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# CORNELL DAIRY FOODS EXTENSION PROGRAM

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WHO HAS HEARD OF CORNELL????

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# BUT THAT'S NOT WHERE I'M FROM....

“I would found an institution  
where any person can find  
instruction in any study.”

EZRA CORNELL, 1868



EXPERIENCE CORNELL



HELPFUL LINKS

VISITING CORNELL

ITHACA TODAY





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Dairy Foods Extension



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# ***CORNELL DAIRY FOODS EXTENSION PROGRAMS***

The mission is to help farmers, business owners, regulators and consumers in New York State **and beyond** to produce safe, healthy, and wholesome foods.

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# ***CORNELL DAIRY FOODS EXTENSION PROGRAMS***

Our dairy extension program focuses on supporting the production of safe and high-quality dairy products with specific expertise in microbial spoilage and food safety issues. Our program offers an extensive set of workshops that lead towards certificates in fluid milk production, cheese production, ice cream production, yogurt production and other fermented dairy products.



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# Comprehensive support

To promote economic  
development through dairy  
processing in New York State



<https://cals.cornell.edu/dairy-extension>

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WHAT WE DO

WE EXPLAIN  
THE WHY





# Dairy Foods Certificate Program

## Core Courses

*(Dairy Science and Sanitation, a Food Safety Course, and a Pasteurizer Course required)*

Dairy Science and Sanitation

Food Safety Course (one required)

- Accredited HACCP
- Preventive Controls Qualified Individual

Pasteurizer Course (one required)

- HTST
- Vat

## Specialized Courses

*(Choose one specialized course per certificate)*

Science of Cheese  
(Basic Level)

Science of Yogurt  
(Basic Level)

Fluid Milk  
Processing for  
Quality and Safety

Ice Cream and  
Frozen Desserts  
(Basic Level)

Membrane,  
Evaporation, and  
Drying Technology

## Advanced Core Courses

*(All courses required)*

Environmental Monitoring  
Programs

SOP and Technical Writing

Leadership Skills for Success

## Advanced Specialized Courses

*(Choose one advanced specialized course per certificate)*

Science of Cheese  
(Advanced Level)

Science of Yogurt  
(Advanced Level)

Fluid Milk Processing  
(Advanced Level)

Ice Cream and Frozen  
Desserts (Advanced Level)

*Successful completion of Core Courses and appropriate Specialized Course required for Basic Certification. Certificate valid for 3 years. 15 hours every 3 years of approved course work or meeting attendance required for renewal. See examples on the back page.*

*Successful completion of Basic Certificate Track, Advanced Core Courses, and appropriate Advanced Course required for Advanced Certification. Certificate valid for 3 years. 15 hours every 3 years of approved course work or meeting attendance required for renewal.*

# ***Dairy Science and Sanitation***

(On-line recorded Lectures and knowledge checks,  
2 CEUs) At your own pace

- Basic Dairy Microbiology/Food Safety Overview
- Good Manufacturing Practices/ Dairy Sanitation
- Milk Composition & Unit Processing Operations
- Dairy Regulations/Food Safety Modernization Act



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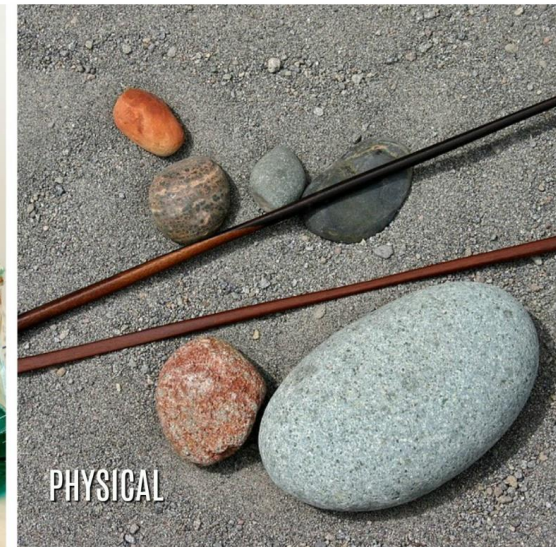
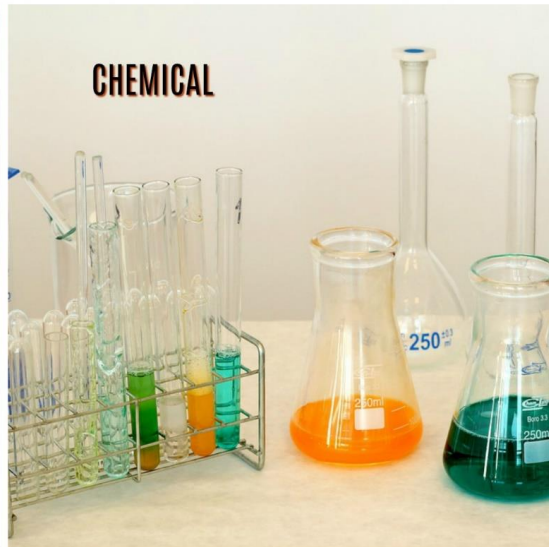
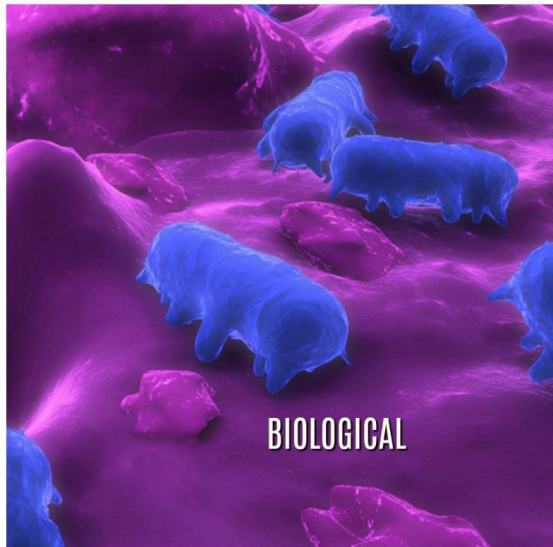




# ***Hazard Analysis Critical Control Points/Food Safety Plans (HACCP) for Dairy***

(On-line recorded Lectures and knowledge checks, 2 CEUs) At your own pace

- Hazards associated with dairy foods processing
- Prerequisite Programs and Good Manufacturing Practices
- HACCP plan development
- HACCP-based regulations



# *High Temperature Short Time (HTST)*

(Virtual live or In person 2.5 Day Course, 2 CEUs)

- Why we pasteurize
- HTST Operation Components
- Regulatory requirements for HTST Operation
- Cleaning & Sanitizing HTST Programs
- Maintenance of HTST
- Requirement as part of NYS Broken Seal Program
- Special Breakout for UHT Units







# ***Fluid Milk Processing for Quality & Safety***

(On-line Lectures/1 Day Virtual live, 2 CEUs)

- Basic Microbiology in relation to Milk Quality and Safety
- Influence of Raw Milk Quality on Pasteurized Milk Quality & Shelf-Life
- Fluid Milk Processing Parameters
- Tools for Assessing Milk Quality and Shelf-Life

# ***Science of Yogurt and Fermented Dairy Products***

(Online lectures/1 Day Hands-on, 2 CEUs)

- Milk quality and impact on cultured dairy products
- Culture microbiology and hands-on cultured dairy making
- Unit operations and sanitation in cultured dairy production
- Formulation utilizing different ingredients





# ***Science of Cheese Making***

(On-line Lectures/1 Day Hands-On, 2 CEUs)

- Foodborne pathogens resulting from unpasteurized milk
- Milk quality which impacts cheese making
- Cheese culture, chemistry and microbiology
- Cheese-making unit operations and techniques and hands-on cheese making



# ***Artisan Ice Cream and Frozen Desserts***

(On-line Lectures/1 Day Virtual live, 2 CEUs)

- Frozen dessert food safety
- Ice cream ingredients and their attributes
- Ice cream formulation
- Ice cream-making equipment and production
- Flavor composition
- Ice cream sensory





# ADVANCED LEVEL COURSES

- Advanced Science of Cheese
- Advanced Science of Cultured Products
- Advanced Science of Ice Cream

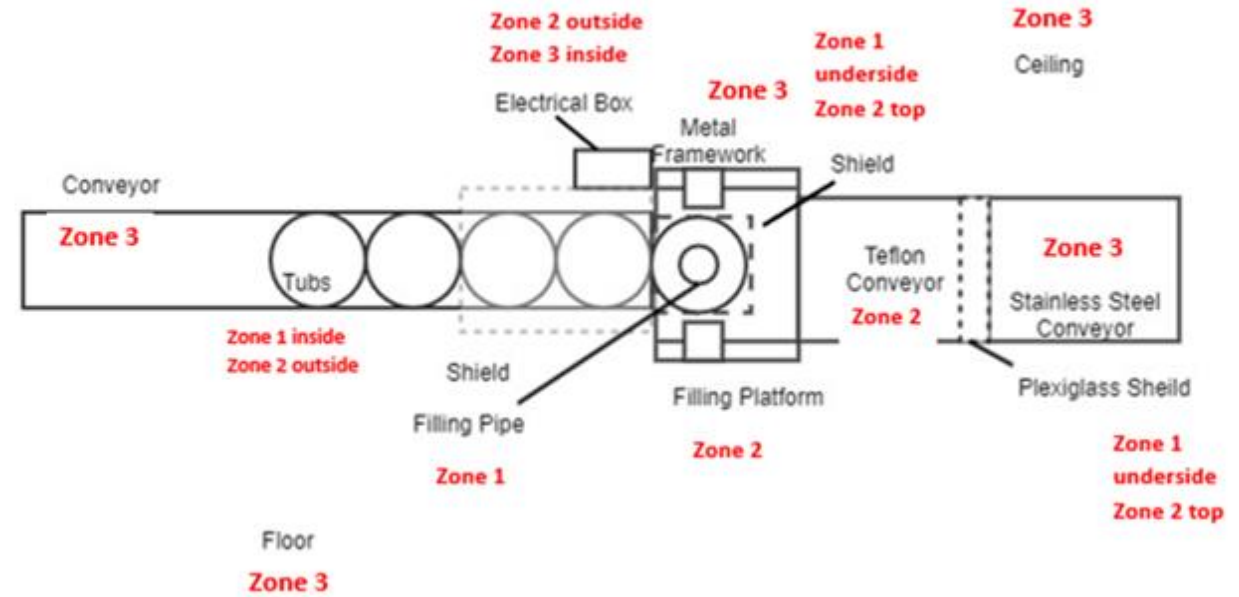


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# PATHOGEN ENVIRONMENTAL MONITORING



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# SOP and Technical Writing

Provides attendees with the skills to write and maintain Standard Operating Procedures and other technical documents for both regulatory compliance and everyday employee usage.

## Key areas include

- Documentation systems
- Tense and word choice
- Writing effective documents
- Review, revisions, and compliance.
- Course includes hands-on writing sessions.



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# ***LEADERSHIP SKILLS FOR SUCCESS***



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# ***SQF PRACTITIONER TRAINING***



# ***Our Partnerships***

- PROCESSING PLANT SUPERINTENDENTS MEETING
- DAIRY LAB SEMINAR
- CERTIFIED MILK INSPECTORS
- ANNUAL MILK INSPECTOR'S UPDATES
- LABORATORY WORKSHOP (JAN '23)



**Agriculture  
and Markets**

**Cornell**  
**CALS**

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# ***Regulatory Needs***

- PREVENTIVE CONTROLS QUALIFIED INDIVIDUAL
- INTENTIONAL ADULTERATION
- FOREIGN SUPPLIER VERIFICATION



FOOD SAFETY PREVENTIVE CONTROLS ALLIANCE

# *SPANISH LANGUAGE COURSES*

Developed Spanish-language  
versions of multiple courses:

- Dairy Science and Sanitation
- HACCP



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## DAIRY PROCESSING

22

Workshops  
in 2020



787

Individuals  
trained through workshops alone



Of workshops have  
a **food safety**  
component

11,665

Contact hours  
Through workshops

## Economic impact of dairy products in New York

\$13.2 Billion in direct  
economic impact



58,246

Direct jobs

Supporting 15.3 Billion pounds of milk  
produced by NYS dairy farms

<https://www.idfa.org/resources/dairy-delivers>

# Our Dairy Foods Extension Programming

- Customizable programs
- In-plant training and consultation available

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# 2022 Courses

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Cornell University Dairy Foods Extension Upcoming Courses

Course Name	Delivery	Course Dates	Registration Link
<u>Introduction to Food Safety Principles</u> in <b>Spanish</b> and <b>English</b>	Subscription model, self-paced training	Rolling Admission	Contact <a href="mailto:lmf226@cornell.edu">lmf226 [at] cornell.edu</a> > Louise Felker
<u>Dairy Science and Sanitation</u> in <b>Spanish</b> and <b>English</b>	Self-paced online course	Rolling admission	<a href="#">Register Now</a>
<u>Hazard Analysis Critical Control Points (HACCP)</u> in <b>Spanish</b> and <b>English</b>	Self-paced online course	Rolling admission	<a href="#">Register Now</a>
<u>Vat Pasteurization</u>	Self-paced online course	Rolling admission	<a href="#">Register Now</a>
<u>Fluid Milk Processing for Quality and Safety</u>	Hybrid: Self-paced online session and live instructor-led video conference	Online open 02/01/2022, Live session 03/02/2022	Registration closed





# Economic Development

## Dairy is New York's #1 Agricultural Industry

- Cornell extension supports this with both dairy farm extension support and dairy processing extension support
- Both programs are robust and responsive to industry and regional needs



# Our role in Economic Development

**Our Dairy Foods Extension Program works collaboratively with economic development agencies to foster dairy processing growth across New York State**

- Training programs and “boot camps” for new/expanding businesses
- Continuous training and troubleshooting support for existing businesses
- Collaboration with other community organization to foster workforce pipelines
- Strong relationships across necessary operations/supply chains
  - Farmer/Producers, Suppliers, Regulatory Officials, Educational Institutions, Trade Organizations

# **Other Free Resources: The Price is Right!!!**



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cals.cornell.edu/dairy-extension/what-we-do/food-safety-resources/standard-operating-procedures

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Download sample SOPs

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▲ Aging Room Maintenance and Cleaning

▲ Blue Cheese from Pasteurized Milk

▲ Brine Maintenance

▲ Camembert Cheese Production

▲ Chevre Cheese Production

▲ Environmental Sampling

▲ General Cleaning of a Cheese Making Area

▲ Gouda Cheese from Pasteurized Milk Production

▲ Ingredient Receipt

▲ Inspection Guidelines

▲ Mock Recall

▲ Raw Milk Cheddar Cheese Production

Training Programs

Services

On-Site Consultations

Food Safety Resources

Audits and Inspections

Food Safety Plans

Food Safety Programs

Good Manufacturing Practices

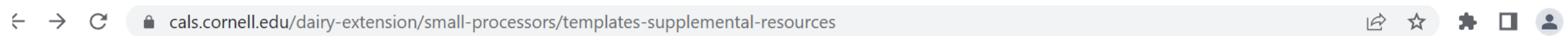
Regulatory Resources

Standard Operating Procedures

Templates and Forms

# FREE RESOURCES

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**HOME / DAIRY FOODS EXTENSION**

Cornell Dairy Foods Extension has templates for many of the most commonly used forms. For illustrative purposes, you will find completed versions of all the forms referenced in the Example section. These examples are exactly that, we encourage you to customize as appropriate for your operation.

**Food Safety Plan Templates**



**FDA Forms and Templates**



**Artisan Food Safety Plan  
Coaching Templates**



**Example Documents**



**NYS Dept. of Agriculture and  
Markets Forms**



**Regulatory Resources**



## Dairy Foods Extension

- WHAT WE DO
- FOR SMALL PROCESSORS
- FOR LARGE PROCESSORS
- FOR REGULATORY
- FOR EXTENSION EDUCATORS
- COURSE CALENDAR



# Dairy Foods Extension

Providing cutting-edge research and support to New York state's dairy industry.





# Milk Facts

[Milk Composition](#) | [Nutrition](#) | [Microbiology](#) | [Processing](#) | [News & Research](#) | [Resources](#) | [FAQ](#) | [Cheese Extension](#)

## Milk Facts

[Milk Composition](#)

[Nutrition Facts](#)

[Microbial Issues](#)

[Milk Processing](#)

[News & Research](#)

[Resources](#)

[FAQ](#)

[Cheese](#)

## Welcome to Milk Facts

Our goal is to provide consumers with factual, scientifically supported information about the composition, nutritional content, health issues, and microbial issues associated with milk. It is our hope that this information will be used by consumers to make informed choices about the consumption of pasteurized and raw milk products. For additional information on dairy science, milk microbiology, and other subject matter related to milk, [visit the Milk Quality Improvement Program website](#).

**If you are looking for specific COVID-19 information, we have established a clearinghouse of information on the topic [here](#).**

## UPCOMING WORKSHOPS and SEMINARS

A complete list of upcoming Cornell University Food Science Workshops and Seminars can be found at:

[Cornell Dairy Extension Calendar](#)

# Other Cornell Dairy Resources

- Cornell Dairy Plant
  - Fully licensed dairy plant in Cornell's Food Science Building used for teaching and dairy processing
- Food Processing Development Lab (FPDL)
  - Fully licensed pilot plant for product development
  - Experienced full-time staff are able to assist in all aspects of product development and processing



# The Milk Quality Improvement Program – Key Impact Areas

## *On-farm Practices and Raw Milk Quality*

Investigation of sources, transmission and control of sporeforming bacteria in raw milk, troubleshooting farm related finished product quality problems



## *Dairy Product Processing, Quality and Safety*

Evaluation of fluid milk, cheese, yogurt and dairy powder quality and safety through targeted, applied research



## *Consumer Acceptance and Sensory Evaluation*

Assess influence of distribution and market storage conditions on dairy product sensory quality and consumer acceptance including in primary school settings



# MQIP

MILK QUALITY IMPROVEMENT PROGRAM

Cornell CALS  
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## *Extension Services and Workforce Development*

Translation of research activities and dairy industry assistance with training, troubleshooting and root-cause analysis



# Food Safety Laboratory and Milk Quality Improvement Program

[About the Lab](#)[People](#)[Research & Publications](#)[MQIP](#)[LMT](#)[Resources](#)[Produce Safety CoE](#)[Digital Dairy](#)

More  
Helpful  
Resources

## [MQIP](#)

[History](#)[Research and Extension  
Activities](#)[Information Videos](#)

## [Information Sheets](#)

[Publications](#)[Associated Programs](#)

[Home](#) / [MQIP](#) / Information Sheets

## Dairy Science Information Sheets and Documents

The MQIP is responsible for the production and distribution of the *Dairy Foods Science Notes* and other informational bulletins, which provide brief overviews of topics of current interest to the dairy industry and consumers. The following documents are currently available, click on the document you would like to download and send your request to receive the pdf.

### General

- [Milk Quality Improvement Program - MQIP](#)
- [MQIP - Pasteurized Milk Voluntary Shelf-Life Program](#)
- [Raw Milk Dangers of Consumption - Consumer Sheet](#)
- [Raw Milk Sales & Consumption - Position Statement](#)
- [School Milk - Handling to Maintain Quality](#)
- [Sanitation in Soft-Serve Frozen Dessert](#)

# How Can Cornell Help????

- Four Field Extension Associates
  - Kim Bukowski
  - Anika Gianforte
  - Rob Ralyea
  - Al Trmcic



# Your's Truly

- MS-Food Science/Microbiology
- Registered Sanitarian (NEHA)
- 21 Years US Army in Food Safety and Force Health Protection and 18 years at Cornell Dairy Extension
- 'Interim' Manager of Cornell FPDL since 2007
- Extensive experience is troubleshooting dairy processing problems around the world
- Resident product development and cheese/cultured products expert





# Kim Bukowski

- AAS-Dairy and Food Science
- Expertise in GFSI Auditing/Training
  - 14 years auditing for Bio Merieux
- Ran Cornell Dairy Plant and had her own ice cream shop in Syracuse, NY which makes her our 'ice cream specialist'
- Oversees our Workshop/Certificate program



# Anika Gianforte

- BS-Food Science/MPS-Applied Economics and Management
- Our youngster, learning the ropes because Kim and I want to someday retire
- Our lead person in our economic/job development endeavors
- Expertise in dairy product manufacturing and food safety systems



# Al Trmcic

- Our Lead for all things Covid-19 from the outset
- PhD Biotechnology/Food Science with strong research experience
- Spent a while working for the British Columbia CDC
- Expertise in dairy product manufacturing and food safety systems

