to 2 pm from November through March. The webinars focused on the latest dairy research and practical on-farm information for dairy producers.

15 webinars were held, which were attended by a total of 378 people. The recordings of these webinars have been viewed over 1,500 times.
Empire Farm Days Profit Seminars

PRO-DAIRY continues to partner with DAIRYBUSINESS Communications to develop and deliver the annual Dairy Profit Seminars at Empire Farm Days.

**Impact**

- **Enhanced Herd Health through Effective Protocol Management**, by Rob Lynch, DVM, Dairy Herd Health and Management Specialist, Cornell PRO-DAIRY.
- **Spreading the Word – Manure: The Planning and Implementation Process**, a panel discussion with Russ Beck, Beck Farms Inc.; Jessica Skinner, JESS Engineering, PLLC; and Brian Boerman, Ag Consulting Services. Peter Wright, Cornell PRO-DAIRY, moderated the panel discussion.
- **The Changing Labor Environment – Responses and Approaches**, a panel discussion with Dale Hemminger, Hemdale Farms; Gregg McConnell, Farm Credit East; and Tom Maloney, Cornell University. Jason Karszes, Cornell PRO-DAIRY, moderated the panel.

2016 Northeast Dairy Producers Association Conference

In collaboration with the Northeast Dairy Producers Association, PRO-DAIRY planned, organized, and hosted the 2016 NEDPA Conference. This conference is bi-annual and presentations focus on management skills and techniques that can improve the daily operation and performance of modern dairy farms.

General session topics included:

- **How the Best Get Better** - Jay Lehr, Environmental Education Enterprises
- **Designing and Managing a Feed Center for Efficiency** - David Greene, Diamond V
- **Financial Management: Bulletproofing Your Balance Sheet** - Moe Russell, Russell Consulting Group
- **Sleep For Success: Everything You Must Know About Sleep, But Are Too Tired To Ask!** - James Maas, Sleep for Success
- **Innovating for Change** - Steve Jones, Fairlife
- **Employer and Employee Expectations** - Melissa O'Rourke, Iowa State University
- **Environmental Management and CAFO** - Jackie Lendrum, NYS Department of Environmental Conservation and Karl Czymmek, Cornell PRO-DAIRY
- **How the FARM Program is Building Consumer Trust in Dairy** - Emily Meredith, National Milk Producers Federation
- **Image of Ag** - Jay Lehr, Environmental Education Enterprises

**Impact**

- The conference was attended by 414 people, including 133 dairy farmers who own 115,671 cows; 204 agriservice professionals; and 77 Extension educators, veterinarians, university faculty, staff or students.

2016 Herd Health and Nutrition Conference

In collaboration with the Northeast Agribusiness and Feed Alliance, PRO-DAIRY planned, organized, and hosted the Syracuse site of the 2016 Herd Health and Nutrition Conference. This conference is held as a one-day conference in Syracuse, NY and Burlington, VT. Topics included: **New and Alternative Forages for Modern Dairy Rations in the Northeast** - Dr. Sid Bosworth, University of Vermont; **Politics, Policy, Profit and People: How They Help and Hinder Animal Welfare** – Dr. Jennifer Walker, Dean Foods; **Preserving the Quality of Silage through Improved Aerobic Stability** – Dr. Limin Kung, University of Delaware; and **Inflammation, Immune Function and the Transition Cow** – Dr. Barry Bradford, Kansas State University.

**Impact**

- Over 128 feed industry employees, veterinarians, students and farmers attended the two locations.

Collaborators for Dairy Discussion Group, Winter Dairy Management and Thursday Dairy Update Webinar Programs

- Cornell Cooperative Extension Educators
- Cornell Cooperative Extension Regional Teams
- PRO-DAIRY Staff
- Cornell Faculty
- Milk Quality Improvement Program
- New York Quality Milk Production Services
- SUNY Morrisville
- Dr. Mark Thomas, DVM
Northeast Agribusiness and Feed Alliance understands the critical role PRO-DAIRY plays in helping the dairy industry reach its potential as a vibrant growing economic engine in the Northeast. As a long-time collaborator, we work together on programs and services that benefit the dairy industry, and thus return value to the agribusiness sector. We recognize that together we are able to accomplish far more than what we could do independently. The Agribusiness and Feed Alliance is bullish about the future of the Northeast dairy industry and we know PRO-DAIRY will continue to play the critical role of assisting the dairy industry to achieve sustainable profitability, effectively manage nutrients and maximize renewable energy resources.

PRO-DAIRY in partnership with DAIRYBUSINESS Communications launched a weekly webinar series each Thursday from 1 to 2 pm, November 2015 through March 2016. Registration was not required. Participants clicked on the Dairy Webinars tab on PRO-DAIRY’s website to join. Webinars were also edited and posted for viewing after the event. Participants received one continuing education unit (CEU) from the American Registry of Professional Animal Scientists (ARPAS).

High quality, easily accessed information is the overreaching goal for the Thursday Dairy Update Program. The webinars focused on the latest dairy research and practical on-farm information for dairy producers. 15 webinars were held, which were attended by a total of 378 people. The webinar recordings have been viewed over 1,500 times.

Available webinar recordings include:

- **Using Test Day Data to Manage Udder Health and Milk Quality.** Dr. Rick Watters, PhD, Regional Director of Quality Milk Production Services, Cornell College of Veterinary Medicine.

- **Update on Ration Phosphorus and Reproduction.** Dr. Larry Chase, Professor Emeritus, Dairy Cattle Nutrition and Management, Department of Animal Science, Cornell University.

- **Valuing Farmland Proximity - Methods for valuing proximity in farmland purchasing decisions.** Dr. Jennifer E. Ilft, PhD, Assistant Professor, Mueller Family Sesquicentennial Faculty Fellow in Agribusiness and Farm Management, Charles H. Dyson School of Applied Economics and Management, Cornell University.

- **Heifer Nutrition and Economics two-part series. What the new edition of the Cornell Net Carbohydrate and Protein System tells us.** Dr. Mike Van Amburgh, Professor of Dairy Management, Department of Animal Science, Cornell University.

- **Hot Topics in Transition Cow Nutrition.** Dr. Tom Overton, Professor of Dairy Management, Cornell University, Director, PRO-DAIRY, Associate Director, Cornell Cooperative Extension, Department of Animal Science, Agriculture and Food Systems.

- **Clinical Mastitis Treatment Decisions and Using Pathogen ID.** Dr. Daryl Van Nydam, Associate Professor, Cornell University, Director, Quality Milk Production Services, College of Veterinary Medicine.

- **Shredlage - What have we learned?** Dr. Larry Chase, Professor Emeritus of Dairy Cattle Nutrition, Department of Animal Science, Cornell University.

- **Keeping it Clean for the Tank! Reducing spore forming contaminants in the bulk tank.** Nicole Martin, MS, Associate Director, Milk Quality Improvement Program.

- **Rumination and Activity Monitors Update.** Dr. Matias Stangaferro, DVM, MS, PhD candidate in the Giordano Lab.

- **Reproductive Management - Focus on 2nd and Subsequent Service.** Dr. Julio Giordano, DVM, MS, PhD, Cornell University Assistant Professor – Dairy Cattle Biology and Management.

- **Reproductive Management - 1st Service.** Dr. Julio Giordano, DVM, MS, PhD Cornell University Assistant Professor, Dairy Cattle Biology and Management.

- **Genetics on the Farm.** Dr. Heather J. Huson, PhD, Cornell University Assistant Professor, Animal Geneticist.

- **Applied Dairy Immunology and Vaccination Protocol Management.** Dr. Rob Lynch, DVM, Dairy Herd Health Specialist, Cornell PRO-DAIRY.

- **Bedding and Bulk Tanks – What to do with that information?** Dr. Paula Ospina, DVM, PhD, Quality Milk Production Services, Cornell College of Veterinary Medicine.

**RICK ZIMMERMAN**
Executive Director, Northeast Agribusiness and Feed Alliance

“Northeast Agribusiness and Feed Alliance understands the critical role PRO-DAIRY plays in helping the dairy industry reach its potential as a vibrant growing economic engine in the Northeast. As a long-time collaborator, we work together on programs and services that benefit the dairy industry, and thus return value to the agribusiness sector. We recognize that together we are able to accomplish far more than what we could do independently. The Agribusiness and Feed Alliance is bullish about the future of the Northeast dairy industry and we know PRO-DAIRY will continue to play the critical role of assisting the dairy industry to achieve sustainable profitability, effectively manage nutrients and maximize renewable energy resources.”
The Dairy Environmental Systems (DES) Program strives to support dairy industry sustainability by providing leadership with industry partners to identify and perform needed work in the technical, economical, practical, and managerial aspects of dairy farm systems and system components. This includes environmental friendliness, neighbor/consumer acceptance and regulatory compliance. Program focus is on cow comfort/well-being, air quality, water quality, and renewable energy opportunities, specifically anaerobic digestion with energy conversion coupled with advanced manure treatment (nutrient separation).

CAFO - Dairy By-Product Management, Treatment, and Renewable Energy Systems


This is a new three-year funded project (December 2015 to November 2018). The lead PI is at the University of Buffalo and other project collaborators are with the University of Maryland and the University of Michigan. The project goal is to investigate the fate of therapeutic antimicrobials used in dairy herds by examining if and how various methods to treat manure affect the viability of residuals monitored, and the potential movement of any residuals from farms to the environment.

PRO-DAIRY’s role is to identify and work with selected commercial dairy farms in New York (who all have manure storage and some that have manure treatment systems) to document the manure systems, quantify their performances, and obtain pre- and post-treatment system samples for analysis. PRO-DAIRY will also obtain drug use information from the collaborating farms and analyze this information to determine the impact manure handling/treatment system has on drug residues.

Identified and met with six NYS farms as collaborators. Organized and hosted a project team meeting and farm site tours. Developed manure sampling, testing, and evaluation/quality assurance/quality control plans. Worked with CALS Communications Director and project collaborators to develop a press release. Wrote three Q & A documents on antibiotics and dairy with the goal of increasing society’s understanding of how and why antibiotics are used on-farm.

Sponsored Project: Quantifying and Demonstrating Scrubbing Hydrogen Sulfide from Farm-Based Anaerobic Digestion Systems (Northeast SARE w/UMD)

This is a two-year funded project (October 2015 to August 2017) in collaboration with the University of Maryland that looks at the cost and performance of various biogas clean-up systems. Currently lack of reliable biogas clean-up is one of the major reasons manure-based digesters do not achieve their full electrical energy generation potential. More information is needed about the existing biogas clean-up methods for farmers to make better informed decisions about their use and associated economics. PRO-DAIRY’s project will work with commercial dairy farms with digesters.
in New York, Pennsylvania, and Maryland to monitor the performance of the existing clean-up systems. Project deliverables include development and delivery of various Extension materials about biogas clean-up and a book “A Farmer’s Guide to Biogas Clean-up and Utilization.”

**Impact**

- Assembled and installed two instrumentation/data logging systems for location at two collaborating farm sites in CNY. Trouble shot systems and made in-field adjustments/changes. Developed field installation guidance document for instrumentation/data logging systems. Organized and hosted a whole project team meeting/team training program. Developed on-site logs to obtain labor and financial expenditures associated with the biogas clean-up system and associated engine-generator sets. Worked with system managers to complete logs on a daily basis.

**Sponsored Project: Dairy Manure-Based Anaerobic Digesters with Commercial Greenhouses: Develop, Quantify, and Disseminate Synergistic Opportunities**

This was a three-year funded project that termed in September 2015. Funding was provided, in part, by Smith-Lever and Hatch program monies. This project seeks to expand upon and generalize the results of a paper published by Scott et al. (2005) where they reported on the theoretical feasibility of partnering a dairy manure-based anaerobic digester, located on a 500-cow NY dairy farm, with two NY greenhouses from an energy perspective. The analysis showed that the digester could meet nearly all of the energy needs of both the digester and an energy intensive greenhouse operation. In a typical upstate NY climate heat and electricity represent a major expense for greenhouse operators (on the order of $10 to $20 per square foot per year). Heat is necessary to maintain optimal growing temperature for crops, and electricity is needed to provide supplemental lighting to ensure consistent year round production.

**Impact**

- PRO-DAIRY developed a greenhouse energy model that will allow users to quantify the energy usage (heat and electricity) of a greenhouse size of their choice. Coupled with the anaerobic digestion model, the greenhouse model will allow a user to estimate the size of greenhouse facility that could be supported by a digester. The first program is called the Cornell Digester Simulation Model, the second is called the Cornell Commercial Greenhouse Simulation Model, and the third is a bridge that connects the two models together. Users can use the model to quantify the synergies between proposed AD and GH projects, which may lead to synergistic relationships.

- A grant was written in 2015 and selected for funding to increase the capacity of the existing models by developing new modules that will perform economic and greenhouse footprint outputs. Work began on this project in October 2016.

**Sponsored Project: PRO-DAIRY Increases Agricultural Engineering Capacity for BMP Implementation (Lake Champlain Basin Program).**

A proposal was written to the Lake Champlain Basin Program in late 2015 and PRO-DAIRY was notified of selection for funding in early 2016. The proposal is to develop and deliver technical training sessions targeted to those interested in serving farmers within the Lake Champlain watershed in the areas of dairy environmental system management.

**Dairy Housing Systems/Cow Comfort**

There are many ways to have meaningful impact on the NYS dairy industry. Extending one’s reach through “multipliers” (other Extension educators and agriservice personnel) is one, and working directly with dairy producers on specific production or business issues, is another. Significant effort was spent, along with associated impact, that are important for the greater good.

**Impact**

- One-on-one help with dairy freestall renovation plans, including stall designs, ventilation, cow cooling, manure gathering and transfer, and water delivery.
- One-on-one design assistance with group fed pre-weaned calf barns.
- One-one-on assistance with anaerobic digester feasibility, trouble shooting, and modifications.
- Cow comfort assessment through the use of position logger and environmental instrumentation.
and poultry producers and consumers of animal products in all regions of the US to foster production practices that are environmentally sound, climatically compatible, and economically viable.

**Impact**

- Over 125 visitors from several countries attended a Dairy Environmental Systems and Climate Adaptations Conference on the Cornell campus in July 2015. This two-day regional conference featured a unique opportunity to learn about emerging dairy housing and manure management system topics in conjunction with regional climate trends and national and international market force drivers. Climate adaptation strategies for the Northeast and upper mid-west US was another major topic focus for the conference. Keynote speakers were Cornell College of Agriculture and Life Sciences (CALS) Dean Boor and Nestlé’s Corporate Head of Agriculture Hans Johr. The conference included an optional day of tours that showcased on-farm integrated waste handling/treatment systems and on-farm climate adaptation strategies.

**Sponsored Project: Comprehensive Investigation into the Use of On-Farm Generated Renewable Combined Heat and Power (CHP) Energy to Mitigate the Effects of Environmental Stress on Dairy Cows in New York State.**

This project looks at the use of anaerobic digester system surplus heat for cooling cows. Project collaborators (Drs. Angenent and Gebremedhin – Biological and Environmental Engineering), completed their work and started writing research finding reports in 2015. PRO-DAIRY’s lead work for this project began in 2016 with development of a list of target outreach materials to develop and deliver.

**Dairy and Climate Change/Adaptation/Mitigation**

**Sponsored Project: National Facilitation of Extension Programming in Climate Change Mitigation and Adaptation for Animal Agriculture (USDA-NIFA AFRI w/UNE); “ANIMAL AGRICULTURE AND CLIMATE CHANGE.”**

The Animal Agriculture and Climate Change project, a six-year project funded primarily by the USDA, is a partnership among five land grant universities nationwide. The goal is to build capacity in Extension educators to effectively inform and influence livestock

**Regulated Air Emissions**

PRO-DAIRY continues to remain engaged with National Air Emissions Monitoring Study (NAEMS) data analysis being performed by the US EPA. The EPA is still in the process of analyzing data presented to them via reports others and PRO-DAIRY filed in 2011. The outcome of EPA’s analysis will be the development a standardized method for all US dairy farms to estimate their regulated air emissions (ammonia-N, hydrogen sulfide, dust, and volatile organic compounds). The final standardized method was scheduled to be released in 2012 but a release date is still unknown.

**CAFO Engineer Training Program**

PRO-DAIRY developed training sessions held in Ithaca, NY to educate engineers on specific topics within the dairy industry.
Sheland Farms, LLC, a 940 cow dairy in Ellisburg, Jefferson County, NY, constructed a new group-housed calf barn where 100 calves have free access to milk through robots. The barn was constructed in 2014 and calves moved in in February 2015.

"Curt designed our ventilation system, which is an intricate part of the successful operation of our calf barn. It’s extremely beneficial to have an unbiased design," said Douglas Shelmidine, who is an LLC member with his brother Todd, son Devon, and father Donald. His son, Eric, is Calf Program Manager. "Curt is extremely concerned about the same things we are: animal health and welfare. And the functionality of his design reflected that."

"PRO-DAIRY is the NY Dairy industry’s main connection with applied research and development. With all of the technology that is coming at us, it’s important to have an independent voice and opinion on how we can apply those technological advances. We always have a need for basic research as it is applied through technology."

DOUGLAS SHELMIDINE
Sheland Farms, LLC

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**Impact**

- 45 Continuing Education Unit certificates, with 6.8 credit hours for each certificate, were earned by NYS professional engineers who attended one or both of the two PRO-DAIRY training sessions that focused on professional engineering ethics, basic and advanced manure separation and treatment, earthen manure storage liners, and costs and benefits of manure storage covers.

**PRO-DAIRY Water Use Calculator**

This is an ongoing joint project between PRO-DAIRY and DEC to educate NYS dairy producers about additional changes to New York’s water use reporting law and related requirements.

**Impact**

- In February 2016 the PRO-DAIRY’s water use calculator was updated to reflect changes made by DEC to the reporting form so that farms could continue to use it to estimate and report water use, if required to do so.

**New York State’s Clean Energy Fund and Renewable Energy Vision**

In 2014 the Public Service Commission (PSC) directed the New York State Energy Research and Development Authority (NYSERDA) to develop a new plan to advance the renewable energy in the State. NYSERDA responded by drafting two documents, the Clean Energy Fund (CEF) and the Renewable Energy Vision (REV). The NYS Clean Energy for Agriculture Task Force was formed in October of 2014 by Governor Cuomo, in part as a result of PRO-DAIRY work conducted as a follow-up to the 2012 Yogurt Summit, and began meeting in 2015. PRO-DAIRY serves as the leader of the Anaerobic Digestion (AD) work group and on the Technology R&D work group. A Strategic Plan is being developed.
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 the farms in partnership with Cornell Cooperative Extension and other agriservice professionals.

For eligible farms, 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.

Response to the Dairy Acceleration Program is strong. Since its inception three years ago, a total of 265 dairy projects have been awarded funding, focused on small and mid-size farms across NY. An estimated $18 million, including $2 million in environmental projects, has been reinvested as a result of these projects.

- 69 farms were awarded both business planning and environmental planning funds.
- 81 farms were awarded business planning funds.
- 115 farms were awarded environmental planning funds for either a CNMP or design funds for engineering BMPs identified in their farm CNMP.

The business plans have assisted these owners with making sound business decisions for their dairies. Farms are analyzing options to improve profitability, 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 maximizing the 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 EQIP or AgNPS funds facilitating the implementation of the farm CNMP.

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

“Pollution of surface and ground water by nutrients is one of the greatest environmental challenges facing us today. DEC’s continued support for Cornell PRO-DAIRY’s Dairy Acceleration Program is helping dairy farms throughout the state to manage nutrients for a better environment. Keeping the nutrients that are generated by the farm on the farm through recycling and reuse, lessens the need for nutrient imports, resulting in the reduction of the farm’s nutrient footprint to the local watershed. The Dairy Acceleration Program provides dairies with the technical support to implement best management practices to meet this goal and improves both farm operations and water quality across the State. The Department continues to support this program through funding from the Environmental Protection Fund.”

JAMES TIERNEY
DEC Water and Watershed
Assistant Commissioner
DAP Funds Spur Innovation on a Castile, NY Farm

Silver Meadow Farms, LLC, a 200-milking-cow dairy in the town of Castile, near Silver Lake, used Dairy Acceleration Program funds to evaluate feasibility of robotic milking machines and to update their environmental management plan.

Dairy Acceleration Program is designed to enhance profitability and environmental stewardship of New York dairy farms. Funding for eligible projects may be used for organization of financial records and benchmarking, creation of strategic business plans, design of new or remodeled production facilities, development or updates of Comprehensive Nutrient Management Plans (CNMPs) and design of Best Management Practices (BMPs) identified in the farm CNMP.

Through DAP, the farm family moved forward with plans to build a new insulated barn with two robots to milk 120 cows and hired an engineer to design a new manure pit. They also updated paperwork and added short term storage, to bring the farm to a CAFO compliant standard.

“It was money well spent. It spurred us to pour money into the business,” said Russell Klein, who farms with his parents Michele and Stanley Klein. “It was a bigger project than anything I had done. We took the time to work on the budget and the layout. It helped us make better decisions.”

For a neighboring farm, a DAP project showed that a project shouldn’t move forward, Michele said. “It saved their life savings,” Stanley said.

Because a lake is located across the road from the farm, and a YMCA camp is in close proximity, the farm family is familiar with and has an open-door policy with neighbors and vacationers. They’ve always taken their commitment to protect the environment and to engage in the community seriously.

“We had been a top tier environmental farm for a long time even though we didn’t have the cow numbers,” Stanley said. “The proximity of where we are dictates how we farm. Visitors are totally amazed with the robotics. They get the flavor of the family farm and they see new technology. It’s not haphazard.” He said the farm participates in the FARM animal care program, are nine consecutive year quality winners with their Upstate Milk Niagara Cooperative, and have been a Supermilk recipient “forever.”

The farm family initially learned about DAP in 2014 through Extension. At that time they were planning to build a new facility, and were evaluating how to handle manure in the new facility, and how to manage the flow of animals from the old to new facilities.

“We were tossing around the idea. Funding allowed us to continue to look at it more in depth, including budgeting and engineering a manure storage,” Russell said. Russell is a SUNY Morrisville and Cornell University graduate, who returned to the farm in 2006, and initially worked as an employee, before becoming a partner in 2009.

At that time Russell said, “We were pushed to the max and production had flattened out,” so the family knew they had to make changes to remain viable for the next generation.

“We were bringing the next generation in. It’s what he wanted to do. We have the land base and low debt. It’s the right thing to do. It gives us flexibility,” Stanley said. “We could have easily retired.”

Russell was exposed to robotic milkers during college. He traveled to Canada with DeLeval in 2013 to see more. “They were no longer experimental. We had some concern about labor. We have good long-term labor, but the minimum wage is increasing. We thought that it’s a better way to milk cows. Cows adapt very well. We asked what do we seriously have to think about to do this?”

DAP funds allowed them to “push the financial issue” with a cost analysis with PRO-DAIRY’s Betsey Howland. “Once we decided we could do that, then we turned to engineering a manure storage,” Russell said.

The new barn and storage were completed in 2015. “There have been lots of lessons, no regrets and constant learning,” Russell said. And, he said, the cows seem to enjoy the new milking robots and choose to be milked three to four times a day. “They don’t like to come back to the old barn to freshen.”

“Planning is cost effective,” Stanley said. “It would be more costly without the support. It’s a very easy application process.”

Additional DAP information is online, visit: prodairy.cals.cornell.edu/dairy-acceleration.
Dairy Youth Programs

PRO-DAIRY Specialist

DEBORAH 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 18 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.

Junior DAIRY LEADER Program

The Junior DAIRY LEADER Program is a year-long program designed for youth between the ages of 16 to 19, who have interest in exploring careers in the dairy industry, and building their leadership skills, personal and professional development, and career planning.

In 2015 - 2016, 29 youth between the ages of 16 and 19 participated. During the year-long program, the youth:
- Prepare for successful careers in the dairy industry.
- Gain an in-depth understanding of the dairy industry’s scope and opportunities.
- Are exposed to progressive and profitable agricultural businesses.
- Learn communication and teamwork skills that aid in problem solving.
- Explore and enhance their career planning through discussions with dairy industry leaders.
- Develop personal, professional and leadership skills necessary to make positive contributions to the dairy industry.
- Obtain work experience in the dairy field.
- Develop technical skills through training workshops.

Through visits to Wisconsin, the National 4-H Dairy Conference, and agribusinesses in New York, youth interacted with professionals who have positive and enthusiastic attitudes about the dairy industry. The youth learned about opportunities that the dairy industry offers.

Over the past 15 years, 98% of the 375 Junior DAIRY LEADER graduates will continue their education beyond high school. More notable is that 85% of these youth have attended or are attending college to study agriculture. Prior to participating in Junior DAIRY LEADER, 56% of these youth indicated that they had not been planning to pursue agricultural careers, or had been undecided.

Beginning DAIRY LEADER Program
(NEW 2015 - 2016)

With the success of Junior DAIRY LEADER, Beginning DAIRY LEADER was successfully launched in the fall of 2015. This program targets high school students entering at least their sophomore year, but who not have graduated, and have a potential interest in dairy and agricultural careers.

20 students participated in the newly launched program. Through 5 one-day workshops, they explored post-secondary agricultural education and career opportunities in a networking environment through interaction with faculty, students and industry professionals, along with college planning and personal development.

Dairy Discovery

Dairy Discovery is a statewide program for 14 to 19 year-olds and is a hands-on workshop held annually at Cornell University. Young people spend a day and a half on campus learning about dairy careers and probing the specifics of dairy cattle production. During the Dairy Discovery 2016 Milk Quality and Milk Product workshops, young people rotated through a series of hands-on stations observing and participating in technical skill training related to topics in proper milking...
procedures, pathogens and how it affects milk quality, Standard Operating Procedures (SOP’s) for milking, the cost of mastitis, and dairy products.

**Impact**

- In March of 2016, 100 young people and adults participated, representing 28,198 cows and 13,620 heifers.

- On a 1 to 5 scale evaluation, with 5 being the highest score, the overall program was scored a 4.4. Participants ranked their increased knowledge and understanding of milk quality and production a 4.4. Their score for recommending the program to other participants a 4.6.

**Animal Crackers**

This is an annual event for youth age 9 to 13 years. Participants meet Cornell faculty and students to learn about different aspects of animal care. They interact and exchange information with professionals, producers and industry experts. Hands-on workshops are planned for each species group and dairy is now featured on even years.

**Impact**

- 95 youth and parents participated in the dairy track of Animal Crackers in May 2016.

- On a 1 to 5 scale, with 5 being the highest score, the evaluation rated the overall program as a 4.7. Participant knowledge and understanding of dairy increased, with a score of 4.5. The rating for recommending the program to other youth was 4.9.

**Dairy and Equine 101 Camp**

This is a two-day program held on Morrisville State College Campus for 13 to 19 year old youth to learn more about the species specific areas while experiencing a college campus environment. PRO-DAIRY was engaged in the dairy track of the program in 2016, and partnered with the leadership for the program going to CCE in Oneida, Herkimer and Madison counties, and Morrisville State College faculty and staff.

**Junior DAIRY LEADER Graduation at Empire Farm Days**
Traditional 4-H Dairy Youth Programs

These programs provide learning opportunities for young people ages 9 to 19 through activities such as dairy judging, showing cattle and dairy quiz bowl. Key program areas include dairy cattle quiz bowl (a jeopardy-like activity testing knowledge, understanding of and current issues in the dairy industry); a dairy cattle judging segment focusing on skills needed to select good, functional, dairy cattle; and decision making skills.

**Impact**

- The program attracts more than 400 participants each year.
- Dairy Challenge is skill-a-thon for youth and 150 youth participate yearly.

National 4-H Dairy Conference

PRO-DAIRY participates in the planning committee for the annual National 4-H Dairy Conference. The four-day experience exposed 4-H members to new dairy science technology and dairy-related careers. Through a combination of workshops, speakers, educational off-site experiences, and networking with other dairy-oriented youth, 4-H members gained information they could use to strengthen their futures in the dairy industry. Hands-on learning workshop topics included biotechnology, genetics, foods evaluation, animal nutrition and marketing.

**Impact**

- The national conference is attended by over 200 youth from across the US and Canada.

“I learned what I wanted to do. I’m interested in attending college and majoring in business. Junior DAIRY LEADER helps young people get exposed to different parts of the dairy industry and builds their interest.” Erica Leubner, Junior DAIRY LEADER 2016 graduate

“I got to know about lots of dairy techniques and to meet people across the world. We are the future. We will feed the world. It’s one of the best programs I’ve participated in.” Tricia Hulton, Junior DAIRY LEADER 2016 graduate

“You learn networking and can make so many lifelong connections. It gives us a chance to be educated and we can pass that knowledge on. Debbie gets close to the kids. It’s like you’re family.” George Lamb, Junior DAIRY LEADER 2016 graduate, SUNY Cobleskill student
“Helping Young People Explore Post-Secondary Agricultural Education and Career Opportunities”

The Beginning DAIRY LEADER program was launched in 2015 - 2016 due to the overwhelming demand for the Junior DAIRY LEADER program, and to reach more youth earlier in their high school careers. “We needed to capture that interest. Beginning DAIRY LEADER allows students to start their planning process sooner as they prepare for their junior and senior year of high school,” said PRO-DAIRY’s Debbie Grusenmeyer, who coordinates the program.

**ELIGIBILITY/REQUIREMENTS:**

- High school students entering at least their sophomore year. High school graduates not eligible.
- Have potential interest in dairy industry careers.
- Have an interest in pursuing post-secondary education in agriculture.
- Can reasonably commit to one Saturday program in November of current year and February, March, April, and June of the following year.
- Students can apply for both the Junior DAIRY LEADER and the Beginning DAIRY LEADER program in the same year, however, students cannot participate in both programs in the same year.

Beginning DAIRY LEADER gives high school participants the opportunity to explore post-secondary agricultural education and career opportunities in a networking environment through interaction with faculty and students, college planning, and personal development.

“Beginning DAIRY LEADER can be a first step and building block into Junior DAIRY LEADER,” Grusenmeyer said. Over the past 15 years, 98% of the 375 Junior DAIRY LEADER graduates will continue their education beyond high school. More notable is that 85% of these youth have attended or are attending college to study agriculture. Prior to participating in Junior DAIRY LEADER, 56% of these youth indicated that they had not been planning to pursue agricultural careers, or had been undecided.

The Beginning DAIRY LEADER program targets high school students entering at least their sophomore year, but who not have graduated, and have a potential interest in dairy and agricultural careers.

In its inaugural year 20 students participated in the newly launched program. They were evaluated and selected based on application essay, interest and personal reference. The written essay discussed why they were interested in exploring continued education and careers in dairy and agriculture.

Through 5 one-day workshops, they explored post-secondary agricultural education and career opportunities in a networking environment through interaction with faculty, students and industry professionals, along with college planning and personal development.

The Manager in DAIRYBUSINESS & HOLSTEIN WORLD magazine

Since 1999, DairyBusiness Communications has worked with PRO-DAIRY to provide educational materials to the dairy industry in a quarterly magazine insert. In April 2016, The Manager was expanded from 12 to 16 pages, and magazine distribution is now a national publication, DAIRYBUSINESS & HOLSTEINWORLD. For the new magazine, combined national circulation is over 32,200 dairy producers and agriservice professionals.

The Manager is published in January, June, July and October to coordinate with magazine distribution at national events, including the World Ag Expo in Tulare, CA and the World Dairy Expo in Madison, WI. In addition, this PRO-DAIRY section is mailed independently to more than 4,000 New York dairy producers who do not regularly receive the magazine. The Manager was previously published in DairyBusiness East as a 12-page insert.

PRO-DAIRY specialists organized and developed:

- The January 2016 “Climate Change” issue included articles: Prepare for climate change; Crop insurance mitigates risks; Climate change will impact manure management; Can agriculture be sustainably intensified to meet human needs and protect the environment?; Heat stress abatement techniques for dairy cattle; Is it weather or is it climate?: Dairy carbon credits; and Sustainability.

- The April 2016 “Timely Topics” issue included articles: Current and emerging strategies for nutritional management of dry and fresh cows; Bacterial endospores in bulk tank raw milk: Challenges and opportunities; Cow side diagnostics; Rumination and activity monitors detect metabolic disease; Value of manure lingers long after application; Sidedressing saved money and N in 2015; PRO-DAIRY supports planning for the future; and the Dairy Acceleration Program: Additional Funding Opportunity.

- The July “Empire Farm Days 2016” issue included articles: Enhanced herd health through effective protocol management; FARM Program changes highlight improvements in animal care; Siting manure storages. with sidebar Planning a storage? Some NY funding sources; Manure Treatment. Is it in your future?: Capital vs. labor: A historic tradeoff in perspective, with sidebar Business Analysis Resources; How to help each employee become more valuable to your business; and Use of robotic milkers.

- The October 2016 “Research Focus” issue, which was distributed at World Dairy Expo, the largest dairy cattle show in North America that showcases dairy cattle and the newest technologies available to the dairy industry, included articles: Farm partnerships apply research; Transition cow management characteristics in Northeast Dairy Herds; Nitrous oxide emissions in corn are related to nitrogen inputs; Dietary mineral sources and feeding rates in the transition period; Comparison of hand-held meters to diagnose hyperketonemia; Genomic research and selection improve cow health; Lactococcus: an emerging mastitis pathogen; Influence of cow characteristics and premilking udder preparation on milk flow and teat condition; Starch and fiber in fresh cow rations; and Factors that affect the viability and longevity of dairy cattle.
DAIRYBUSINESS & HOLSTEINWORLD has a national circulation of over 32,200 dairy producers and agribusiness professionals.

Program Outreach

In 2011, PRO-DAIRY initiated the PRO-DAIRY e-Leader monthly newsletter with an email list that has grown to nearly 7,000. e-Leader features upcoming PRO-DAIRY events and conferences, specialist programs, and recaps recent events. In addition, e-Leader provides timely information specific to the New York dairy industry that recipients are unlikely to receive from media-based newsletters that focus more on national issues. An e-Alert is delivered to the same list with specific and timely news information.

In 2015, with the launch of a new webinar series, weekly webinar series updates, and with the hire of a new forage management specialist, monthly forage management updates, were initiated.

e-Leader, e-Alert and Forage Management updates are posted on PRO-DAIRY’s website. Alerts span the spectrum of topics covered by PRO-DAIRY staff. A sampling of topics includes: Veterinary Feed Directive (VFD) changes go into effect this January. Are you prepared?; When can OSHA investigate death or serious injury of a farm owner?; Bunker Silo Safety Reminder from the OSHA Work Group; Resources for Forage Management in a Drought Situation; and Spring Safety Reminder.

PRO-DAIRY also has a bimonthly column in Lancaster Farming that features PRO-DAIRY work and programs.

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

Impact

- PRO-DAIRY’s website had 53,000 page views between July 1, 2015 and June 30, 2016, generated during 21,500 sessions. 44% were returning visitors, and 56% were new. 80% of the views were from the US, and 20% were from Canada, India and European countries.

The Manager

A sneak peak at Empire Farm Days Dairy Profit Seminar 2016

This Manager issue from PRO-DAIRY focused on EFD Profit Seminar:

- Influence of cow characteristics and premilking udder preparation on milk flow and condition

PRO-DAIRY’s column in Lancaster Farming reaches 56,000 paid subscribers in Pennsylvania and 15 other states, including NY. Lancaster Farming is the leading Northeast and Mid-Atlantic farm newspaper and has been in continuous weekly print since 1955.

Impact

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On behalf of the New York State dairy industry, PRO-DAIRY thanks the State of New York and the New York State Department of Agriculture and Markets for their financial support and years of commitment. Significant additional NYS-based funding for PRO-DAIRY programs is provided by the Department of Environmental Conservation, New York State Energy Research Development Authority, and the New York Farm Viability Institute. Through collaboration PRO-DAIRY will continue to provide expertise and leadership within New York’s dairy industry.
The PRO-DAIRY Mission: 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 information on the PRO-DAIRY program, contact:

PRO-DAIRY
272 Morrison Hall
Cornell University
Ithaca, NY 14853

Dr. Thomas Overton
Director
tro2@cornell.edu

Tel: 607.255.4478
Fax: 607.255.1335
prodairy.cals.cornell.edu