

# 2023 New York State Dairy Promotion Order Annual Report

## Overview

The Division of Milk Control and Dairy Services at the New York State Department of Agriculture and Markets is responsible for the administration of the New York State Dairy Promotion Order (NYSDPO). The NYSDPO was proposed and approved by a referendum vote by New York dairy producers to promote the consumption of New York milk and dairy products. Dairy producers have an obligation to the National Dairy Research and Promotion Program of fifteen cents per hundredweight of all milk produced. The NYSDPO collects an assessment at the rate of ten cents per hundredweight. This decreases New York dairy producers' obligation to the national program and allows the ten cents to remain in New York. The Dairy Promotion Advisory Board, comprised of New York State dairy producers, provides advice and recommendations to the State Commissioner of Agriculture and Markets on how these funds should be spent, in line with the following goals:

1. Increase the consumption of New York milk and dairy products by youth (lunches, breakfasts, and other offerings);
2. Promote the uniqueness of, and increase sales of, New York milk, dairy products, and/or ingredients throughout the entire food supply chain through various distribution channels and partnerships, including but not limited to, e-commerce, curbside sales, etc.;
3. Proactively improve the image of dairy products and/or dairy producers farming practices among consumers, thus improving the acceptance and consumption of New York milk and dairy products;
4. Improve communication with dairy producers and dairy stakeholders to inform them of how they can assist in improving the consumption of New York milk and dairy products by highlighting the sustainability story;
5. Increase the sales and consumption of milk and dairy products produced in the United States and exported to other countries;
6. Participate in national programs influencing increased consumption of milk and dairy products;
7. Conduct research projects that create new products and/or enhance the safety, quality, and sensory attributes to expand the demand for New York dairy products and dairy ingredients;
8. Create target marketing to promote the consumption of New York State milk and dairy products to Gen Z (ten to twenty three years old); and

9. Develop and implement marketing strategies that are inclusive of the socially diverse population to increase the consumption of New York State milk and dairy products.

According to the United States Department of Agriculture (USDA), United States per capita consumption of dairy products is increasing. However, the per capita consumption of fluid milk products continues to decline.

**United States Per Capita Consumption of Fluid Milk and Dairy Products (Pounds)**

	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>% Change 2018-2022</b>
Fluid Milk Consumption	145	141	141	134	130	-10.3%
Dairy Product Consumption (Including Fluid)	644	651	651	661	653	+1.4%

New York State regulations (1 NYCRR Part 40; Section 40.35) require that an annual report be prepared each year for the benefit of the producers. Specifically, this report “shall contain information on the promotion programs carried on during the preceding year, expenditure of funds for each program, and such other information as may be of benefit to producers.”

The NYSDPO budget for the 2023 contract year had available funds for promotion and research activities of \$15,350,000. During 2023, the NYSDPO contracted with eight organizations for projects that totaled \$15,349,299.

Award recipients were asked to submit a summary of their work for the 2023 contract year. The submissions are included below and solely represent the language and opinions of the award recipients and their supporting organizations.

## **Promotional Contracts, Summaries, and Metrics: 2023 Calendar Year**

### **American Dairy Association North East (ADANE)**

[www.AmericanDairy.com](http://www.AmericanDairy.com)

Contract Awarded: \$10,200,000

Summary of Company: ADANE is a farmer-directed and funded non-profit organization that works to enhance consumers’ understanding of and appreciation for dairy farmers and dairy products by engaging local farmers, cultivating a dialogue with consumers, and advancing the dairy industry at the state and national level. ADANE builds sales and consumer trust by creating demand for dairy products through retail, e-commerce,

schools, digital and traditional media, and enlisting the help of local dairy advocates to “tell dairy’s story.”

***Priority Areas Addressed:***

**Goal #1 - Increase the consumption of New York milk and dairy products by youth (lunches, breakfasts, and other offerings).**

Budget: \$2,472,155

ADANE’s youth marketing efforts boosted milk and dairy product consumption and sales across New York by ensuring dairy remained an integral component of school nutrition programs.

- Efforts to increase school breakfast and lunch participation netted 24,804,990 additional school meals served and 11,059,125 pounds of milk sold.
- Targeted promotions and placement of proven menu enhancement dairy sales strategies, “Just Say Cheese” and “Yogurt All Ways,” yielded 95% and 258% aggregate incremental increases in cheese and yogurt sales, respectively. Moo Latte, our signature latte program was instituted in three school districts.
- Summer Meals publicization 51 million impressions to boost program awareness and participation.
- Through strategic partnerships, we reached over 5,700 health influencers and over 5,000 school administrators for win-win outcomes and alignment with ADANE’s dairy initiatives.
- Farm-to-school programming efforts reached 45,643 students and teachers through Virtual New York Farm Tours. Dairy Ambassadors reached 20,578 students with in-school promotions while New York Thursdays featured at 1,979 schools educated students and stakeholders about dairy’s sustainability efforts and its significance to school meals.
- Fuel Up to Play 60 involved 3,773 New York schools and 2,057,856 students to help foster trust in dairy.
- Virtual Farm Tours of New York dairy farms reached 45,643 students and teachers, and Dairy Ambassadors reached 20,578 students in school promotion programs.

***Priority Areas Addressed:***

**Goal #2 - Promoting uniqueness of, and increased sales of, New York milk, dairy products and/or ingredients throughout the entire food supply chain through various distribution channels and partnerships, including, but not limited to, e-commerce, curbside sales, etc.**

Budget: \$1,936,037

ADANE designed, initiated, and directed programs that included but are not limited to e-commerce, large and small retailers, food banks, and charitable efforts funded through government grants. ADANE staff worked with dairy managers, category directors, marketing managers, and retail dietitians to grow dairy category sales.

- E-commerce program for milk and cheese achieved 17,220,565 impressions and additionally attributed product sales of \$3,652,784, through November.
- The Dairy Aisle Performance Program (DAPP) is a retail audit and awareness system to help keep dairy cases clean, cold, and well stocked at the store level. The team assessed 1,241 stores with 4,397 retail visits.
  - Seventy nine percent of program stores had clean or improved hygiene conditions with our hygiene best practices.
  - 1,392 new cross merchandising placements in 1,035 stores.
- Dairy Aisle Reinvention (DAR) is the in-store program that creates the best in-store dairy shopping experience for retail customers to increase dairy sales. The program utilizes multiple merchandising elements to modernize the look of the aisle and inspire consumers to purchase additional dairy items. ADANE implemented new signage in 109 stores, initiated the installation of yogurt dividers in 56 stores and cheese pushers in 142 stores.

#### Yogurt dividers: Results

Price Chopper - 49 stores installed; chain completed with more than \$480,000 invested by retailer.

ShopRite - one new store; over \$1.5 million invested by retailer.

#### Cheese Pusher: Sales Results

ROI Modeled rates include:

- Four to seven percent sales lift
- 12 percent less replenishment/rotation labor
- One percent less shrinkage

#### Cheese Pushers System at ShopRite

- Shred 104 facings before, 124 facings after
- String 23 facings before, 30 facings after
- Sliced 49 facings before, fifty 56 facings after
- 34 new facings
- Total pack out increased by 476 units.

Local Farmer Image signage program incorporated local farmer images and their stories in customized, retailer-specific sign packages. Implemented in 212 new stores.

Fill a Glass with Hope program raised \$639,148 from consumers for food banks to purchase milk to give to the food insecure. Additionally, 38 coolers were placed in food banks.

***Priority Areas Addressed:***

**Goal #3 - Improve the image of dairy products and/or dairy producers among consumers, thus improving the acceptance and consumption of New York milk and dairy products.**

Budget: \$1,686,199

ADANE's consumer-centric marketing strategy helps build confidence in New York dairy through farmers' ability to tell their own stories in an authentic, compelling way. These stories showed how dairy farmers care for their animals and the environment, and produce nutritious products for their communities and the world.

ADANE creates a trustworthy image for the dairy industry among consumers and has the potential to drive business growth and foster brand loyalty, while creating a positive and sustainable market position for New York dairy.

ADANE reaches consumers "where they are" using:

Digital and Social Media Marketing

- Website Visits: 1,905,394
- Social Media Impressions: 100,111,790
- Social Media Engagement: 2,340,447
- Search Engine Marketing Impressions: 2,339,859

Consumers Events – 25

Traditional Media

- 1,774 story placements
- 291,065,328 Impressions (radio/television/newspaper)

Issues Management and Crisis Readiness and Response

- Core Crisis Team handled 65 issues; held one organization-wide training exercise; shared weekly communications with key Dairy Management Inc. staff regarding ongoing issues and conducted quarterly communications with the New York Dairy Issues Team.

Environmental Outreach and Consumer Education

- Developed and enhanced relationships with six community and environment-focused organizations.

- Secured dairy checkoff presence at eight environmentally focused events and hosted two farm tours for environmental audiences, virtual and in-person.

***Priority Areas Addressed:***

**Goal #4 - Improve communication to dairy producers and dairy stakeholders to inform them how they can assist in improving the consumption of New York milk and dairy products by highlighting the sustainability story.**

Budget: \$709,127

ADANE's industry relations team empowered dairy farmers and advocates to be effective spokespersons to consumers to convey the story of dairy's contribution to a sustainable world and the many ways farmers care for the land, animals, and people.

- Provided media training to farmers and advocates to reach consumers with more than 19 million media impressions and engaged 89 dairy farmers as spokespersons in ADANE events and programs.
- American Dairy ENGAGED group membership grew to 1,152 members and group posts reached an average engagement of 33 percent. Six farmer influencers reached 2,301,722 consumers with positive dairy messaging.
- Sixty grassroots farm tours hosted by farmers were supported with materials or signage. Partnered with nine dairy farmers and provided local dairy promotion grants to support grassroots dairy promotion events reaching 10,050 consumers.
- New York State Dairy Ambassador Program provided training, support, and resources to the network of county dairy ambassadors. Twenty five Dairy Ambassadors recruited participation in ADANE retail and Fuel Up to Play 60 activities. The Dairy Ambassadors raised \$3,748 for Fill a Glass with Hope.
- Produced newsletters for dairy farmers that provided talking points for consumer communications and provided examples of dairy farmers engaged in dairy promotion activities. ADANE completed two direct mail pieces, an annual report, 75 placements in dairy trade publications reaching 2,269,593 impressions, and 104 digital news updates with a 28.2% open rate.
- Hosted face-to-face and virtual meetings reaching 150 key dairy farmer leaders.
- Targeted social media posts to dairy farmers achieved 5,184 link clicks.

***Priority Areas Addressed:***

**Goal #8 – Create target marketing to promote the consumption of NYS milk and dairy products to Gen Z (ten to twenty three years old).**

Budget: \$479,132

ADANE created targeted marketing strategies for promoting the consumption of New York milk and dairy products to Gen Z consumers. Since the 1.3 million Gen Z residents

in New York possess significant disposable income, ADANE's campaigns were meticulously crafted to engage this key consumer group.

- Content was tailor-made for Gen Z based on thorough consumer research and featured innovative approaches to encourage dairy consumption. This included the introduction of new recipes, insights into dairy sustainability, and positive information on cow care. The outreach efforts in 2023 yielded impressive results, achieving 119% of its goal generating 15,440,012 social media impressions and 253,653 social media engagements.
- Utilizing platforms like TikTok and Instagram, collaborating with Gen Z influencers, and geo-fenced advertising on college campuses, ADANE effectively reached this target audience. One notable campaign, "Dorm Room Dairy," focused on promoting easy-to-make dairy-centric recipes to New York college students. The campaign achieved remarkable success with 2.28 million social media impressions.
- The Gen Z recipes campaign leveraged TikTok and Instagram to showcase exciting dairy-centric recipes. In 2023, the Gen Z recipe videos garnered substantial traction, accumulating a total of 1.89 million views resonating with and influencing the consumption choices of the Gen Z demographic.

### ***Priority Areas Addressed:***

**Goal #9 – Develop and implement marketing strategies that are inclusive of the socially diverse population to increase the consumption of NYS milk and dairy products.**

Budget: \$304,850

ADANE's "Dairy is for Everyone" multicultural campaign underscored the significance of nutritious and delightful dairy products in everyone's life, irrespective of cultural background, ethnicity, or lifestyle.

ADANE hosted a Hispanic Heritage Month cooking activity at The Strong National Museum of Play in Rochester; curated Spanish-language recipes centered around dairy; and expanded out Spanish-language blog (Novedales) on AmericanDairy.com. Outreach extended to the Spanish-language press, resulting in 21 traditional media features.

In 2023, ADANE's culturally sensitive marketing initiatives garnered 33,098,830 social media impressions and 1,190,988 social media engagements (238% of goal achieved).

### ***ADANE's Participation in National Program – Dairy Management Inc.***

#### ***Priority Areas Addressed:***

**Goal #5 – Increase the sales and consumption of milk and dairy products produced in the United States and exported to other countries.**

**Goal #6 - Participate in national programs influencing increased consumption of milk and dairy products.**

Budget: \$2,612,500

Please see Dairy Management Inc.'s section for a summary and breakdown of its initiatives and metrics.

**New England Dairy Promotion Board (NEDPB)**

[www.newenglanddairy.com](http://www.newenglanddairy.com)

Contract Awarded: \$1,637,000

Summary of Company: Since 1920, New England Dairy Promotion Board, a dairy checkoff organization, has represented New York and New England dairy farmer interests in schools and with thought leaders, the dairy supply chain, consumers, and media to promote dairy's science-based health benefits and sustainable farming practices. It is staffed by registered dietitians and marketing communications professionals. Its focus is building trust and sales for dairy in five New England states, a key market for New York dairy. Programs are informed by current consumer insights and dairy farmer perspectives. By leveraging national and local partners, NEDPB maximizes program impact and dairy farmer investment.

**Area 1: Accelerate incremental dairy sales to youth in schools.**

***Priority Areas Addressed:***

**Goal #1 - Increase the consumption of New York milk and dairy products by youth (lunches, breakfasts, and other offerings).**

**Goal #9 – Develop and implement marketing strategies that are inclusive of the socially diverse population to increase the consumption of New York State milk and dairy products.**

Budget: \$302,095

Program #1: Equipment and marketing grants

New England Dairy (NED) provided over \$92,000 to 74 schools, impacting over 33,700 students. Sixty-two of the schools are implementing smoothies, three are expanding breakfast service, and nine are adding hot chocolate milk programs.

- Preliminary data from 37 of these schools shows that dairy sales increased an average of five percent.

NED held a Chill Out with Cold Milk contest for all K-12 schools for a chance to win a refrigerated milk cooler by submitting cold milk temperature surveys. In addition, six of the largest schools held Chill Out with Cold Milk trainings for school nutrition staff (over



200 participants). In total, NED received over 270 cold milk temperature surveys from districts across the region.

#### Program #2: Convene and Collaborate with Influential School Nutrition Partners

NED convened 22 school nutrition professionals from around the region for their School Nutrition Experts Forum to discuss marketing school meals and dairy to students and ways to support educational efforts.

The team exhibited and/or presented at nine school nutrition conferences, sharing dairy-related resources and education with over 1,500 school nutrition professionals.

#### **Area 2: Build dairy trust in New England target audiences (Gen Z, Millennial Moms, Thought Leaders).**

##### ***Priority Areas Addressed:***

**Goal #3 – Proactively improve the image of dairy products and/or dairy producers farming practices among consumers, thus improving the acceptance and consumption of New York milk and dairy products.**

**Goal #8 – Create target marketing to promote the consumption of NYS milk and dairy products to Gen Z ( ten to twenty three years old).**

**Goal #9 – Develop and implement marketing strategies that are inclusive of the socially diverse population to increase the consumption of NYS milk and dairy products.**

Budget: \$753,360

#### Program #1: Building Gen Z trust in Schools

##### Dairy Farm to School Outreach:

##### Adopt a Cow

- Live Chats: In 2023, 16,000 students (60 percent increase over last year) from 800 classrooms enjoyed seeing their calves and asking questions directly to their Adopt a Cow farmer.
- Registration/Enrollment: Over 2,800 classrooms are enrolled for the 2024 school year, reaching more than 91,000 students (50 percent growth in the program).

##### STEM (Science, Technology, Engineering, and Math) Curriculums:

- NED’s integrated promotion with digital marketing and paid social media ads delivered over 1.4 million impressions and over 339,000 engagements. The emails and social media ads helped drive more than 12,000 educators to the Fuel Up Learning Plan webpages.

This year, NED engaged over 1,500 students with dairy farmers at nine farm tours and school events to celebrate new smoothie and hot chocolate milk programs.

#### Sports Nutrition Outreach:

- Developed a new teen athlete nutrition webpage for parents, coaches, and teen athletes, and launched a campaign on Facebook and Instagram to drive parents and coaches to the page. These paid ads delivered 1.4 million impressions and over 47,000 video views.
- Worked with five Gen Z TikTok influencers to reach younger Gen Z athletes with dairy messaging on refueling and energizing your day.

#### Program #2: Building Gen Z Trust through Digital Activations:

NED utilized the Fuel Up player ambassador, New England Patriots' Safety Kyle Dugger, to reach Gen Z with positive dairy messages, including:

- Four TikTok videos highlighting immunity, calm, energy, and digestive health, resulting in 800 new followers and over 40,000 video views.
- A longer video featuring Kyle, where he runs out of milk while making his post-game smoothie then goes to his local dairy farm to buy more. While there, he learns how milk gets from the farm to his fridge. The video was posted on the New England Patriots Instagram channel (4.9 million followers) as a collaborative post with New England Dairy. The videos received over 519,000 video views and nearly 27,000 engagements.

TikTok Earth Day campaign with influencers drove more than 1.6 million video views. The engagement rate was strong at 2.64%.

#### Program #3: Building Trust with Millennial Moms Digitally:

##### Social Media Campaign: Real Life Needs Real Dairy

- Using paid social media to reach people who are more skeptical, NED focused on insights-driven topics such as: dairy is good for you and your family; good for the community. These ads delivered 6.2 million impressions and over 7,000 link clicks. Boosted posts delivered over 71,000 impressions and over 1,000 link clicks.

Digital Assets: Content development was based on consumer research and search engine optimization insights to connect with people's interests, wants, and needs.

- NED saw a 318% increase in impressions and a 208% increase in engagements across all social media platforms (Facebook, Instagram, Twitter (X), TikTok, LinkedIn, and YouTube) in 2023 vs. 2022.

#### Comprehensive Influencer Approach:

Working with a variety of influencers, NED featured dairy health and wellness, dairy sustainability, and the importance of local dairy farms to communities.

- For National Milk Day (January 11), NED partnered with @TheFeastKings, which has a significant following in New York and New England. The video showcasing their top four foods to have with real milk generated 79,200 video views and 4,700 engagements.

Program #4: Building Trust with Millennial Moms through Consumer Experiences and Media:

- The New England Dairy Community Events Team attended 40 events throughout the region. Our “Taste. Learn. Meet.” initiative resulted in 75,000 impressions, 32,000 in-person engagements, and 11 events with dairy farmer participation.
- NED accumulated 4.9 million earned media impressions in 2023. Publicity value totals \$1.4 million.

Program #5: Building Thought Leader Trust through Continuing Education

- NED educated 697 thought leaders through its live webinar series. Topics included the health benefits of the dairy matrix, lactose intolerance, and dairy’s sustainability story. Positive perception of dairy after attending a live webinar was 92 percent. NED reached an additional 439 thought leaders through viewing of its recorded webinar library. Positive perception of dairy after viewing a recording was 93 percent.
- NED reached 370 registered dietitians by placing speakers at statewide conferences covering dairy’s positive role in addressing food insecurity, sports nutrition, and diabetes.

Program #6: Building Thought Leader Trust through Communications and Outreach

- NED achieved over 55,000 impressions and over 4,000 engagements through digital communications, including our thought leader newsletter, to registered dietitians.
- They reached 3,200 Pediatricians and 1,100 Advanced Practice Registered Nurses with eight digital communications on child brain health, bone health, immunity, and growth. New England Dairy registered dietitians educated 83 dietetic interns and 26 culinary and sustainability students via dairy sustainability workshops and farm tours.
- Three unique communications to 40 food insecurity partners highlighted dairy resources including posters, handouts, webinars, social post templates, and recipes. Nearly 50 percent of the organizations ordered materials for their clients.
- Where Our Milk Comes From: A Conversation with a New England Dairy Farmer with dairy farmer Melissa Griffin educated school nutrition professionals on how milk flows from farm to school. Positive perception of dairy increased from 89 to 95 percent.

**Area 3: Engage dairy farmers and industry stakeholders in dairy promotion program activities.**

### ***Priority Areas Addressed:***

**Goal #4 – Improve communication to dairy producers and dairy stakeholders to inform them how they can assist in improving the consumption of New York milk and dairy products by highlighting the sustainability story.**

Budget: \$215,045

#### **Program #1: Digital Dairy Ambassadors**

NED had 18 farmers interact with consumers through social media as part of our Digital Dairy Ambassador program. In 2023, ambassadors generated 254 posts, over 12,800 likes, and 570 comments.

#### **Program #2: Dairy Farmer Promotional Grant Program**

The dairy promotion grant program supports dairy farmers in local promotion activations. NED awarded over \$43,100 in dairy promotion grants to support activities including open farm days, on-farm camps for children, agricultural career tours, dairy nutrition signage, and dairy promotion at community events. Over 13,300 consumers were reached through these activities.

#### **Program #3: Farmer Engagement and Communications:**

- The farmer newsletter had a four percent click rate, nearly three times the industry average of 1.4 percent.
- NED engaged 56 farmers in 68 dairy promotion activities, including consumer events, school events, earned media, and social media campaigns.
- NED engaged with farmer groups and supported Vermont Breakfast on the Farm, which had nearly 1,400 attendees.
- NED renewed the focus on trade publications and check letters. Our farmer relations team placed six trade publication stories.
- NED staff hosted communications trainings for dairy farmers across our region, including New York farmers.

#### **Program #4: Fluid Processor and Retail Collaboration:**

- NED launched its industry newsletter, The Dairy Connector, providing insights, research, and resources to processors including producer-processors, brands, co-ops, and others. Newsletters reached over 200 stakeholders with click-through rates up to twenty five percent, exceeding the industry average of 1.4 percent.
- NED launched an Instacart campaign focusing on New England-produced cheese. The campaign resulted in attributed sales of \$87,000 and exceeded the Return on Ad Sales (ROAS) benchmark of \$2.00 with a ROAS of \$3.08. NED launched an additional Instacart campaign featuring dairy and the holiday season. Instacart shoppable ads drove shoppers to regional milk options. Initial results have \$120,000 in attributed sales and 350,000 impressions.

#### **Area 4: Support national programs influencing increased consumption of milk and dairy products.**

##### ***Priority Areas Addressed:***

**Goal #5 – Increase the sales and consumption of milk and dairy products produced in the United States and exported to other countries.**

**Goal #6 – Participate in national programs influencing increased consumption of milk and dairy products.**

Budget: \$366,500

Please see Dairy Management Inc.'s section for a summary and breakdown of its initiatives and metrics.

#### **Dairy Management Inc. (DMI)**

[www.USDairy.com/about-us/dmi](http://www.USDairy.com/about-us/dmi)

Budget: \$2,612,500 (ADANE - \$2,575,000 & NEDPB - \$366,500)

The NYSDPO did not directly award DMI a contract for the 2023 year. However, given the amount of funds contributed to the national program, a summary of DMI's work has been submitted by ADANE and NEDPB.

Summary of Company: Dairy Management Inc. (DMI) represents and implements the national dairy checkoff program and works on behalf of America's dairy farmers, including the over 2,700 New York dairy farmers, to grow sales and trust in dairy foods, dairy farmers, and the dairy community.

The foundation of this work is the DMI-developed national Unified Marketing Plan implemented in partnership with a nationwide network of dairy promotion organizations – including American Dairy Association North East and New England Dairy – that aligns promotion strategies and activities focused on core priorities set by dairy farmers and approved by the farmer-driven boards of national, state, and regional promotion organizations.

Program #1: Sustainability: Build health and wellness, and environmental proof points to affirm/reaffirm dairy's role as an essential, sustainable food source.

By means of a pilot program and partnership-building, DMI developed and identified measurement tools and resources to help farmers with sustainability planning and decisions. Results that can be used to inform the industry include:

- Five online education courses for Certified Crop Advisors and a learning hub with 32 articles, videos, and podcasts.
- Model manuscript on evaluating the use of aerobic digesters submitted to peer-review journal for publication later in 2024.

- Secured and supported over \$10 million in incremental commitments to support environmental research and action.

Engaged with stakeholders to prioritize sustainability research, communicating dairy sustainability research results to increase consumer trust.

- Hosted seven workshops, created DMI's first Scientific Advisory Council for Environmental Research, engaged with 36 farms and surveyed 920 farmers.
- Initiated eight new research projects and three new research collaborations, awarding three Greener Cattle Initiative Grants totaling \$7.2 million and collaborating with eight research institutions on the impact of advanced soil health management on Greenhouse Gas (GHG) reduction, water quality improvements, and agronomics through the Dairy Soil & Water Regeneration Program.
- Contributed to more than 25 trade media articles, delivered 23 presentations at industry events, authored four scientific publications, and contributed to two white papers and one podcast.

Program #2: Innovation: Grow relevancy, excitement, and sales around dairy's claims, messages, and products.

Leveraged foodservice and fluid milk partners to increase dairy sales, resulting in the launch of more than ten products. Sales results include:

- Foodservice: Partners projecting over 125 million milk equivalent pounds, over 1.5-2 percent volume growth
- Retail: Yogurt category volume grew 2.4 percent, General Mills new product volume over 25 million pounds
- Fluid Milk: Value-added volume grew .2 percent, Lactose free volume grew 6.8%, alternatives declined 6.5 percent.

Utilized modern technology, nutrition research, science platforms, and collaborations to accelerate innovation.

- Launched an Artificial Intelligence (AI) database to accelerate insights and speed to market for dairy products to meet health and wellness needs.
- Product Science: Initiated three projects in fermentation and filtration and selected nine Discovery Research projects.
- Built and launched a proprietary platform, called the Milk Molecule Initiative, to uncover new health benefits and potential claims.
- Performed outreach on multiple platforms including podcasts, leadership events, lectures, webinars, and articles.
  - Published six papers in the areas of sleep, digestive health, and weight management.
  - Initiated seven studies on biological age, inflammation, digestive health, anxiety, and depression.

Collaborated with the Mayo Clinic on cardiovascular benefits and dairy.

- Started one research project in cardiovascular health, with others in progress or under review.
- Completed close to 30 activations, reaching over 80,000 health care professionals, and generating over 7.2 million consumer impressions.

Program #3: Reputation: Using digital marketing and media to grow dairy's positive share of voice in the most critical channels for youth and parents.

Engaged a diverse group of 14 social influencers, delivering a return on advertising spend of \$11.35. Drove 4.4 million impressions and \$3.1 million in dairy sales.

New partnerships with top sites featured content addressing dairy's role in pregnancy and childhood development.

- Results: 100 pieces of content, 2.7 million video views, and 50,000 visits to USDairy.com.

Content designed to combine fun and education reached younger audiences on TikTok, Pinterest, YouTube, Instagram, and Facebook.

- Results: USDairy.com pageviews increased by 28 percent in 2023 to 4.94 million, with website new users up 27 percent to 3.52 million.

Media partnership with Time engaged consumers and thought leaders with dairy farmer's commitment to environmental sustainability and outperformed industry averages, garnering:

- 5.8 million impressions
- 9,514 video views
- 26,417 article clicks and .6 percent social click through rate

Earned positive media coverage with science-based news, resulting in 3,000 dairy stories (three billion media impressions). Top coverage included Washington Post, Wall Street Journal, CNBC, People, Los Angeles Times, Chicago Tribune, and U. S. News and World Report.

Reached environmental and business leaders through the "See Dairy Differently" digital media campaign, media buys in USA Today, Washington Post, The Economist, and Wired, and at key environmental events including The Economist Sustainability Week and GreenBiz VERGE to elevate dairy's leadership.

Program #4: Reputation: Work with high-impact partners to protect dairy's place in the diet and reach consumers.

Hosted first-ever U.S. Dairy Climate Week dinner in New York City in September 2023, attended by environmental sustainability leaders.

Activated nutrition partnerships focused on highlighting dairy's role in addressing health disparities. Highlights include:

- American Academy of Pediatrics' (AAP) Committee on Nutrition issued a Clinical Report on Older Infant - Young Child Formulas, which highlighted cow's milk and water as preferred beverages and received significant media coverage and two sessions at AAPs annual meeting.
- National Medical Association authored six journal supplement papers on the role of dairy across the lifespan.
- National WIC Association engaged National Dairy Council (NDC) to explore opportunities to increase participation and dairy consumption.
- Feeding America hosted Dairy Nourishes America Symposium, engaging 120 representatives from food banks, dairy companies, and governmental organizations.

Reached 208,000 pediatric care specialists, one million parents, and 129,000 prenatal nutritionists around dairy's critical role for their patients.

Submitted 13 public comments on dairy's role in nutrition guidelines.

Provided \$1.1 million in funding to 417 schools through Nutrition Equipment Grants.

Continued three-year program with 11 up and coming academics to further solidify dairy's role in nutrition and public health. Eighty nine percent of the 11 scientists have enhanced understanding of the important role of dairy as a solution to health equity.

Program #5: Exports: Positioning United States dairy as a consistent, preferred supplier in key global markets.

Partnered with United States foodservice companies to drive innovation using U.S. cheese.

- Continued to expand pizza partnerships with the number one and number two global pizza brands, focusing on permanent menu innovation and new products.
  - Launched ten new items including Pizza Hut Melts in Japan and Indonesia, MyBox and BigBox in Japan and Taiwan, and incremental Limited Time Offers with both Pizza Hut and Domino's.
  - Reached 1.7 million consumers with the US cheese messaging by Pizza Hut Indonesia through the new incorporation of the United States Dairy Export Council (USDEC) "Made with US Cheese" logo.
- Engagement with Yum! China is nearly ten percent ahead of target, delivering 10.84 million cheese pounds through December 2023.

Partnered with U.S. co-ops to build capabilities and co-fund value-added growth initiatives.



- Darigold continues to expand Extended Shelf Life milk in retail channels in Asia. Initially selling-in incremental eggnog pallets in China and orders placed for Philippines and Taiwan for 2024.
- Initial partnership with Associated Milk Producers Inc. (AMPI) resulted in nearly 2,000 outlets selling U.S. cheese in China and Middle East and a 650% increase in exports volume since beginning of partnership. AMPI is expanding into new markets (from four to 17), new products, and channels in 2024.

## **Milk For Health on The Niagara Frontier, Inc. (MFH)**

[www.MilkForHealth.org](http://www.MilkForHealth.org)

Contract Amount: \$465,000

Summary of Company: Incorporated in 1949, Milk for Health is one of the oldest dairy promotion organizations in the United States. Milk for Health consists of seven dairy farmer board members from across western New York, a full-time employee, and, recently, one part-time employee. Since day one, the goal of the organization has been to support the dairy farmers of western New York, promote dairy products, and educate about the goodness of milk. In 2019, the organization reorganized and took a more modern direction in their programs. The new up-to-date strategy being implemented is much more prevalent for the high-tech, fast-paced world of today.

### ***Priority Areas Addressed:***

**Goal #1 – Increase the consumption of New York milk and dairy products by youth (lunches, breakfasts, and other offerings).**

**Goal #3 – Proactively improve the image of dairy products and/or dairy producers farming practices among consumers, thus improving the acceptance and consumption of New York milk and dairy products.**

**Goal #9 – Develop and implement marketing strategies that are inclusive of the socially diverse population to increase the consumption of New York State milk and dairy products.**

### **Broadcast Television**

Budget: \$25,000

2023 marks the last year that Milk for Health (MfH) will be a staple on Buffalo television. This year their three commercials – Milk is Amazing, Farm to Table, and The Christmas Commercial – rotated throughout nine local stations during June Dairy Month, the Christmas holiday season, and special sporting events. MfH did not set any goals for this area in 2024. The relationships that Milk for Health established with these stations through the decades has played a big role in securing deals with the digital/streaming portion of its business.

## Streaming Advertising

Budget: \$135,000

Streaming or connected television has given MfH its biggest “bang for its buck” in terms of impressions. It gives them a much more precise look at how many consumers are actually viewing their ads. They are able to target specific demographics, document how many of these consumers view the entire ad, and how many people skip through. In 2023 they continued their partnership with Bone Cold TV, a Buffalo-based hunting show that has a national broadcast and streaming television audience. This show had helped them place ads over various platforms. They also were able to advertise on the Spectrum TV digital app, YouTube, and Hulu. They worked with Buffalo Advertising Management to secure a deal to stream on over fifteen other digital channels and apps!

Goal Number of Impressions: 6.4 million

Actual: 7.6 million

Goal Number of Sites/platforms: 15

Actual: 31

Explore and More Children’s Museum

Budget: \$35,000

MfH’s partnership with Explore and More Children’s Museum continued to flourish in 2023. Located on Canalside in downtown Buffalo, its location connects it to both museum attendees and tourists visiting the area attractions. Every year they add more and more events to the calendar at the museum.

2023’s schedule included:

- Spring Break Week
- Cows at Canalside
- Magician appearances with Rob Allen
- Cooking classes
- Taste testing
- Grown up Night of Play
- National Cookie Day
- Milk and Cookies with Santa
- Mother’s Day
- St. Patrick’s Day
- Earth Day
- Summer camps

Every time they partner with Explore and More for an event, MfH is featured on the museum’s website, social media, and sometimes their digital billboard along I-190.

Activities during these events have included making specialized milkshakes (i.e., shamrock shakes); making butter, ice cream, smoothies; make your own milk bath; creating other dairy confections; and hands on calf feedings. It is common to have a line waiting outside the kitchen galley to be able to participate. Cows on Canalside is always a huge hit. Each month that they brought calves to the lawn outside the museum, more and more people came out specifically to meet a new bovine friend. They were featured on half a dozen Buffalo news stations several times throughout the summer. Rob Allen joined them for a fourth year at the museum performing pop up magic shows with his trivia wheel and fun magic tricks. The museum is continually asking for him to come and perform throughout the year.

Goal Number of events: 17

Actual: 31

Goal Number of Events: Ten

Actual: 12

Goal Number of Cows on Canalside: Three

Actual: Three

### Assemblies

Budget: \$30,000

2023 marked Rob Allen's 47th year performing dairy based magic shows for Milk for Health. He has brought his fun and educational magic show to 60 schools in the Buffalo area. After over 40 years of performing, he and his wife Carol still bring rave reviews.

Olcott Beach Carousel Park continues to be a bustling place! Rob's 40 shows were filled and because of this the park has decided to add additional seating for the 2024 season.

Goal Schools: 60

Actual: 60

Goa Olcott Park Performances: 40

Actual: 40

### Buffalo City Schools (BCS)

Budget: \$35,000

MfH's partnership with Buffalo Community Schools grew exponentially again in 2023. In January 2023, they were working with 11 schools; that number grew to 18 schools by the end of the year. The goal number of BCS events for 2023 was 60; they finished the year with a total of 86 events, making close to 13,000 impressions.

Some highlights from the year include:

- Bringing calves to multiple schools that were not previously accessible thanks to our new calf box.
- Focusing on recipes that are relevant to the community they are working with and using readily available ingredients.
- Participating in wellness fairs to highlight the goodness of milk in a healthy diet.
- Making yogurt-based dips and dressings as part of the summer program and using the vegetables grown in the school's community garden to sample them.
- A farm-to-grocery store obstacle course, comprise of items found on a dairy, such as calf bottles to simulate milking, grain scoops for carrying, grain bags for a sack race, etc.

In May, Milk for Health received the Buffalo City Schools (BCS) Community Partner Award. The School-Community Partnership Award recognizes an organization or group that exemplifies outstanding efforts in partnering with the school, students, and their families to further the mission of the Buffalo Public Schools. MfH felt very honored to receive this award since its relationship with BCS is still fairly fresh!

Goal Number of events: 60

Actual: 86

#### Web/Social Media

Budget: \$50,000

MfHs web and social media sites remain a landing zone for many people who attend their events and classes to come to follow up on stories, print recipes, find fun kid activities, and more. In the fall, MfH finally launched their freshly updated site, which resolved many of the bugs the old website had. Visitors can print the recipes and activities with ease. They have it all easily translatable so that their non-English speaking visitors, including many of their contacts from the in-person events, can understand and use the information and recipes. Soon they will be adding a list of upcoming events to the events page for people to find out when and where they will be with calves and other activities. In 2023, they began working with Amplified Buffalo, an extension of the Buffalo News. Amplified Buffalo has managed MfHs paid social ads, built their new website, produced videos, the Dig in Buffalo Series, and their branded content. Amplified blew MfH's goal of impressions out of the water! Amplified used the ads created for social and used them across all their media and social platforms. MfH also began their partnership with the Buffalo Bandits Lacrosse team, which crosses between the web and social and branded content categories.

Goal of impressions: One million

Actual: 5.67 million

Goal of new Recipes: 30

Actual: 20

Goal of less than one-minute videos: 30

Actual: 31

Goal of more than one-minute videos: 100

Actual: 71

Goal Video Clicks: 5,000

Actual: 375,786

### Events

Budget: \$37,000

Fairs and events were the highlight of MfH's year. MfH attended 22 events throughout 2023. The face-to-face interaction consumers have with MfH's staff, volunteers, and local dairy farmers is irreplaceable. There is something special about being able to explain who MfH is and what it does. This gives consumers a tangible experience that will stay with them.

The 2023 year included:

- The Attica Health and Wellness Fair, where there was a yogurt bar
- Sponsoring and supplying the cheese table at the Attica Partners in Ag Dinner
- Dairy activities included smoothies and butter making at the YMCA Kids Days
- Dairy portion size booths at both the Warsaw and Springville Central Schools' Ag Days
- The mobile photo booth at Kinderfarmin' and supplied the backpacks for all the kiddos
- Dairy portion size activity and Millie the milking cow for eight days of farm tours at Edleweiss Farms
- The photobooth milk carton was set up at three weddings!
- The Dodge Elementary County Fair
- The Hamburg Festival of lights with close to 8,000 vehicles
- The Cattaraugus County Fair, where they teamed up with Farm Bureau to bring a fun interactive tent including dairy signage, daily make and take activities, Millie the milkable cow, and so many balloons!
- Wyoming County Fair where they sponsored the farm Olympics, ice cream eating contest, a few 4-H events, and had their mobile milk carton photo booth
- The Erie County Fair with over one million visitors
- Various school events; dairy days, dairy activities, ice cream making, calf feedings, etc.

MfH again sponsored Dairy Day at the Erie County Fair. Highlights of the day included a Western New York Farmer of the Year Award, which was awarded to Russell and Stan Klein. They were honored in the Showplex with the entire fair board present and then were featured on several news programs throughout the day. MfH also used NYAACs “Bertha” inflatable cow and placed her near the Future Farmers of America (FFA) ice cream trailer. She drew in quite a crowd and helped fair goers locate the booth, which partnered with MfH to give \$1.00 ice cream cones for the day. MfH’s booth in the commercial building had special giveaways and various activities for kids to participate in. Down in the dairy barn, kids were able to make dairy charm bracelets and participate in a scavenger hunt. If attendees used the trolley that drives around the fair, they listened to dairy facts and trivia during their ride. MfH was featured on “Fair Day Live” that morning along with sponsoring the show throughout the week. This day also included advertising on the fairs radio and television ads, website, social media, mobile app, and print ads. MfH kept with the tradition of trivia and giveaways in the booth along with the fourteen-foot-tall milk carton photo booth, activities for the kids, looping videos, and face-to-face interaction with local dairy farmers.

MfH’s mobile ten-foot-tall milk carton photo booth attended many of these events and was also used at several weddings throughout the summer and fall. Other events included: WIC World Breast Feeding Day, speaking engagements at several schools, and guest spots on radio shows.

Goal Number of Events: 20

Actual: 20

Goal Number of Attendees: 1.5 million

Actual: 1.4 million

### Branded Content

Budget: \$40,000

In 2023, Milk for Health worked with Amplified Buffalo to survey the Urban Buffalo Area, focusing on the Black and Hispanic communities to see how they consume or why they do not consume dairy products. MfH used these survey results to create branded content to use across Amplified Buffalo’s avenues of advertising, social media, web, and streaming media. MfH’s e-mail blasts had a 13 percent open rate and a 2.19 percent click rate. The published content had roughly 10,000 page views, 100,000 impressions and reached 50,000 Facebook followers.

Goal branded content pieces: 12

Actual: 13

Goal Surveys: Four

Actual: Three

## Cooking Classes

Budget: \$5,000

In 2023, MfH was able to teach over 1,000 students across western New York how to cook with dairy! MfH exceeded its goal and budget due to having so many requests and the manpower to facilitate. Students learned to cook loaded grill cheese sandwiches, not so typical smoothies, and home-made macaroni and cheese. All the recipes offered a lactose free option and students were taught about lactose intolerance and how to enjoy dairy despite it. Every school they attended requested them back for the 2024 year.

Goal students: 750                      Actual: 1,011

## **New York Animal Agriculture Coalition (NYACC)**

[www.NYAnimalAg.org](http://www.NYAnimalAg.org)

Contract Amount: \$435,000

Summary of Company: The New York Animal Agriculture Coalition (NYAAC) is a collaborative group of advocates that build trust between farmers and their community members. This not-for-profit organization showcases modern agricultural practices in an everchanging industry by empowering and encouraging farmers to share their agricultural stories. To sustain the future of animal agriculture, NYAAC utilizes diverse passions to amplify the voices of New York State farmers. With a dynamic staff, farmer directors, and industry professionals, this team effectively networks and builds relationships to raise funds and support for programs that align with the NYAAC mission.

### ***Priority Areas Addressed:***

**Goal #3 – Proactively improve the image of dairy products and/or dairy producers farming practices among consumers, thus improving the acceptance and consumption of New York milk and dairy products.**

Dairy Cow Birthing Center

Budget: \$50,000

The Dairy Cow Birthing Center celebrated its tenth anniversary at the 2023 State Fair and was funded at the amount of \$50,000 from the Dairy Promotion Order. Having welcomed more than a quarter of a million visitors during the 2023 New York State Fair, people had the chance to witness more than 30 'udder miracles' (calves). The opportunity to witness the miracle of life initiated conversations between fairgoers and farmers to learn more about modern dairy farming. The experience was streamed live on YouTube and shared on social media which had a reach of nearly 500,000 views. With a limited attention span by many, NYAAC is excited that the average watch time on YouTube for the 2023 Birthing Center was more than 14 minutes. The event was brought to life at the hands of more than 200 volunteers and more than 50 sponsors and donors.

## Mobile Dairy Experience

Budget: \$335,000

The Mobile Dairy Experience has simply been an idea for the past decade and is finally coming to life. In 2023, the Dairy Promotion Order funded this project at the amount of \$335,000. NYAAC combined this with some funds from the previous year and look forward to completing the building of this unique experience in 2024. During 2023, the focus was developing a feasibility study to find continued support and additional funds in the future. Stay tuned for the completed results of this project in 2024.

## Regional Dairy Center

Budget: \$50,000

The Regional Dairy Center was funded at the amount of \$50,000 for 2023. This project was approved for a project extension to be completed in 2024.

## **Burt Media (Previously Jeb & Company)**

[www.BurtMedia.co](http://www.BurtMedia.co)

Contract Awarded: \$200,000

Summary of Company: Burt Media Group (BMG) is a creative media company that helps individuals and brands develop an impactful presence online through social-first digital strategies. BMG specializes in content strategy, content creation, social media management, and paid advertising.

### ***Priority Areas Addressed:***

**Goal #3 – Proactively improve the image of dairy products and/or dairy producers' farming practices among consumers, thus improving the acceptance and consumption of New York milk and dairy products.**

**Goal # 8 – Create target marketing to promote the consumption of New York State milk and dairy products to Gen Z (ten to twenty three years old)**

### Creative Development

Budget: \$40,000

This year's content efforts included blog writing, social media post creation, feature content of farms and partners, and creative campaign videos.

BMG developed 50 blogs on [newyorkdairy.co](http://newyorkdairy.co), assembled hundreds of pieces of social content, and built out the creative campaign, "The Udderly Amazing History of New York Dairy," that ended up being featured in a variety of press outlets including; [USA Today](#), [New York Ag Connection](#), and [The Washington Times](#).



Campaign video and Blog:

<https://www.newyorkdairy.co/content/the-udderly-amazing-history-of-new-york-dairy>

Results:

- Five New York Dairy Creative Campaign Videos
- 122 pieces of content created about farmers/partners.
- 2064 total posts on all platforms (TikTok, Instagram, Facebook, YouTube)
  - Aiming for one or more posts daily on each platform (minimum four)
- 50 blogs developed.

### ***Priority Areas Addressed:***

**Goal #2 – Promoting uniqueness of, and increased sales of, New York milk, dairy products and/or ingredients throughout the entire food supply chain through various distribution channels and partnerships, including but not limited to, e-commerce, curb-side sales, etc.**

**Goal #3 – Proactively improve the image of dairy products and/or dairy producers' farming practices among consumers, thus improving the acceptance and consumption of New York milk and dairy products.**

**Goal # 8 – Create target marketing to promote the consumption of New York State milk and dairy products to Gen Z (10 to 23 years old)**

Paid Advertising Promotions

Budget: \$60,000

This year's paid advertising promotion included campaigns across Instacart, Instagram, Facebook, TikTok, and YouTube.

BMGs paid media campaigns for New York dairy were successful in increasing brand awareness, driving sales on Instacart, and increasing audience size.

BMG utilized custom creative content from @newyorkdairy channels, creative campaign videos, and Instacart's platform functionality to develop a variety of campaigns built for different objectives, sales, brand awareness, and audience growth.

The campaign generated 6,109,762 impressions, reached 2,186,953 unique users, and received 380,490 engagements with an engagement rate of 0.062. BMG gained 1,983,210 video views and 133,466 link clicks, resulting in a cost per mille (thousand) impressions (CPM) of \$8.20 for Instagram and Facebook and \$16.03 for TikTok.

The campaign achieved a cost per engagement (CPE) of \$0.08 for Instagram and Facebook and \$0.38 for TikTok; a cost per video view (CPV) of \$0.09 for Instagram and Facebook and \$0.04 for TikTok; and a cost per click (CPC) of \$0.79 for Instagram and Facebook and \$0.37 for Tiktok.

Instacart proved to be an effective sales channel with over \$285,000 in attributed sales and about \$30,000 of those sales being new-to-brand sales (sales in which the individual had not purchased that brand in the past twenty six weeks). Sponsored products campaigns maintained over a nine return-on-ad-spend (ROAS) and BMGs video campaign on the platform maintained over a fifteen ROAS.

Overall, BMG believes it has created a strong blend of sales and brand marketing by bringing together unique content, a new ads platform, and growth marketing tactics.

### ***Priority Areas Addressed:***

**Goal #2 – Promoting uniqueness of, and increased sales of, New York milk, dairy products and/or ingredients throughout the entire food supply chain through various distribution channels and partnerships, including but not limited to, e-commerce, curb-side sales, etc.**

**Goal #3 – Proactively improve the image of dairy products and/or dairy producers' farming practices among consumers, thus improving the acceptance and consumption of New York milk and dairy products.**

**Goal #4 – Improve communication to dairy producers and dairy stakeholders to inform them how they can assist in improving the consumption of New York milk and dairy products by highlighting the sustainability story.**

**Goal # 8 – Create target marketing to promote the consumption of New York State milk and dairy products to Gen Z (ten to twenty three years old)**

Media Brand Management

Budget: \$100,000

In its second year, @newyorkdairy maintained impressive growth and development, continuing its impact as a consumer-facing brand for the New York dairy industry. The brand's success has been driven by its engaging and informative edu-tainment content, which has generated 12,900,000 impressions, 9,438,000 users reached, and 10,550,000 video views.

@newyorkdairy also maintained a consistent posting schedule, with at least one daily post across all its platforms (TikTok, Instagram, Facebook, and YouTube); combined the brand posted over 2,000 times. The brand earned 19,529 new followers this year, current totals for followers across our channels are 24,700 TikTok followers, 6,256 Instagram followers, 4,860 YouTube subscribers, and 2,500 Facebook fans.

A new element for this year was a focus on activities that showcased other farmers, influencers, and dairy organizations in the state by creating content to feature them. The brand created and posted 122 feature pieces of content, 40 of which were collaborations with dairy farms or DPO partner organizations.

Through dynamic content and community engagement, @newyorkdairy has established itself as an approachable brand for dairy farmers and consumers, serving as a valuable touchpoint for the New York dairy industry. With BMGs ongoing efforts to create impactful content and engage with the community, @newyorkdairy is poised for continued growth and success.

Profile links can be found at <https://linktr.ee/newyorkdairy>.

## **New York Agriculture in The Classroom (NYAITC)**

NewYork.AgClassroom.org

Contract amount: \$650,000

Summary of Company: New York Agriculture in the Classroom (NYAITC) engages Pre-K to 12<sup>th</sup> grade students in hands-on learning experiences during the formal school day. County-based Cornell Cooperative Extension educators build connections and relationships with teachers to teach or reinforce core academic content using dairy as the lens for learning.

### ***Priority Areas Addressed:***

**Goal #1 – Increase the consumption of New York milk and dairy products by youth (lunches, breakfasts, and other offerings).**

County Cornell Cooperative Extension (CCE) Grants

Budget: \$448,000

Support was provided to 17 counties to provide direct classroom dairy education during the formal school day. County NYAITC educators completed 3,072 classroom visits and worked to build relationships with teachers and students, clearly communicate scheduling and lesson objectives, and develop hands-on lessons, tastings, and experiences.

Student learning took place in classrooms and outside school walls. Schools have opened more widely to allow for regular guest educators to teach in person and at outdoor events, and to host school field trips to farms. Students were able to benefit from lessons that consisted of interacting with dairy products and over 50,523 dairy samples were consumed.

With NYAITC educators more frequently visiting classrooms, each lesson and dairy experience allowed for concept reinforcement; half of the impacted classrooms had between two and 17 visits.

Counties included in this program were: Albany, Broome, Cayuga, Erie, Genesee, Herkimer, Livingston, Madison, Monroe, Nassau, the counties that comprise New York City (including New York County, Kings County, Bronx County, Richmond County, and Queens County), Oneida, St. Lawrence, Schenectady, Seneca, Steuben, and Wyoming.

Additional metrics include:

- 3,072 classrooms were visited.
- 116,933 students were reached.
- 63,827 hours of dairy education were conducted.
- 34,598 dairy samples were consumed.

Dairy Lessons, Mac & Cheese Challenge, Virtual & On-Farm Experiences

Budget: \$17,000

NYAITC provided curated lessons, kits, and program materials for teaching core academic concepts through dairy.

Standard-aligned lessons and kits included, but were not limited to:

- Agriculture Pays: students discover that agricultural careers are interconnected, and that agriculture influences many parts of their daily lives.
- Cheesemaking: from Liquid to Solid: understanding phases of matter by making cheese.
- Lactose Lab: exploring the chemistry and composition of milk.
- Sun, to Moo, to You!: investigating the transfer of energy in the process of making milk.
- Dairy Farming in a Glove: observing how common crop seeds grown on a dairy farm sprout and investigating the conditions necessary for germination to occur.

Metrics include:

- 1,400 classrooms benefitted from these resources.
- 50,523 dairy products were sampled or consumed during the lessons.
- Cheese was the most consumed dairy product sample (14,553 samples).
- Milk was a close second (12,332 samples).

Dairy Innovation Contest: Mac & Cheese Challenge

In its second year, the Mac & Cheese Challenge was again wildly successful. The challenge asked students to work together to develop their own unique macaroni and cheese recipe, cook the recipe, and create a unique marketing element to help sell their final product.

This contest was so popular with teachers because it was a strong cross-curricular project, which reinforced math skills, encouraged research on existing recipes, and taught science concepts that touched on talking about melting point and baking temperatures. The project also had an English/Language Arts (ELA) focus because the students had to develop marketing materials. Students loved the contest because they didn't know they were learning along the way, they just enjoyed making the recipe.

Metrics included:

- 273 student recipe and marketing submissions.
- 4,928 students participated.

### Virtual and On-Farm Experiences

As expected in a COVID-fatigued education system, virtual field trip programs have been happening less and less throughout the county programs. With four completed for the year, NYAITC recognizes that they have an important role in showing students elements of agriculture that would not be accessible or possible to visit in person but provide value to their learning. NYAITC is also finding a strong number of re-watches of past high-quality virtual field trips, especially the visit to Tiashoke Farm and with Chef Kane Jilek making his award-winning macaroni and cheese.

Most exciting over the 2023 year has been the full return of on-farm field trips. Over 2,635 students stepped foot on a dairy farm this year. These students likely had their first opportunity to meet a farmer, understand the lifecycle of a farm, and their teachers and parents were able to ask their own questions about milk production and nutrition. Interestingly, the field trips varied in size – there were the very large open farm day experiences, and there were the very small visits for targeted or in-depth topic studies. It has been a triumphant return for on-farm field trips.

### Professional Development Trainings

Budget: \$18,548

In 2023, NYAITC hosted professional development trainings in partnership with the NYAITC counties. These sessions were held on farms where teachers experienced lessons, received classroom supply kits to teach the lessons in their classrooms, and were able to build connections with the farmers hosting the sessions. Most teacher participants had never been to a dairy farm in the past.

The goals of the trainings were to help the NYAITC counties build stronger engagement and connection with the teachers using their programs, and to create interest for new schools to participate in NYAITC. The trainings built confidence in teachers to use food, agriculture, and dairy for their lessons even when the NYAITC educators are not teaching their students.

One of the highlights for the teachers was learning how to make cheese, and how easy it is to make with their students. Every teacher received a cheesemaking kit to use in their classroom, along with a book that teaches the science of cheesemaking to kids.

Ninety-six teachers participated in trainings held in:

- Oneida County- Oneida County Fair
- Seneca County- Persoon Dairy, Muranda Cheese Company
- Monroe County- Springdale Farm
- Livingston County- Noblehurst Farms

## Agriculture (Dairy) in the Classroom Educator Inservice

Budget \$15,000

The Dairy in the Classroom (DITC) program has quickly grown and evolved in its third year of existence. With the 17 county programs and over 116,000 students being impacted, it has become increasingly more important to build a community amongst the educators leading and implementing the project.

For the first time, NYAITC hosted a multi-day professional learning in-service for all existing and new county programs. Hosted in Madison County in September, over 30 DITC educators and county CCE Executive Directors came together to model lessons to one another, share best practices, lessons learned, and how they structure special programs with their schools. They shared scheduling logistics, favorite tools of the trade, and brought materials to give one another.

Guest speakers included Beth Meyers (ADANE), Dr. Nicole Martin (Cornell University), and Monica Cody (Cody Farms). A highlight of the experience was going on a “behind the scenes” farm tour with Johanna Bossard of Barbland & White Eagle Dairy, where she explained as a farmer how she is preparing for a farm tour, and communicated what information she needs from a DITC educator to set up a high-quality farm tour.

One of the goals of this action was to build the strength and capacity of each program by providing time and space to share, grow, and learn about the implementation of school-based programming from one another. Every participant shared in their evaluation how valuable the time spent together was, modeling and learning new curricular connections for the new school year.

### **Dairy Runway Program**

<https://dairyinnovation.org/dairy-runway-program/>

Contract amount: \$278,420

Note: CREA received a no cost extension for this 2023 grant, extending the program and funding through June 2024.

Summary of Company: Cornell’s Center for Regional Economic Advancement (CREA) launched the Dairy Runway entrepreneurship program in 2023 for food innovators with early-stage ideas for value added dairy products. The program provides participants with the knowledge and skillset required to bring a product to market and is organized into two phases: 1) an online, synchronous entrepreneurship course focused on the customer discovery process that introduces tools like the Business Model Canvas; 2) the Kitchen Incubator phase of the program, for participants who complete the entrepreneurship course, to test the technical feasibility of their proposed product and work toward a business model with a paired Cornell Entrepreneur in Residence, who provides one-on-one coaching for up to eight weeks.

### ***Priority Areas Addressed:***

**Goal #2 – Promoting uniqueness of, and increased sales of, New York milk , dairy products and/or ingredients throughout the entire food chain through various distribution channels and partnerships, including but not limited to, e-commerce, curbside sales, etc.**

Budget \$278,420

CREA has committed to supporting two cohorts per grant period, with no more than ten participants per cohort.

#### **Cohort 1**

For the inaugural cohort, program administrators recruited two course instructors, Ken Rother and Heather Sandford, to lead and design the six-week, online entrepreneurship course modeled after the National Science Foundation Innovation Corp (NSF I-Corp) curriculum. An application process was developed using a similar structure and criteria as other CREA entrepreneurship programs. A recruitment campaign launched in early May and concluded the end of June, resulting in 28 applications. Ten applicants were accepted into the program, which began in early July 2023 with the entrepreneurship course that concluded in August. Industry leaders representing marketing firms, major grocery chains, like Wegmans; and national dairy organizations, such as Dairy Management Inc.; participated as guest speakers throughout the course.

Six program participants advanced into the Kitchen Incubator phase, which began in September and concluded in January 2024. Each participant was paired with a Cornell Entrepreneur in Residence who served as an individual business coach. Participants met with coaches on a weekly basis to further develop the business model canvas started during the entrepreneurship course. During this phase, participants worked with Cornell's Food Processing & Development Lab (FPDL) team to test the formulation of their products and work toward a prototype. Each participant had up to two full days to collaborate with Cornell's food processing facility teams in Ithaca or the Cornell Food Venture Center's pilot plant in Geneva, depending on technical needs. Feedback from this work was shared with paired business coaches to determine adjustments to the business model canvas. Three participants are completing their work with the FPDL team in January.

#### **Cohort 2**

Recruitment for the second cohort began in mid-November and concluded in early January, resulting in 23 applications. Eight applicants will start the program on January 31 and are scheduled to conclude the end of June. Class materials have been updated to reflect feedback from previous participants and guest speakers have been confirmed. Speakers will include representatives from Agency 29, Wegman's, Dairy Management Inc., Antithesis Foods, and lu.lu ice cream.

Additional metrics include (as of January 2024)

- 51 total applications received
- 20 total applicants accepted
- 18 total participants
- Six Cornell Entrepreneurs in Residence recruited as business coaches
- 501 total social media impressions
- Six informational webinars hosted
- Four New York-based dairy farms participated

## Cornell University Research Projects

[cals.cornell.edu/food-science/research](https://cals.cornell.edu/food-science/research)

### Milk Quality Improvement Program (MQIP)

Contract Awarded: \$857,860

Summary of Company: The MQIP is the core overall dairy foods program at Cornell University, providing research and extension support for raw and finished product quality improvements and product safety in New York. The MQIP provides broad expertise in dairy microbiology, including microbial food safety and spoilage, along with key expertise in training New York dairy manufacturers, playing a critical role in ensuring that New York has a qualified dairy processing workforce. This program is the only one of its kind in the US, committed to serving the New York dairy industry to ensure a plentiful supply of high-quality dairy products to consumers in New York and beyond.

#### ***Priority Areas Addressed:***

**Goal #7 – Conduct research projects that create new products and/or enhance the safety, quality, and sensory attributes to expand the demand for New York dairy products and dairy ingredients.**

Dairy Product Quality and Safety Program (DPQSP; MQIP “core” program):

Budget: \$449,580

The Milk Quality Improvement Program (MQIP) provides comprehensive support to the New York dairy industry throughout the farm to processing continuum. On behalf of the New York dairy farmers, who have continuously supported this program since 1979 through check-off dollars, the MQIP prioritizes program activities and outcomes that facilitate the long-term success of the New York dairy industry through DPQSP efforts. Key metrics for 2023 include:

- 13 peer reviewed publications and eight lay articles published;
- submitted six requests for additional funding from non-DPO sources and received nearly \$950,000 in leveraged funding;
- conducted 36 dairy foods training courses, reaching 1,009 individuals with 13,150 contact hours;



- collected over \$600,000 in fees from workshops and from processor support through the food processing development laboratory; and
- supported New York processors and producers through seven deployments of the MQIP rapid response team.

In 2023, our interactions with the New York dairy processing industry reached businesses that process approximately 94 percent of the milk in New York, demonstrating the reach of the program and an overall high level of stakeholder impact.

Supplemental Project – Preparing the New York Dairy industry for eCommerce distribution channels.

Budget: \$114,460

ECommerce and related distribution channels are rapidly growing in their importance, including for the distribution of dairy products. These distribution channels, however, represent unique challenges such as the potential for more frequent and prolonged temperature abuse, which impacts product shelf life and quality. MQIP continued its efforts to assess the temperature profiles of dairy products moving through eCommerce distribution channels in New York and simulated those temperature profiles in the lab for fluid milk and Greek yogurt. Staff ran three different temperature simulations representing the distributor-to-consumer channel, three temperature simulations representing the third-party(e.g., Instacart)-to-consumer channel in fluid milk, and three simulations representing the distributor-to-consumer in Greek yogurt and then held the products and tested them at different time points through 21 days of shelf-life. The dynamic temperature data was used as input for current predictive Monte Carlo simulation dairy spoilage models to predict the presence of indicator organisms (i.e., Gram-negative bacteria in milk, yeast, and mold in Greek yogurt). Temperature data gathered in 2022 will also be able to fill gaps in these predictive models by representing eCommerce-specific sections in the dairy distribution chain.

Supplemental Project – New York State Raw Milk Quality: Benchmarking to facilitate continuous improvement and consumer acceptance.

Budget: \$107,970

High quality raw milk is essential to the manufacture of high-quality processed dairy product, but contemporary research indicates that tests that are currently performed on raw milk such as somatic cell count and total bacteria count do not comprehensively capture the factors that impact the finished product quality. For this project, staff evaluated raw milk for traditional and novel measures of quality to produce data that will establish New York benchmarks for parameters that directly affect finished product quality and identify farm characteristics and management practices that lead to desired raw milk quality specifications. Staff enrolled 100 farms throughout New York, including 15 central farms, 23 eastern farms, 39 western farms, and 23 northern farms. The farms vary in size with 35 farms milking less than 100 cows, 18 milking 100-500 cows, 20 milking 501-1,000,

cows, 17 milking 1,001-2,000, and ten milking more than 2,000 cows. Staff collected 200 raw milk samples and performed 4,800 tests including 2,800 microbiological tests, 200 sensory tests, and 1,800 chemistry tests. Evaluating the raw milk parameters that directly impact processed dairy products is critical to the long-term success of the New York dairy industry.

Supplemental Project – Detection, identification, and tracking of thermotolerant and non-starter lactic acid bacteria throughout the dairy value chain.

Budget: \$94,400

Thermotolerant bacteria can survive moderate to severe heat treatments and non-starter lactic acid bacteria (NSLAB) are unintentional contaminants in cultured dairy. The defects caused by these organisms may cause unwanted gas production or off-flavors. Staff selected forty strains comprising nine key genera of thermotolerant bacteria to be used to develop an enumeration method based on evidence of isolation from dairy products and survival of, at a minimum, a lab pasteurization heat treatment (63 degree Celsius for 30 minutes). Four different heat treatments including:

- 63 degrees Celsius for 30 minutes
- 65 degrees Celsius for 15 minutes
- 68 degrees Celsius for seven minutes, and
- 70 degrees Celsius for five minutes

Combined with three incubation times (24, 48, and 72 hours) are being evaluated as possible methods for isolation and detection. In 2023, 11 of the 40 thermotolerant strains were tested, and reductions ranged from 0.04 log to >7.19 log CFU/mL, highlighting a wide range of responses from the bacteria tested. In 2024, we will continue to develop a method for detecting and identifying these bacteria and begin evaluating finished dairy products suspected of quality issues related to thermotolerant bacteria or NSLAB to compare bacterial recovery to our proposed methodology.

Supplemental Project – Developing best practices for prevention of sanitizer in milk.

Budget: \$91,450

Adulteration of milk with residual sanitizer poses a risk to consumer health as well as a risk to overall publicity for the dairy industry. Therefore, staff set out to identify current sanitizer detection methods used at the processor level, evaluate current and potential testing practices for sanitizer detection, and develop training materials with best practices to prevent the unintentional adulteration of fluid milk. In 2023, they surveyed filler operators from eleven New York dairy processing facilities and identified that the top practices for prevention and detection of sanitizer were:

- Visual inspection of tanks and filler lines
- Sensory evaluation
- Pushing sanitized water with the product until filler flow turns white

- Freezing point testing of raw milk

Staff evaluated four chemical testing strips and conducted three sensory studies to determine some of these practices' sensitivity to sanitizer levels. Testing strips targeting peroxide were found to have a higher sensitivity to low levels of peracetic acid (PAA) compared to sensory evaluation, where only a small portion of consumers could reliably identify PAA in milk samples by odor. They are incorporating the findings into fluid milk workshops offered at Cornell University in 2024.

## Northeast Dairy Food Research Center (NDFRC) Research Projects

Contract Award: \$824,619 (total includes projects approved for 2022 contract, completed in 2023. The amount approved for 2023 is \$626,019.)

The NDFRC works in collaboration with dairy farmers, industry, government agencies, and University partners to pursue cooperative dairy foods research and extension. Its mission is to seed dairy innovation and entrepreneurship; enhance the quality, safety, and demand of dairy foods; and improve the sustainability of the dairy industry. The NDFRC is located at Cornell University in Ithaca, New York. It was established in conjunction with Dairy Management, Inc. (DMI) in 1988 as one of six national dairy centers. The NDFRC and its accomplishments over the past decades would not have been possible without the support of New York dairy farmers.

### *Priority Areas Addressed:*

**Goal #7 – Conduct research projects to ensure the safety and/or expand the demand for New York dairy products and dairy ingredients.**

Project 1 – PI – Carmen I. Moraru

Title: Microwave dehydrated, shelf stable cream.

Budget: Carry over from 2022 - no additional amount budgeted

Conduct research to expand the demand for New York dairy products and dairy ingredients by developing a novel process for the manufacture of shelf-stable dehydrated cream, without preservatives (clean label), which can be stored and shipped at room temperature, for domestic use or export. The project is now complete. During the last reporting period, the shelf-life study of Microwave Vacuum Dried (MVD) cream was finalized. In addition to what was initially proposed, researchers developed an instrumental method to evaluate changes in the volatile profile of MVD cream, which will allow them to notice changes in cream flavor after processing and during storage. Based on this assessment, researchers estimated that the shelf-life of MVD cream is at least six months at room temperature. A paper describing the process was published and another paper (focused on shelf-life testing) is currently in progress. Researchers have one patent filed from the research, published one peer reviewed paper, and given two presentations on this work at scientific conferences and one at industry conferences.

## Project 2 – PI – Syed Rizvi

Quick dissolving milk protein-rich extruded baby foods.

Budget: Carry over from 2022- no additional amount budgeted

Conduct research to expand the demand for New York dairy products and dairy ingredients by developing quick dissolving extruded puffs that incorporate the use of milk protein concentrate (MPC) as the major ingredient in the puffs to deliver a high level of nutritional quality from dairy. Goals were to:

- quantify the effect of selected functional ingredients (sodium hexameta phosphate (SHMP) and skim milk (SMP)) on the hydration and disintegration properties of MPC based extruded puffs; and
- evaluate the physio-chemical properties of the final, consume-acceptable, quick disintegrating products.

Orally self-disintegrating milk protein-rich puffs for infants were designed utilizing 70% milk protein concentrate (MPC) and 20% skim milk (SMP) or 60% MPC and 30% lactose hydrolyzed skim milk (LHSMP). Puffs' physio-mechanical properties (initial yield stress, initial yield strain, Young's Modulus, etc.) were analyzed considering variable contact area. Results indicated significant difference between physical characteristics determined considering variable contact area compared to constant contact area ( $P < 0.0001$ ). These milk protein-rich puffs were nutritionally superior to the Market Baby Puff having higher protein (16.3g/30g serving), fiber (1.6g/30g serving), bioactive compounds, mineral, and galactooligosaccharide (GOS) content. Sensory evaluation showed good consumer acceptability with need to increase sweetness. Researchers have published one peer-reviewed paper, and given two presentations on this work at scientific conferences and one at industry conferences.

## Project 3 – PI – David Barbano

Technology transfer processing and chemistry research results to industry.

Budget: \$ 56,758

To conduct research to expand the demand for New York dairy products and dairy ingredients particular by implementation of results, knowledge and technology developed based on research at the Northeast Dairy Foods Research Center and other technological developments that would keep dairy processors in New York State competitive.

Goals were to:

- work on technology transfer and implementation of value-added high protein milk-based beverages, shelf-stable beverages, and processing and packaging technology.
- develop a system for routine calibration of the instrument with calibration samples developed at Cornell.

- provide emergency processing technology and product chemical and physical property analytics support for technical emergency problem solving and support for New York State dairy product manufacturers.

In 2023, researchers collaborated on milk protein beverages with Byrne Dairy and HP Hood on new approaches to make them lactose free. They had MIR infrared analyzer installed at the Great Lakes cheese factory in Adams, New York and are working on training of staff and instrumentation calibration. Lastly, at the request of New York State dairy processors, researchers are working with analytical chemical methodology to determine if a foreign imported product that competes with a New York State dairy product is made by a technology that is not allowed in the US standard of identity for that product. Researchers have given one presentation on this work at a scientific conference and two at industry conferences.

Project 4 – PI – Samuel Alcaine

Technology transfer for the NDFRC.

Budget: \$13,570

Conduct research to expand the demand for New York dairy products and dairy ingredients particularly by:

- Facilitating directed engagement with the New York dairy industry to drive technology transfer and implementation based NDFRC research, with a focus on technologies that improve the sustainability, innovation, and entrepreneurship of the New York dairy industry.
- Focusing on outreach to dairy companies, dairy industry groups, and supporting dairy trade organizations to identify strategies to further improve not only the transfer of key technologies but to improve the technological workforce pipeline that enables successful implementation and maintenance of transferred technologies to the New York dairy industry so that New York remains a leading and competitive state for dairy processing.
- Providing emergency processing technology and product microbial quality, safety, and fermentation support for technical emergency problem solving and support for New York State dairy product manufacturers.

In 2023, the first Industry NDFRC meeting in three years was held. NDFRC received great feedback on how better to collaborate and communicate with industry on ongoing and future dairy foods research. Presented on NDFRC research, work force development, and startup activities at the multiple industry events, meetings, and outreach. The NDFRC also provided support to over 20 companies and startups.

Project 5 – PI – David Barbano

Source and control of variation in butter (and high fat dairy product).

Budget: \$71,036

Conduct research to expand the demand for New York dairy products and dairy ingredients by specifically improving consumer satisfaction with the texture (i.e., hardness) of butter and other high-fat dairy products (e.g., sour cream, cream cheese, and spreads) produced by New York State milk processing plants. All samples for objective one have been analyzed and researchers have determined the range of fatty acid composition by gas-liquid chromatography (GLC) and melting properties of milk fat for those fatty acid compositions by differential scanning calorimetry (DSC). They have proof of concept that cycling of the temperature of the solid milk fat will cause a lower melting point of the milk fat and have demonstrated that the process of temperature cycling increases the proportion of milk fat that is liquid at room temperature. An interesting finding is that high de novo fatty acid milk fatty acid composition is more responsive to softening due to temperature cycling. For objective two, they have worked with tempering cream prior to butter making. The tempering influences the speed of the churning process in making the butter but does not have an impact on the final melting properties of the butter. For objective three, the next step has been to test this on commercial butter using a recently purchased texture analyzer to measure butter hardness. They set up an instrumental method using a texture analyzer with a wire cutter slicer head and a controlled temperature chamber to evaluate finished butter hardness. One paper is in preparation, and two presentations have been given on this work at scientific conferences and at one industry conference.

Project 6 – PI – David Barbano

The role of milk salts on heat stability of milk protein in high-milk protein beverages.

Budget: \$73,750

Conduct research to expand the demand for New York dairy products and dairy ingredients by specifically expanding the market and sales for value added high milk protein beverages (more grams of protein and calcium per serving than standard milk) produced by New York State milk processing plants. A custom small scale apparatus has been built that will allow researchers to simulate thermal milk processing done in retort and ultra-high temperature (UHT) to produce shelf-stable milk and milk-based beverages. They tested this apparatus and developed a centrifugal assay on the milk or beverage processed in this apparatus to measure the amount of heat-induced aggregation (and settling) or protein will occur in a container after processing. A paper on this was presented at ADSA (American Dairy Science Association) this summer. Researchers have begun applying the method to concentrated milk protein beverage formulation to determine the impact of various salts on the extent of protein aggregation and protein setting cause by UHT thermal processing and have added laser light scattering to determine what portion of the casein (protein) micelles have formed aggregates. The heat stability of milk protein beverages at about 6.5% protein was tested and it was found that beverages from different suppliers that have lower mineral content are less heat stable.

Researchers are trying to determine if overall mineral content is more important or if specific minerals (e.g., calcium, phosphorous, potassium) have specific effects. Also, lower pH of beverage seems to have lower heat stability. One paper is in preparation, and researchers have given two presentations on this work at scientific conferences and one at an industry conference.

Project 7 – PI – Samuel Alcaine

Leavened dairy.

Budget: \$45,103

Conduct research to expand the demand for New York dairy products and dairy ingredients by developing novel types of dairy food products produced through the acidification of milk using yeast rather than bacteria, which also means these new fermentations are susceptible to loss due to bacteriophage. Researchers have characterized the fermentation dynamics of five yeast strains in terms of acidification rate, sugar utilization, metabolites, counts, and temperature and presented their findings at the American Dairy Science Association. They continue to characterize and optimize the production of yogurt-like products and have identified additional yeast-strains that can be incorporated into these fermentations to drive the creation of novel flavor or to provide probiotic potential. Lastly, they have scaled up the production of these fermentations from bench-scale (1/2 gallons) and optimized the production of a Gouda-style cheese that is currently now under evaluation. One paper is in preparation, and researchers have given one presentation on this work at a scientific conference and one at an industry conference.

Project 8 – PI – Samuel Alcaine

Enabling natural, enzymatic processing technologies to improve dairy product quality and safety.

Budget: \$44,513

Conduct research to expand the demand for New York dairy products and dairy ingredients developing a novel enzymatic processing technology that can improve the microbial quality and safety of milk and other dairy foods. They had a delayed start as VISA issues prevented the student from coming for the first half of the year. Since arriving, methods for immobilization of the enzyme in alginate beads have been evaluated, and the activity of the system characterized for impact on the acidity of milk. The conditions (time) for treatment of milk by the immobilized enzyme, as well as the impact on the level of spoilage organisms (*Pseudomonas*) during treatment and subsequent outgrowth of the spoilage organism post-treatment has been evaluated. Further bead formulation optimization has been done to improve integrity and enzyme retention. There was one presentation on this work at a scientific conference.

Project 9 – PI – Julie Goddard and Robin Dando

Rare sugar sweetened yogurt – a novel process for better tasting, healthy, and natural dairy-derived sweeteners.

Budget: \$102,399

Conduct research to expand the demand for New York dairy products and dairy ingredients by developing a method to sweeten yogurt by using low calorie, no sugar added rare sugars produced from dairy coproducts and to understand consumer perception and sensory analysis of rare sugar sweetened yogurt. There was a delayed start for this project due to student recruitment. Since starting the project, a sensory test to evaluate consumer perceptions and response to rare sugars in yogurt has been run, with the data currently being analyzed. A joint analysis and price optimization study is currently in the field, 202 out of a recommended 200 responses already returned, but will be kept fielded for another few weeks to maximize. Lastly, two prospective enzymes have been identified from *Lactobacillus* sp. that are capable of the second step in the cascading reaction from lactose to tagatose (the rare sugar). This second enzyme (D-tagatose 3-epimerase) has been successfully expressed and purified in the lab.

Project 10 – PI – Carmen Moraru and Samuel Alcaine

Novel process for the manufacture of shelf stable yogurt powder with live and active cultures.

Budget: \$106,200

Conduct research to expand the demand for New York dairy products and dairy ingredients by developing a novel process to manufacture shelf-stable yogurt powder with live and active cultures. Specifically, staff is looking at the use of microwave vacuum drying (MVD) to create a shelf-stable yogurt and shelf-stable yogurt base that subsequently ferments when hydrated. Researchers have conducted optimization trials using varying vacuum pressures (2 kPa, 6 kPa, 10 kPa) and drying energy sequences (segmented vs. single power input) for fermented dairy beverages. They have analyzed drying kinetics of nonfat plain yogurt, Greek yogurt, and kefir. This data has allowed to utilize the Page Model for predicting drying behaviors. They have analyzed and compared quality attributes (LAB color, moisture ratio, solubility, dispersibility, bulk density) of dried powders post MVD trials, and performed reconstitution tests under various conditions (temperature: four degrees Celsius, 21 degrees Celsius, 45 degrees Celsius; speed 12,000 revolutions per minute (RPM), 18,000 RPM; time: two minutes, four minutes, six minutes) to simulate different home use and industrial scenarios. They have also chosen optimal drying parameters based on texture, viscosity, and water holding capacity of the yogurt/fermented dairy base.

Project 11 – PI – Syed Rizvi

Production of novel, dairy-based products, and in-mouth dissolving puffs via high pressure extrusion.



Budget: \$112,690

Conduct research to expand the demand for New York dairy products and dairy ingredients by developing new dairy products that to date do not exist, utilizing skim milk powder (SMP), or lactose hydrolyzed skim milk powder (LHSMP) for those with lactose intolerance, as major ingredients in nutrient rich snack products with added fruit pomace or in-mouth dissolving puffs produced through supercritical CO<sub>2</sub> (SC-CO<sub>2</sub>). Nutritionally enhanced milk protein-rich snacks were made by valorizing by-products from the fruit and dairy industries (apple pomace and acid whey). The formulations approximately contain 40 percent milk protein concentrate (MPC), 20 percent lactose hydrolyzed skim milk (LHSMP), 20 percent apple pomace powder and 8 percent acid whey on dry basis. Incorporating fruit and dairy by-products significantly improved the nutritional profile of the snacks, having high protein (15g/30g serving), fiber (4g/30g serving), bioactive compounds, minerals, and GOS content, making them nutritious functional snacks with balanced nutrients. Sensory test (n=92) showed that incorporation of fruit and dairy by-products in snacks either improved or maintained Just About right (JAR) scores in four of the five attributes studied (texture, hardness, flavor, and purchase intent) except sweetness compared to Market Snacks. Further studies are underway to improve perceived sweetness. One paper has been published, and there was one presentation on this work given at a scientific conference and one at an industry conference.

## 2023 Dairy Promotion Advisory Board Members

Larry Bailey (Board Chair)- Fort Ann, New York (Dairy Farmers of America Seat)

Kim Nelson - West Winfield, New York (Agri-Mark Seat)

Julie Patterson - Auburn, New York (At-large Seat)

Jason Kehl - Strykersville, New York (Niagara Frontier Cooperative Bargaining Agency Seat)

Carl Moore - North Bangor (New York Farm Bureau Seat)

Dean Handy - St. Johnsville, New York (New York State Grange Seat)

Alicia Lamb - Oakfield, New York (At-large Seat)

Judi Whittaker - Whitney Point, New York (At-large Seat)

Sheila Marshman - Oxford, New York (New York State Grange Seat)\*

Donald Harwood - Perry, New York (Rochester Cooperative Milk Producers Bargaining Agency Seat)\*

Roberta Wolf, Lyons - New York (Rochester Cooperative Milk Producers Bargaining Agency, Inc. Seat)^

Sarah Head - Homer, New York (At-large Seat)^

\* until April 2023

^ New to the Board in April 2023

## 2023 Dairy Promotion Advisory Board Meetings

<b>Date</b>	<b>Location</b>
March 1	Albany, New York
May 26	Albany, New York (educational)
June 14	Syracuse, New York
August 1	Syracuse, New York
September 12 and 13	Albany, New York
November 1 and 2	various locations in New York (educational)

Note: Dairy Promotion Advisory Board meetings are open to the public. For more information about Dairy Promotion Advisory Board meetings, recordings or minutes, visit [www.agriculture.ny.gov](http://www.agriculture.ny.gov) or visit the Dairy Promotion Advisory Board's YouTube page: <https://www.youtube.com/@nysdpo9667>.