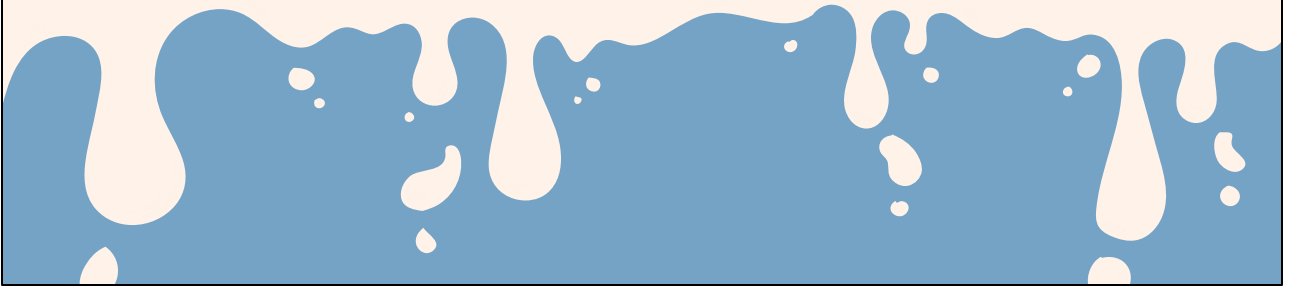# Bringing Truffle Cheese to Market:

Navigating Certification and Innovation in Dairy Production

Hilltopper Creamery

- Unit of the Western Kentucky Univ. Ag Research & Education Center
- Resource for dairy processing and product development
- Experiential learning opportunities for students, industry professionals, and the public.
- Public Relations & Sales
- Special events and education
- Ag-vocate for local & small-scale food production

The Hilltopper Creamery was established to demonstrate that the small family dairy farm is not a relic of the past. Farmers aren't required to manage a large herd to be successful because they can thrive by producing and selling value-added products. Our facility puts this concept into practice by producing up to 500 lbs. of award-winning artisan cheese a month from our 50-60 head milking operation and still having additional fluid milk to sell or create other dairy products in the future.

The **Hilltopper Creamery & WKU Farm Market** is a value-added retail location that displays farm fresh products produced alongside students as part of their hands-on educational experience within WKU's Agriculture & Food Science Dept. We provide a variety of award-winning artisan cheeses, dry aged beef, greenhouse plants, and seasonal fruits & vegetables to be served to students on campus and directly to the community! Value-added products, direct consumer sales, and Agritourism are becoming an increasing percentages of farm profits.

This unit allots students the opportunity to fully immerse themselves in these areas by gaining experience in dairy transport & processing, food production, food safety, packaging, marketing, customer service, and sales (direct & online). Students gain a variety of guided Agritourism experiences through facility and farm tours, event management, community workshops, educational seminars, and conferences. In 2023, we participated in numerous community events and welcomed over 1,000 visitors for student and community tours, cheese-making classes, guided cheese tastings, charcuterie board grazing events, and conferences.

- https://www.wku.edu/hilltoppercreamery/
- https://www.instagram.com/p/C33cCU3uhhL/?img_index=1

Truffle Research & Development

Why cheese? Grade B, "Safer" finished dairy product, Process Conducive of low heat truffle handling

Many cheeses are generally considered to be an inherently safe food: reduced moisture, a significant salt content, a higher acidity and contain an active starter culture. These characteristics help keep pathogens from growing.

Truffles: Beautiful and terrifying
- Use of a Raw or Untreated Ingredient
    - Non-food approved ingredient
    - Dug from the ground
        - Not cooked
        - Not sanitized
    - Not shelf stable (Potential for spoilage)
    - Could carry foodborne illnesses (concern especially in cheeses)
        - Clostridium-Botulism
        - Salmonella
        - Listeria
        - Yeasts

Truffle Research & Development

- Use of a Raw or Untreated Ingredient
  - Non-food approved ingredient
  - Not cooked
  - Not sanitized
  - Not shelf stable (Potential for spoilage)
- Variety Testing: Cheddar & Gouda
  - Moisture Content
  - Water availability
  - pH
  - Aging
  - Competitive or Complementary Umami
- Truffle Species
  - Imported: Black Perigord
  - Natives: KY Winter White aka Cumberland Ese?
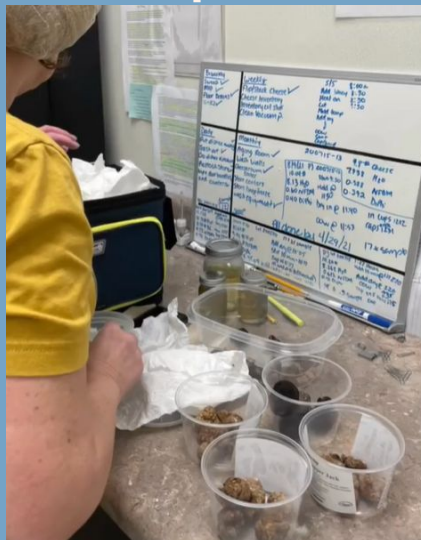
See PMO pg. 112
More acidic and low water availability varieties preferred
Cheeses with a lower water activity and a lower pH are more likely to be a non-potentially hazardous food (non-PHF) and thus don't require temperature control.
pH of cheese types https://www.cheesescience.org/ph.html
Water availability AND pH in cheese https://www.cdr.wisc.edu/cheese-safety-storage

Truffle Research & Development

- Incorporation
  - Quantity
  - Preparation
  - Heat sensitivity
  - Inclusion
  - Feedback
    - More Truffle Flavor
    - Truffle-infused olive oil
    - Industry Professionals
- Observations

- Quantity factors: Cost, Taste, Visual Appeal
- Preparation: Seasonality, Freshness, Cleaning, Processing (Skin on vs. Skin off, Grated & Sliced)
- Inclusion: At make, after aging (surface and potentially re-milling)
- Feedback: More truffle flavor (Marketing vs Flavor in relation to business ethics of incorporating artificial flavors or processed truffle products)
  - Truffle Producer
  - Current customers
  - Inclusion at special events
  - Industry Professionals: Beehive Cheese (Larger producer that creates truffle cheese *uses dried/powdered*
    - Gouda w/Perigord and no oil
- Observations:
  - Secondary batch with the inclusion of truffle infused olive oil to increase truffle flavor (Pressed in with curd, which resulted in butyric acidity due to trapped whey)
  - Zones of inhibition in the cheese around truffle inclusions (think tiny brûlé in orchard)
    - Antimicrobial
    - Volitile organic compounds (VOC's)?
  - Comparatively "slowed" aging/acidification to plain Control cheeses
    - Truffles destroying or slowing the growth of bacteria/cultures used to create cheese?
  - Initial concerns before production included unsanitized truffles

- contaminating cheese
    - Is the cheese safer?
    - Truffles have antimicrobial properties and may produce antibiotic-like compounds:
        - **Antibacterial properties**: Truffle extracts have been shown to inhibit the growth of several types of bacteria, including:
            - **Staphylococcus aureus**: A test-tube study showed that an extract from desert truffles inhibited the growth of this bacteria by up to 66%.
            - **Pseudomonas aeruginosa**: A test-tube study showed that an extract from desert truffles decreased the growth of this bacteria, which is often resistant to antibiotics.
            - **Escherichia coli**: An aqueous extract from T. claveryi had antimicrobial properties against this bacteria.
            - **Salmonella typhimurium**: T. nivea exhibited inhibitory activity against this bacteria.
            - **Enterococcus faecalis**: T. nivea exhibited inhibitory activity against this bacteria.
            - **Bacillus subtilis**: An ethyl acetate extract of T. pinoyi inhibited the growth of this bacteria.
            - **Antibiofilm effects**: Extracts of T. claveryi have shown promising antibiofilm effects.
            - **Antiviral activities**: An aqueous extract of Terfezia claveryi exhibited antiviral activities.

The Scoop: Dairy Regulations

01 Product Creation

02 Role of Inspectors

03 Navigating Regulations

Complex regulations that govern dairy production.
1. Why dairy products can't simply be made in a home or commercial kitchen to be sold at the local farmer's market,
2. Vital role of milk inspectors in ensuring product safety.
3. How to navigate the necessary certifications to bring truffle-infused dairy products to market.

Product Creation

Why can't I make dairy products in my home or a commercial kitchen?

01

- https://www.fda.gov/federal-state-local-tribal-and-territorial-officials/state-cooperative-programs/fda-grade-milk-safety-program

Self Regulation of Milk

Delicate
Prone to off-flavor & deterioration

Mishandling
Pefect growth media with small margin of error

Pathogens
Historical association of illness and death

PMO
Pasteurized Milk Ordinance 1924

Set Standards
Quality & Safety Parameters

Regulating Body
Testing, inspection, and permitting.

- Milk is a delicate starting material. Milk has a mild flavor that is prone to off-flavors and deterioration if it is not handled properly. Milk has a long association with pathogens, the bacteria that make people sick and in extreme cases cause death. Raw milk quality and safety starts at the farm and so attention to milk handling and sanitation from farm through processing are of the utmost importance in producing high quality, safe dairy products.

- Because of the delicate nature of milk and a historical association with pathogens, the dairy foods industry has self-regulated for almost 100 years to ensure product safety and quality. The first version of the Grade "A" Pasteurized Milk Ordinance (PMO) was published in 1924, and the most recent version is 2023. It is updated every 2 years.

- The PMO forms the basis of dairy foods regulations and includes information on milk quality and safety parameters, milk parlor and milk processing facility construction requirements, batch and continuous pasteurizer construction and inspection requirements, pasteurization conditions, microbial specifications and testing, food safety requirements, and many other topics.

- Cottage food laws do not apply to dairy. Dairy has very targeted regulations and regulatory bodies that other small scale food items or processed foods do not.

- Cottage food laws typically cover low-acid fruit products, baked goods, pickles and other shelf-stable foods. Not typically covered meat or dairy-based products, foods that require refrigeration, or fermented foods.

- Cottage food laws vary by state and sometimes even by county, but are of interest to those growing and selling or purchasing locally grown Truffles. https://nationalaglawcenter.org/state-compilations/cottagefood/

- Some states have expanded the types of foods that qualify as cottage foods. For example, Indiana allows home-based vendors to sell almost any type of nonperishable food, including breads, cakes, pasta noodles, dried vegetables, and cereals.

- Some states have also enacted "food freedom" laws that exempt home producers from food-safety rules that apply to grocery stores, restaurants, and other food establishments

- In Kentucky: Foods that don't require refrigeration and are generally shelf stable are allowable under the cottage food laws.

- Kentucky cottage food laws fall under two (2) different types. Home-based "homebased" Processors and MicroProcessors. https://cottagefoodlaws.com/kentucky-cottage-food-laws/

02

Role of Inspectors

How do milk inspectors keep the public safe?

Inspections and testing are routine in the operation of a dairy foods processing business. Inspectors are tasked with the responsibility of ensuring that you are manufacturing in a clean and safe facility utilizing proper procedures and producing a safe and wholesome product. Your facilities, equipment, raw inputs, and final products will all be subject to inspections or testing at various times.

Role of Inspectors in Dairy Production

- Consultation
- Interpreting Regulations
- Facility Inspections
- Environmental Monitoring
- Environmental Testing
- Dairy Testing
  - Raw Milk
  - Finished Product

Remember, regulatory agency staff and inspectors are there to assist in achieving dairy processing goals. They are tasked, however, with ensuring that this is done in a safe manner that complies with applicable regulations.

You should set out in your value-added dairy processing venture with the mindset of developing a trusting relationship with your representative built on open and clear communication. Enlist their assistance in preventing or correcting problems as soon as they are identified.

Inspectors must follow PMO or FSMA rules (depending on the type of inspection) for violations that could lead to permit suspension. Repeated violations (of the same finding) will result in a warning letter being issued. Continuation of the circumstances that lead to further violations can result in citations, permit suspension, or other enforcement actions until the finding has been corrected.

Facility Inspections
- You should expect to undergo both scheduled and unannounced facility and equipment inspections. Inspections can originate with the local or state regulatory body and/or the FDA and they often have a different focus depending on the purpose of the inspection (quarterly pasteurizer checks, FSMA inspection, etc.)
- Section 5 of the PMO outlines the inspection of milk plants. Check with your regulatory agency regarding applicable inspection frequencies. The following are standard inspections for all dairy plants:
- Plant inspections (completed quarterly including water supply – main and recirculated)
- Equipment inspections

- Pasteurizers are inspected and sealed quarterly

Product Testing
- In addition to the inspections listed above, environmental monitoring and raw milk and finished product testing will also need to take place. Some states may allow you to perform some of these tests yourself, while other states may require that you work through your department of agriculture or contract with a 3rd party laboratory. Communicate with your state regulatory agency to ensure that you know the type of testing that is permitted.

Raw milk testing
- The raw milk used to manufacture your dairy food product(s) must be tested prior to processing. While not required for all processors, some examples of the types of tests performed include the following:
- Growth Inhibitor (GI) for antibiotics
- Somatic Cell Count (SCC)
- Standard Plate Count (SPC)
- Product Temperature
- Appendix N of the PMO outlines drug residue testing methods and required records.

Finished Product
- Samples of finished products are tested on a monthly basis. The specific tests required vary based on product. Some states, such as Pennsylvania, outline requirements in their state Code. Review the requirements with your state regulatory agency staff. Tests may include the following:
- Product temperature
- Coliform count
- Alkaline phosphatase
- Aerobic plate count
- Growth Inhibitor (GI) for antibiotics

Environmental Monitoring and Testing
- Environmental monitoring also needs to be done, as required by FMSA's Preventive Controls for Human Food rule when ready-to-eat product is exposed to the environment, such as in the packaging of cheese. Monitoring is performed through tests of processing facility surfaces. Results will inform you whether your personnel training and practices are successful, you have a good sanitary design of facilities and equipment, and your sanitation controls are performing correctly. A strong environmental monitoring program will allow you to take corrective action as soon as any weaknesses or concerns are identified and hopefully before pathogens contaminate product.
- In addition to the environmental monitoring that you perform on your facility, the FDA conducts environmental sampling to ensure that the

- processing facility environment does not contain harmful pathogens such as *Salmonella* spp. or Listeria monocytogenes that may contaminate the finished product. Test results for samples taken will be communicated quickly, and for positive results for contaminants, the FDA will consider several regulatory and enforcement options such as product recall, public warnings, or citations.
- While environmental sampling is an important verification procedure, ensuring that your facility is being cleaned properly, it can also be performed in response to an outbreak of foodborne illness. To read more on environmental testing, see the FDA and Extension resources

03
Navigating Regulations

How can I expand into truffle-infused dairy products?

How can I ensure my farm products meet health and safety regulations?

- ○ To meet health and safety regulations, educate yourself on both local, state and national requirements and ensure that your food safety plan is compliant. This involves implementing proper handling, packaging procedures, and maintaining clean facilities. Quality control measures should be in place to detect potential issues early, and staff should be trained to adhere to food safety protocols. It may also be prudent to secure product liability insurance to protect your business.

We will start this section with the most dissatisfying answer to a question, it depends. State regulations vary widely and this is why the selection of your partner creamery is critical. Some programs to review include FSMA, GAP, and the PMO.

The creamery should already have a strong and positive working relationship with its inspector(s). The inspector and the creamery manager will be the best resources for the requirements they and you must meet for the inclusion of ingredients in the products they create. Navigating federal, state, and local regulations can be very overwhelming.

We will discuss some of the terms/requirements they may share with you.

- Permisability to sell Raw fluid or dairy foods manufactured from raw milk

- is determined by individual states
- Dairy Food Product Standards are spelled out in individual state regulations
- Purpose of Food Safety Modernization Act FSMA is to prevent illness and further enhance U.S. Food safety and requires either a food safety plan or attestation

Code of Federal Regulations

- As a dairy foods processor, you may decide to manufacture items that require the use of additional ingredients, such as fruit, spices, and flavorings that enable you to enhance your product line (CBD and similar derivatives are federally banned from use).

- These ingredients must be purchased from approved and permitted suppliers.

- CFR Title 21 Chapter I Subchapter B Part 117 outlines requirements on good manufacturing practices, hazard analysis, and risk-based preventive controls for human food, along with issues pertinent to supply chain approval concerns that arise when dealing with ingredients.

- However, this regulation will not apply to all processors, which reinforces the need for you to communicate with your state regulatory agency to ensure that you understand which regulations apply to your dairy foods processing operation.

https://www.ecfr.gov/current/title-21/chapter-I/subchapter-B/part-117

Ingredients

- As a dairy foods processor, you may decide to manufacture items that require the use of additional ingredients, such as fruit, spices, and flavorings, enabling you to enhance your product line. In Kentucky, any legal food ingredient may be used as long as these ingredients are purchased from an approved and permitted facility (e.g. business). As noted in Section 8, CBD and similar derivatives are federally banned from ingredient use.

Prospective Kentucky-based dairy foods processors should familiarize themselves with the regulations that will apply to their operation and facility. Some regulations apply to all dairy

processors while others depend on product type and intended business operations.

All Kentucky dairy processors must comply with federal regulations. Also, spend adequate time familiarizing yourself with Kentucky state regulations as outlined in Kentucky Statutes KRS 217C and 902 KAR 50. Kentucky has adopted, in its state regulations, FDA's Pasteurized Milk Ordinance (PMO).

Kentucky Department for Public Health (DPH) Milk Safety Branch to connect with a milk safety inspector.

- **Dairy Food Standards**
- In addition to facility and equipment regulations, there are also product-specific regulations that must be met for many dairy foods. Federal Standards of Identity are found in the Code of Federal Regulations (CFR); they include product definitions, composition limits, and ingredient and processing requirements. For example, the Standard of Identity for Cheddar cheese (21 CFR 133.113) allows Cheddar to be made with raw (unpasteurized) milk, but Monterey Jack must be made with pasteurized milk (21 CFR 133.153). Make sure that you are aware of the regulations that relate to your product line as discussed below and in other resources.
- Standards of Identity section, for links to a Penn State Extension article on dairy food standards and the CFR regulations on Milk and Cream (21 CFR Part 131), Cheeses (21 CFR Part 133), and Frozen Desserts (21 CFR Part 135). https://extension.psu.edu/dairy-food-standards
- **Food Safety**
- There are numerous food safety regulations that apply to food processors as outlined in the Food Safety Modernization Act (FSMA). General regulations like Good Manufacturing Practices (GMPs) will apply to all

- processors and products made, but other regulations may only pertain to processors of a certain size, and it is the manufacturer's responsibility to know which regulations are relevant. Because of milk's known association with pathogens, milk is considered a high-risk food and all dairy processors should conduct a hazard analysis and risk assessment for their products and implement the appropriate preventive controls.
- See the Resources page, Safety section, for links to:
- The FSMA and other FDA food safety webpages
- Penn State Extension articles on the FSMA
- Extension courses and tools on dairy safety
- Resources from industry groups such as 3-A SSI, the DPC, and the FSPCA
- The CFR regulation 21 CFR Part 117

Naviagating Regulations

According to the Pasteurized Milk Ordinance (PMO), any additional ingredients added to dairy products must:
- Be permitted by the applicable standard of identity for that dairy product
- Meet quality standards set by the Food Chemical Codex (FCC)
- Must be added before the pasteurization process to ensure complete pasteurization

- Essentially all ingredients must be approved by the FDA and added in a way that doesn't compromise the safety of the final products

- Any added ingredients must be approved by the FDA (Food and Drug Administration) as food ingredients, additives, or considered Generally Recognized as Safe (GRAS).

- Most fluid dairy processing plants are held to Grade "A" standards as described in the Pasteurized Milk Ordinance (PMO) as adopted by the Food and Drug Administration (FDA). For non-grade A facilities, states can have separate regulations for these facilities and/or adopt USDA regulations.

- As not all states adopt the PMO for their regulations, be sure to check with your regulatory agency first so that you are aware of the regulations you will need to adhere to. However, even if your state does not adopt the PMO, it can serve as a good resource, and a familiarity with its contents can be valuable.

- All food processors, including value-added dairy processors, are required to obtain an FDA Food Facility Registration. A guide with step-by-step instructions for registering your facility is available on the FDA website. Some of the information you will be asked for includes owner and business information, product categories, and an acknowledgment of FDA facility inspection, among other items.

- **Product Processing**
- Ensuring safe and consistent manufacture of dairy foods underlies the existence of federal regulations.

- **Product Standards**

- Many dairy food products have specific standards, or a standard of identity, for their composition (such as required moisture content, minimum fat %, etc.) or for the manufacturing process you must follow (such as the use of pasteurized milk, or specific cultures). These product standards are spelled out in the Code of Federal Regulations (CFR). A Penn State Extension article, "Dairy Food Standards," provides a good introduction to the Code of Federal Regulations, including links to relevant sections (Code title and part numbers), that you will want to read and understand prior to commencing any product manufacture.

- **Monitoring Dairy Food Quality**
- A manufacturer's goal is to make the highest quality, safest dairy foods possible that meet their customer's needs. It is good practice to record quality parameters on raw materials and monitor key quality parameters of the finished product to the end of shelf life. This allows you to make product improvements and troubleshoot any quality problems the product may develop over time. The types of chemical, bacteriological, and sensory tests needed and their frequency are dependent on the product, shelf life, and other company factors. A comprehensive quality monitoring system is ideal, but at least being able to routinely measure a few quality parameters will go a long way toward maintaining and improving product quality. The Penn State Extension Cheese Tracking System shows an example of monitoring quality and developing a sensory evaluation program for cheesemaking, and these principles can easily be adapted to other dairy products.

"Approved Food Ingredient"

- For a farmer to get their product approved as a food ingredient they need to ensure their product meets safety standards set by the FDA or USDA (US Department of Agriculture) depending on the product type
  - Often involves developing a detailed plan outlining their farming practices
  - Undergoing inspections
  - Providing documentation on the safety and composition of their produce
  - Potentially requiring certification through a recognized agency on the desired label (like organic certification)

- "Generally recognized as safe" (GRAS) is a designation by the United States Food and Drug Administration (FDA) that a substance is considered safe for its intended use in food. The FDA uses this designation for substances that have a history of common use in food or have been shown to be safe through scientific procedures.
- Substances that are considered GRAS include: Flavorings, Spices, Phosphates, Carrageenan, and Pure or virgin PTFE. (Dried Truffle Powder?)
- The FDA requires premarket review and approval for all food additives, except those that are GRAS.

"Approved Food Ingredient"

Provided, ingredients which may be added after pasteurization are those flavoring ingredients and other ingredients which have been found to be safe and suitable and which include:

- Ingredients permitted by the CFR standards of identity when considering a standardized milk and/or milk product
- Fresh fruits and vegetables added to cultured milk and/or milk products provided the resultant equilibrium pH level (4.6 or below when measured at 24°C (75°F)) of the finished product is reached without undue delay and is maintained during the shelf life of the product.
- Ingredients subjected to prior heating or other technology, which has been demonstrated to FDA to be sufficient to destroy or remove pathogenic microorganisms;
- Ingredients having a aw of 0.85 or less;
- Ingredients having a high acid content (pH level of 4.6 or below when measured at 24°C (75°F)) or high alkalinity (pH level greater than 11 when measured at 24°C (75°F));
- Roasted nuts; Dry sugars and salts; Flavor extracts having a high alcohol content;
- Safe and suitable bacterial cultures and enzymes; and
- Ingredients, which have been found to be safe and suitable by FDA.

●Provided further, that nothing shall be construed as barring any other process found equivalent to pasteurization for milk and/or milk products, which has been recognized by FDA as provided in Section 403 (h)(3) of the *FFD&CA*.

●2. All milk and/or milk products, i.e., milk solids, whey, nonfat dry milk, condensed milk, cream, skim milk, etc., eggs, egg products, cocoa, cocoa products, emulsifiers, stabilizers, vitamins and liquid sweeteners shall be added prior to pasteurization.

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●Provided, ingredients which may be added after pasteurization are those flavoring ingredients and other ingredients which have been found to be safe and suitable and which include:

●a. Ingredients permitted by the CFR standards of identity when considering a standardized milk and/or milk product;

●b. Fresh fruits and vegetables added to cultured milk and/or milk products provided the resultant equilibrium pH level (4.6 or below when measured at 24°C (75°F)) of the finished product is reached without undue delay and is maintained during the shelf life of the product.

●c. Ingredients subjected to prior heating or other technology, which has been demonstrated to FDA to be sufficient to destroy or remove pathogenic microorganisms;

●d. Ingredients having a aw of 0.85 or less;

●e. Ingredients having a high acid content (pH level of 4.6 or below when measured at 24°C (75°F)) or high alkalinity (pH level greater than 11 when measured at 24°C (75°F));

●f. Roasted nuts;

●g. Dry sugars and salts;

●h. Flavor extracts having a high alcohol content;

●i. Safe and suitable bacterial cultures and enzymes; and

●j. Ingredients, which have been found to be safe and suitable by FDA.

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- **Supply-Chain Program:**
- A milk plant shall establish and implement a written risk-based supply-chain program for those raw materials and other ingredients for which the milk plant has identified a hazard requiring a supply-chain-applied control. The supply-chain program shall, at a minimum:
- 2. Document that a supplier of non-milk and/or milk product ingredients utilized in the milk plant's Grade "A" milk and/or milk products has a functional and written food safety program that provides assurances that a hazard requiring a supply-chain-applied control has been significantly minimized or prevented and also includes food allergen management.
- 3. A supply-chain program shall include: a. Using approved suppliers. The milk plant shall approve suppliers, and document that approval, before receiving raw materials and other ingredients;
- b. Determine appropriate supplier verification activities to include determining the frequency of conducting the activity;
- c. Conducting and documenting supplier verification activities before using raw materials and other ingredients. One (1) or more of the following are appropriate supplier verification activities for raw materials and other ingredients: (i) Onsite audits annually for serious hazards unless there is a written determination that other verification activities and/or less frequent on-site auditing provide adequate assurance that the hazards are controlled;
- (ii) Sampling and testing of the raw material or other ingredient;
- (iii) Review of the supplier's relevant food safety records; and
- (iv) Other appropriate supplier verification activities based on supplier performance and the risk associated with the raw material or other ingredient.
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- d. When applicable, verifying a supply-chain-applied control applied by an entity other than the milk plant's supplier and documenting that verification; and
- e. Include written procedures for receiving raw materials and other ingredients and document that those procedures are being followed.
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- If the milk plant determines through auditing, verification testing, document review, relevant consumer, customer or other complaints, or other relevant food safety information that the supplier is not controlling hazards that the milk plant has identified as requiring a supply-chain-applied control, the milk plant shall take and document prompt action to ensure that raw materials or other ingredients from the supplier do not cause milk and/or milk products that are manufactured or processed to be adulterated under Section 402 or misbranded under section 403(w) of the *FFD&CA*.
- **NOTE:** Refer to 21 CFR 117.5 Exemptions for modified requirements for facilities, including, but not limited to, very small businesses.
-
- R. **FERMENTED HIGH-ACID, SHELF-STABLE MILK AND/OR MILK PRODUCTS:**
- Grade "A" Fermented High-Acid (FHA), shelf-stable milk and/or milk products are Grade "A" milk and/or milk products that have been pasteurized and fermented to pH 4.6 or lower, which may contain safe and suitable ingredients, and

●R-1. which are thermally processed and packaged in accordance with the Process Authority's recommendations using an AQFPSS to achieve shelf-stability and then stored and distributed under normal non-refrigerated conditions and subject to all requirements of Appendix S. of the PMO, or

●R-2. which are processed and packaged in accordance with all applicable provisions of the PMO to achieve shelf-stability and then stored and distributed under normal non-refrigerated conditions.

●Note: This does not include acidified milk and/or milk products, such as acidified milk and acidified sour cream.

●S. **FERMENTED HIGH-ACID, SHELF-STABLE PROCESSING AND PACKAGING:** For

●the purpose of the *Ordinance* Fermented High-Acid, Shelf-Stable Processing and Packaging is the processing and packaging of Grade "A" fermented high-acid, shelf-stable milk and/or milk products on an AQFPSS. The Grade "A" fermented high-acid, shelf-stable milk and/or milk products shall be subjected to a process that is sufficient to destroy the vegetative cells of microorganisms of public health significance and those of non-health significance capable of reproducing in the food under conditions of ambient storage. Fermented High-Acid, Shelf-Stable Processing and Packaging shall conform to applicable requirements of 21 CFR Part 117.

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●JJ. **MILK PRODUCTS:** Grade "A" Milk and Milk Products include:

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●1. All milk and milk products with a standard of identity provided for in 21 CFR Part 131, excluding 21 CFR 131.120 Sweetened Condensed Milk.

●2. Cottage cheese (21 CFR 133.128) and dry curd cottage cheese (21 CFR 133.129)2.

●3. Whey and whey products as defined in 21 CFR 184.1979, 184.1979a, 184.1979b, 184.1979c, and Section 1., Whey Products of this *Ordinance*.

●4. Modified versions of these foods listed above in Items 1 and 2, pursuant to 21 CFR 130.10- requirements for foods named by use of a nutrient content claim and a standardized term.

●5. Milk and milk products as defined in Items 1, 2, 3 and 4 above, packaged in combination with food(s) not included in this definition that are appropriately labeled with a statement of identity to describe the food(s) in final packaged form, e.g., "cottage cheese with pineapple" and "fat free milk with plant sterols".

●6. Products not included in Items 1-5 are Grade "A" milk products which have a minimum of 2.0% milk protein (Total Kjeldahl Nitrogen (TKN) X 6.38) and a minimum of sixty five percent (65%) by weight milk, milk product or a combination of milk products The three (3) primary criteria that shall be utilized to determine whether the product meets the criteria in this item are:

●a. The product is evaluated in its final consumable form;

●b. The product must meet both the minimum 2.0% milk protein and the minimum 65% (by weight) milk, milk product or a combination of milk products requirements to be determined as meeting the Grade "A" milk product definition. The amount of the declared protein will be shown in the nutrition facts on the Information Panel which includes the protein from all the

●ingredients in the product, both dairy and non-dairy. The specific amount of milk protein will need to be determined; and

●c. The weight of water to reconstitute a dairy ingredient to single strength is included in making the determination of meeting or not meeting the minimum 65% by weight requirement. Designation of dry/reconstituted dairy ingredients is provided in 21 CFR 101.4(b).

●In addition to review of the Information Panel of the product, more information may be requested from the manufacturer, such as specific ingredients and their respective percentages, formulation, and batching/processing information. The product may be analyzed by the Regulatory Agency and/or FDA using laboratory methods for purposes of this evaluation.

●Safe and suitable (as defined in 21 CFR 130.3(d)) non-grade "A" dairy ingredients, can be utilized in the products defined in Items 1-6 when added to a level needed for a functional or technical effect, and limited by GMPs and are either:

●a. Prior sanctioned or otherwise approved by FDA, or

●b. GRAS (generally recognized as safe), or

●c. An approved food additive listed in the CFR.

●

●Except that with respect to those products which have a federal standard of identity, only ingredients provided for in the standard may be utilized.

●**NOTE:** Non-grade "A" dairy ingredients may be used after the Regulatory Agency, in

●consultation with FDA, has reviewed and accepted information supporting that the use is to achieve a functional or technical effect in the finished milk or milk product(s). Supporting information shall be submitted by the milk plant and/or the ingredient manufacturer for review and approval by the Regulatory Agency and FDA prior to manufacturing and selling the finished milk or milk product(s). Once the Regulatory Agency, in consultation with FDA, has accepted the use of a non-grade "A" ingredient to achieve a functional or technical effect in the finished milk or

GAP & FSMA

Good Agricultural Practices

Voluntary certification program which verifies, through an independent third-party audit, that sound food safety practices are being used on a farm or produce handling facility. GAP audits focus on the best agricultural practices to verify that fruits and vegetables are produced, packed, handled, and stored in the safest manner possible to minimize risks of microbial food safety hazards.

Food Safety Modernization Act

In response to foodborne disease outbreaks that were traced to food products produced by processors largely regulated by FDA, but not required to develop written food safety plans. Food safety plans, Hazard Analysis Critical Control Point (HACC) plans, or preventive control plans, force companies to systematically consider, and develop programs to prevent, the food safety hazards inherent in their facility, product or process.

Another factor to consider when choosing a partner creamery is size. Small artisan creameries are often more willing and able to work with fellow small producers. Often they already have a local food customer base that is willing to pay for premium artisanal products. They will work closely with their inspector to navigate federal and state regulations on approved food ingredients that can be included in their dairy products. This may mean certain certifications or best practices.

Also, larger producers can be locked into corporate purchasing restrictions, which could mean extra steps for you to navigate in order to become an approved vendor with the company or third-party supplier.

WKU AREC was required to be GAP certified for produce grown on the farm to be utilized in on-campus food production by Aramark. These certifications can be time-consuming and costly to obtain/maintain.

- The Food Safety Modernization Act, or FSMA, is legislation that was passed in 2011, designed to address issues in food manufacture to prevent illness, and further enhance U.S. food safety.
- FSMA addresses issues in five key areas—prevention, inspection and compliance, response, imports, and enhanced partnerships.
- FSMA focuses heavily on prevention. As such, components that dairy food manufacturers should pay particular attention to include: the Preventive Controls for Human Food rule, the Foreign Supplier Verification Program (FSVP) for Importers of Food for Humans and Animals, and the Sanitary

- Transportation of Human and Animal Food rule. While each FSMA rule (there are seven in total) offers its own exemptions and exemption requirements, it is crucial that you work with your appropriate regulatory agency staff to determine which rules may apply to your business and document any applicable exemptions.
- The FSMA's **Preventive Controls for Human Food Rule** outlines requirements for food manufacturers, including dairy foods manufacturers. Under the Rule, all dairy food processors are required to ensure and document employee training and adherence to Good Manufacturing Practices (GMPs) (21 CFR Part 117). Subpart B of the Rule describes GMPs in the categories of personnel, plant and grounds, sanitary operations, sanitary facilities and controls, equipment and utensils, processes and controls, warehousing and distribution, holding and distribution of human food by-products for use as animal food, and defect action levels. Additionally, you will need to develop and implement a food safety plan unless you meet the requirements for a Qualified Facility and submit an attestation form. The article mentioned above, "The Food Safety Modernization Act (FSMA)," outlines and summarizes the core components of a food safety plan—hazard analysis, preventive controls, monitoring and oversight, record-keeping, and a recall plan. This article also includes links to additional resources that processors will find helpful.

Food Safety Modernization Act 2011
- The Food Safety Modernization Act, enacted in 2011, charged the U.S. Food and Drug Administration (FDA) with developing regulations to establish safe growing, harvesting, packing and holding standards for farms that fall under the Produce Safety Rule. The Produce Safety Rule encompasses farms that grow produce meant to be consumed without additional processing, like many fresh fruits and vegetables.
- The USDA GAP audit is based on the [FDA's Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables](#). Although the USDA audit is part of a voluntary audit program, meaning that it does not have a regulatory function, it may help farms prepare for potential regulation from the Food Safety Modernization Act.
- Like the seafood, meat and poultry, and fresh juice HACCP regulations that came before FSMA, the focus of regulators shifts from reacting to an outbreak or contamination issue after the food enters the marketplace and people get sick to preventing the food safety problem from happening in the first place.
- This legislation applies only to food products regulated by FDA, not meat, poultry, or processed egg products that are regulated by the US Department of Agriculture/Food Safety Inspection Service.

Key provisions of FSMA
- **Prevention**
- FDA will:
- Require food facilities to implement a written preventive controls plan which

- involves identifying food safety hazards, specifying preventive controls, and developing a plan for monitoring the controls.
- Establish mandatory science-based standards for the safe production and harvesting of fruits and vegetables.
- Issue regulations to protect against the intentional adulteration of food.
- **Inspection and Compliance**
- FSMA provides FDA with important new tools for inspection and compliance. The FSMA:
- Establishes a mandated inspection frequency, based on risk, for food facilities.
- Gives FDA access to records, including industry food safety plans and the records firms will be required to keep documenting implementation of their plans.
- Requires certain food testing to be carried out by accredited laboratories.
- Directs FDA to establish a program for laboratory accreditation.

Response
- FDA will have new enforcement tools and authorities, including:
- The authority to issue a **mandatory recall** when a company fails to voluntarily recall unsafe food after being asked to by FDA
- A more flexible standard for **administrative detention (preventing the movement of product)** of products that are potentially in violation of the law
- The authority to **suspend registration** of a facility if it determines that the food poses a risk for serious adverse health consequences or death.
- A system that will enhance its ability to **track and trace** both domestic and imported foods
- **Recordkeeping requirements** for facilities that manufacture, process, pack, or hold **high risk** foods

GAP can help prevent food safety recalls, which can be very costly in both immediate financial terms and the lasting impact of a damaged consumer confidence and loyalty. Food safety is a constant concern for consumers who want to ensure that the items they purchase in the supermarket have been properly and safely sourced. That's why implementing GAP can result in safer food practices at every point in the supply chain. Buyers who choose not to participate in GAP or establish recognized food safety standards may be at a competitive disadvantage.

- One of the guiding principles of the GAP program is enacting preventative practices to help avoid problems from occurring in the first place. By setting clear standards and partnering with suppliers who understand the expectations, we can anticipate, monitor and understand emerging issues before they are a concern. These standards can be used to educate consumers about the health benefits of fresh produce as well as food safety practices at home.
- Food Safety Plan
- GAP Workshops
- Reiumbursement programs
- GAP Audit Required
- Receive Certificate of GAP Recognition

- ○ Operations that successfully meet the requirements of a USDA audit receive an embossed certificate from USDA and will be listed on the [national website](). The certification is good for one year from the date of the passing audit.
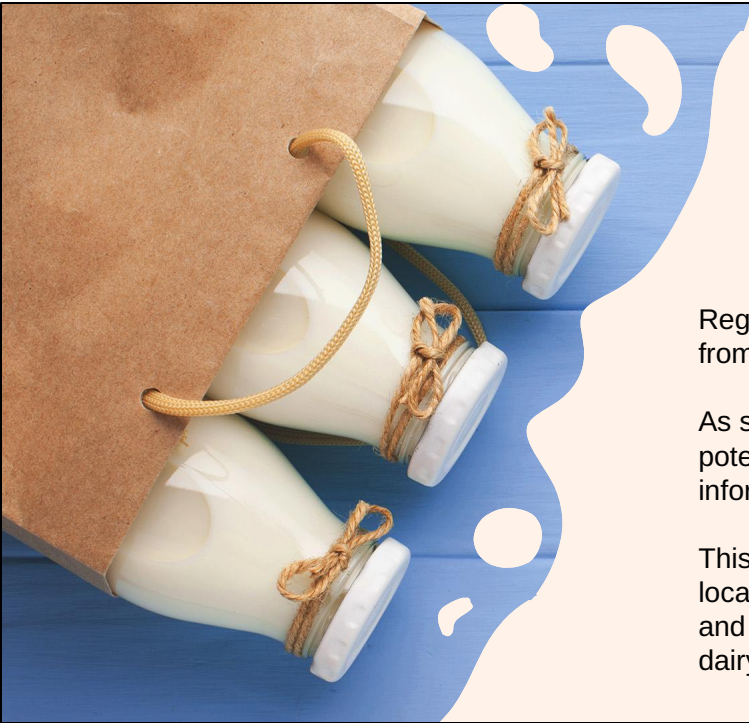
CONCLUSION

Regulatory requirements vary greatly from state to state

As such, we have broadly reviewed potential regulator and regulatory information.

This information will serve as a guide to located local resources for your area and have a general understanding of dairy jargon.

THANKS!
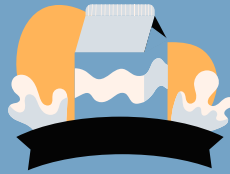
Do you have any questions?
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502-234-0718

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Environmental Health Inspector-Kentucky Department for Public Health & Safety-Milk Safety Branch

- **Business Planning Resources**
- [Example Business Plan](): A Penn State Extension article that explains a sample business plan for a fictional business
- [Assembling a Team to Explore a Value-Added Dairy Enterprise](): A Penn State Extension article that explains how to use a profit team to explore the decision of starting a value-added dairy business
- [Agribusiness Planning: Providing Direction for Agricultural Firms](): A Penn State Extension article on the importance of business planning and how to prepare a plan
- [Matching Production Capacity and Product Markets](): A Penn State Extension video article on projecting the demand for your dairy products so that you produce appropriate product quantity
- [Niche Production and Specialty Markets](): A Penn State Extension video article on determining if your product can meet a niche demand
- [Business and Production Guide for Dairy Cattle Operations](): A downloadable, comprehensive manual/guide explaining metrics for measuring performance of dairy operations, by Sustainable Agriculture Research and Education (SARE)
- [The Crop Costs Conversation: Get the Most out of Your Cropping Plan](): A Penn State Extension article on the importance of knowing the true cost of the crops fed on a dairy farm
- [Crop Cents mobile app](): A mobile app that calculates the actual costs to produce home-raised feeds for crop, dairy, and beef producers
- [Dairy Data](): A webpage of the Economic Research Service of the U.S.

- Department of Agriculture, providing data sets that cover domestic supply, demand, and international trade of various dairy products
- [Milk Components: Understanding Milk Fat and Protein Variation in Your Dairy Herd](#): A Penn State Extension article that describes variation found in production of milk components, how that impacts farm income, and strategies for improvement
- [Dairy Food Processing](#): A webpage listing articles by the Penn State Extension on numerous topics of interest for value-added dairy producers
- [Starting a Farm: Business Planning](#): A Penn State Extension online course on how to conduct research and write a business plan to secure funding and build a viable, profitable agriculture or food business

- **Food Safety and Standards Resources**
- **Facilities**
- [The Grade "A" Pasteurized Milk Ordinance](#): A Penn State Extension article explaining the PMO and how to use it
- [National Conference on Interstate Milk Shipments (NCIMS)](#): The website of the NCIMS, an official body that holds biannual meetings of dairy industry representatives, government, and academia from all 50 states and U.S. territories. Meetings precede PMO revisions by the U.S. FDA.
- [Registration of Food Facilities and Other Submissions](#): A U.S. FDA webpage with information on the requirement for all food facilities to register with the FDA
- [Food Facility Registration User Guide: Step-by-Step Instructions for Registration](#): Instructions on how register a food facility with the FDA
- **Standards of Identity**
- [Dairy Food Standards](#): A Penn State Extension article on the requirements that must be met for the legal labeling of a product's identity
- [Code of Federal Regulations Title 21 Chapter 1 Subchapter B Part 131 – Milk and Cream](#): The Code of Federal Regulations webpage on 21 CFR Part 131, governing requirements for standardized milk and cream
- [Code of Federal Regulations Title 21 Chapter 1 Subchapter B Part 133 – Cheeses and Related Cheese Products](#): The Code of Federal Regulations webpage on 21 CFR Part 133, governing requirements for standardized cheese and related products
- [Code of Federal Regulations Title 21 Chapter 1 Subchapter B Part 135 – Frozen Desserts](#): The Code of Federal Regulations webpage on 21 CFR Part 135, governing requirements for standardized frozen desserts
- [Code of Federal Regulations Title 7 Subtitle B Chapter 1 Subchap C Part 58 – Grading & Inspection, General Specs](#): The Code of Federal Regulations webpage on 7 CFR Part 58, governing the inspection and grading services of manufactured or processed dairy products
- **Labeling**
- [Getting Started with Labeling Dairy Foods: The Basics of Dairy Food Labeling](#): A free, recorded webinar from Penn State Extension on the required elements of food labels for dairy foods

- Getting Started with Labeling Dairy Foods: Special Topics - Allergens and Others: A free, recorded webinar from Penn State Extension on how to label dairy foods that contain allergens or special flavors
- Food Labeling & Nutrition: A U.S. FDA webpage with information on the labeling requirements for foods under the Federal Food, Drug, and Cosmetic Act
- Guidance for Industry: Food Labeling Guide: A downloadable guide from the U.S. FDA that answers common food labeling questions and provides instructions for obtaining nutrition labeling exemptions
- International Dairy Foods Association (IDFA): The website of the IDFA, an association that works to support and represent all segments of the dairy industry
- Milk, Yogurt & Cultured Products Labeling Manual (2019 Edition): A manual produced by the IDFA to explain details of complex product labeling changes
- Code of Federal Regulations Title 21 Chapter 1 Subchapter B Part 101 – Food Labeling: The Code of Federal Regulations webpage on 21 CFR Part 101, governing food labeling
- Butter Grades and Standards: A U.S. Department of Agriculture webpage with information on grades and standards of butter, including links to downloadable pdf files
- **Safety**
- Food Safety Modernization Act (FSMA): A U.S. FDA webpage with information on the Food Safety Modernization Act
- The Food Safety Modernization Act (FSMA): A Penn State Extension article explaining how FSMA protects public safety
- FSMA Final Rule on Sanitary Transportation of Human and Animal Food: A U.S. FDA webpage with information on the FSMA rule on sanitary transportation of food
- FSMA Final Rule on Foreign Supplier Verification Programs (FSVP) for Importers of Food for Humans and Animals: A U.S. FDA webpage with information on the requirement to perform risk-based foreign supplier verification
- Food Safety Modernization Act - Foreign Supplier Verification Program (FSVP) Rule: A Penn State Extension article on imported foods and the FSVP rule
- Environmental Sampling: A U.S. FDA webpage with information on the FDA's environmental sampling procedures
- Sampling to Protect the Food Supply: A U.S. FDA webpage with information on how preventive sampling helps protect food safety
- Environmental Sampling in Meat and Food Processing: A Penn State Extension video on conducting microbiological sampling of the processing environment
- 3-A Sanitary Standards Inc.: The website of 3-A SSI, a dairy-industry not-for-profit group that sets standards and criteria for safe, hygienic dairy processing equipment and systems.
- Code of Federal Regulations Title 21 Chapter 1 Subchapter B Part 117 -

- [Current Good Manufacturing Practices](): A FederalRegister.gov webpage with information on federal regulations governing hazard analysis in food
- [Food Safety Plan Builder](): A tool from the U.S. FDA to assist in the development of food safety plans specific to your facility and in compliance with CFR Part 117
- [Penn State Extension Food Safety Plans for Small-Scale Cheesemakers](): A set of downloadable tools created by Penn State Extension to help smaller cheesemakers conduct risk assessments and develop food safety systems
- [Dairy Practices Council](): The website of the Dairy Practices Council (DPC), a non-profit organization providing resources on milk quality, sanitation, and regulatory uniformity
- [Dairy Practices Council (DPC) Guidelines](): A webpage of the DPC providing links to dozens of peer reviewed, industry-approved guideline documents on procedures in the dairy industry. Publication fees apply.
- [Food Safety Preventive Controls Alliance (FSPCA)](): The website of the FSPCA, a public-private partnership providing information and training on the Food Safety Modernization Act
- [Interstate Milk Shippers (IMS) List](): A U.S. FDA webpage with information on sanitation compliance and enforcement ratings of the IMS list
- [On-farm Milk Culturing for Mastitis Control](): A Penn State Extension online course on conducting mastitis testing and culturing milk to identify bacteria
- [National Mastitis Council](): The website of the National Mastitis Council (NMC), an independent organization providing resources for troubleshooting bacteria counts, maintaining milking equipment, and milking procedures
- [Best Milking Practices](): A Penn State Extension online course on the best management and milking practices to prevent mastitis and to maximize production
- [Best Milking Practices Checklist](): A printable Penn State Extension article providing a checklist to help you pinpoint areas in your milking routine that need improvement
- [Troubleshooting Problems with Milkfat Depression](): A Penn State Extension article explaining how monitoring the milk components of a herd can help assess the health and nutritional status of lactating cows
- [Dairy Food Processing Regulations](): A webpage listing resources from the Penn State Extension explaining regulations that apply to value-added dairy producers
- **Quality**
- [Raw Milk Quality](): A free, recorded webinar from Penn State Extension on how factors such as cleaning and sanitizing, and temperatures, affect the finished product shelf life, flavor, and quality
- [Penn State Extension Cheese Tracking System](): A tool created by the Penn State Extension to help cheesemakers track quality and consistency attributes, in order to improve their cheese and troubleshoot problems

- **Marketing Resources**
- U.S. Bureau of Labor Statistics (BLS): The website of the BLS, a resource where you may be able to collect demographic information about your target market
- United States Census Bureau: The website of the U.S. Census, a resource where you may be able to collect demographic information about your target market
- Sales Forecasting for Agricultural Businesses: A downloadable pdf from University of New Hampshire Extension providing a step-by-step process for conducting market research
- Sales Forecasting [workbook]: A downloadable Excel workbook from University of New Hampshire Extension designed to assist farmers with forecasting the sales of up to five products
- A Guide to Developing a Social Media Strategy for Ag Entrepreneurs: A Penn State Extension article on the stages of developing a social media strategy for Ag businesses
- How to Choose Which Social Media Sites to Use: A Penn State Extension article addressing the question of which social media site is best for you to use, as an Ag business owner or leader
- Facebook for Agricultural Businesses: A Penn State Extension article on using a Facebook account to market your Ag business
- First Steps to a Marketing Strategy: A Penn State Extension article on marketing for a small or beginning farmer
- Marketing Your Value-Added Dairy Products: A Penn State Extension article on the marketing factors for an artisan or farmstead dairy

- **Pricing Resources**
- Understanding Pricing Objectives and Strategies for the Value-Added Ag Producer: A Penn State Extension article on choosing a pricing objective and a pricing strategy that meets that objective
- A General Guide to Pricing for Direct Farm Marketers and Value-Added Agricultural Entrepreneurs: A downloadable publication from the University of Tennessee Extension on establishing product prices for direct farm marketers
- Product Pricing: What Do I Charge?: A Penn State Extension article describing the many pricing methods that business owners may utilize, and advantages and disadvantages of these methods

- **Grant Opportunities**
- Value-Added Producer Grants: A USDA Rural Development webpage with information on value added producer grants and how to apply for them.
- VAPG Program: A webpage of the Agricultural Marketing Resource Center that provides an overview of the Value-Added Producer Grants program

- **Budgeting**
- Value-Added Enterprise Budget Template: An Excel spreadsheet containing a

- template for a value-added enterprise budget. Click the link to download the Excel spreadsheet
- Investment Analysis Template: An Excel spreadsheet containing a template for an investment analysis. Click the link to download the Excel spreadsheet
- Partial Budgeting: A Penn State Extension online course to help farm managers assess the possible financial impact of a decision, such as purchasing new equipment or selling a product in a different market
- **For Tennessee**
- Refer to Sections 3 and 8 Resources, above, for links to:
    - FDA Food Facility Registration
    - 3A Sanitary Standards, Inc
    - The Grade "A" Pasteurized Milk Ordinance (PMO)
    - Interstate Milk Shippers List information
    - NCIMS Biannual Meetings
- Tennessee Department of Agriculture (TDA) Food Safety – Dairy: A page of the TDA website where you may find dairy regulatory staff to connect with, general contact information, and more
    - Also use this page to obtain application forms for the Dairy Plant License, Dairy Tester License, and Dairy Sampler License, required for all Tennessee dairy processors
- FDA Evaluation of Milk Laboratories: A publication that provides the procedures for the evaluation of milk laboratories required to meet the sanitation standards of the current, in-use edition of the Grade "A" Pasteurized Milk Ordinance (PMO)
- Pick Tennessee Products: The website of Pick Tennessee Products (PTP), a state branding program you may wish to participate in
- Pick Tennessee Products Application: A webpage of the PTP website with application and guidelines to meet if you wish to use the PTP logo
- Technical Services Laboratory: A webpage of the TDA website providing an overview of the Technical Services Laboratory, where milk is tested for antibiotics
- Rules of the Tennessee Department of Agriculture: A publication from Tennessee's Secretary of State, officially compiling the rules and regulations of the TDA
- **For Kentucky**
- Refer to Sections 3 and 8 Resources, above, for links to:
    - The Grade "A" Pasteurized Milk Ordinance (PMO)
    - Registration of Food Facilities and Other Submissions: U.S. FDA web page
    - Getting Started with Labeling Dairy Foods: Penn State Extension webinar
- Kentucky Department for Public Health Milk Safety Branch: The website of the Kentucky Public Health Milk Safety Branch, including regulations, applications, and other resources
- Kentucky Revised Statute Chapter 217C: A webpage of the Kentucky

- General Assembly website describing KRS 217C, a state regulation you should be familiar with
- [902 KAR 50:110—Grade A Milk and Milk Product Regulation](): a pdf publication of the Milk Safety Branch describing 902 KAR 50:110, a state regulation you should be familiar with
- [University of Kentucky College of Agriculture, Food and Environment Division of Regulatory Services](): An overview of the University of Kentucky division that administers four state laws pertaining to animal feed, fertilizer, seed, and raw milk
- [UK Division of Regulatory Services License Procedures](): A webpage providing licensing procedures and application forms for milk sampler-weighers, milk testers, and more
- [UK Division of Regulatory Services Hauler School](): A webpage providing information on the quarterly hauler school offered by the division, as well as links to applications for hauler licenses and permits
- [Kentucky Proud](): The website of Kentucky Proud, a state branding program you may wish to participate in
- [Homegrown by Heroes](): The website of Homegrown by Heroes, a subset of the Kentucky Proud branding program that you may be able to participate in if you are veteran of any branch of the U.S. Military
- [Labeling Requirements for Commercial Processors](): A pdf publication of the Department for Public Health describing the information required on all packaged food products in Kentucky
- [Food Safety Branch](): A webpage of the DPH Division of Protection and Safety that describes how the Food Safety Branch protects consumers and provides links to numerous resources
- [Food Manufacturing Program](): A webpage of the DPH Food Safety Branch describing the program that oversees food manufacturing, and providing links to permit resources
- [Retail Food](): A webpage of the DPH Food Safety Branch describing the permits needed for different types of retail food operations in Kentucky
- [DPH Dairy Plant and Products Inspection Frequencies](): A pdf publications of the Milk Safety Branch listing the inspection frequency for different types of dairy producers
- **For North Carolina**
- Refer to Sections 3 and 8 Resources, above, for links to:
    - Registration of Food Facilities and Other Submissions: U.S. FDA web page
    - 3A Sanitary Standards, Inc
    - The Grade "A" Pasteurized Milk Ordinance (PMO)
    - Interstate Milk Shippers List information
    - NCIMS Biannual Meetings
    - Getting Started with Labeling Dairy Foods: Penn State Extension webinar
- [North Carolina Department of Agriculture and Consumer Services, Food and Drug Protection Division](): The website of the NCDA&CS Food & Drug

- Protection Division, which you should contact for permit and license application and prior to any equipment purchase
- [NCDA&CS Forms and Applications](#): A webpage of the NCDA&CS website containing links to forms and applications
- [Application to Build or Modify a Dairy Farm or Milk Plant](#): The application form you are required to complete and submit to receive a permit as a Grade A Processor
- [North Carolina Administrative Code (NCAC) Table of Contents](#): A webpage of the the NCAC website where you may access all titled rule publications
- [Subchapter 09G - Milk and Milk Products](#): A pdf file publication of North Carolina Administrative Code Title 2 Subchapter 09G
- [Subchapter 09k - Sampling and Testing of Milk and Cream](#): Frozen Desserts: A pdf file publication of North Carolina Administrative Code Title 2 Subchapter 09K
- [Value Added Dairy Resources](#): A webpage of the NC State Extension website containing links to articles and other resources for value-added dairy producers
- [General Specifications for Dairy Plants Approved for USDA Inspection and Grading Service](#): A pdf file publication of the USDA that may provide useful information before an inspection or grading service is performed