



New Mexico FFA

Milk Quality & Products

Career Development Event

Milk Quality and Products

Revised: 1/19/2024

PURPOSE

The New Mexico FFA Milk Quality & Products Career Development Event is designed to enhance learning activities related to quality production, processing, distribution, promotion, marketing and consumption of dairy foods, as well help students develop a sound perspective for using the decision-making process.

OBJECTIVES

- FFA members will be able to use knowledge of high-quality milk production and marketing.
- FFA members will be able to use knowledge of the composition and quality characteristics of pasteurized milk.
- FFA members will be able to develop an understanding that clean cows and a clean environment are necessary to produce quality milk.
- FFA members will be able to identify cheese varieties.
- FFA members will be able to identify and evaluate the flavor quality of milk.
- FFA members will be able to differentiate dairy products from nondairy products (imitations and substitutes).
- FFA members will be able to identify milk fat content of fresh milk products.

COMMON CORE REFERENCE

7th Grade

MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

8th Grade

CCSS.ELA-Literacy.RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

9-10th Grade

HS-PS1-5. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.

11-12th Grade

CCSS.ELA-Literacy.RI.11-12.7 Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

SECTIONS OF THE MILK QUALITY & PRODUCTS

- a. Milk Flavor Identification and Evaluation
- b. Milk Fat Content identification
- c. Identification of Cheeses
- d. Natural Vs. Imitation - Identification of Real Vs. Artificial
- e. Cheese Characteristics
- f. Problem Solving- Dairy Industry Id of tools, supplies and equipment Identification-

FORMAT OF EVENT

- a. **Milk Flavor Identification and Evaluation**
 - 10 samples to be scored on taste and odor - Milk samples will be 60 degrees F.
 - All samples of milk are prepared from pasteurized milk intended for table use and will score 1 to 10.
 - Using whole numbers, mark only the most serious defect
 - If no defect is noted, mark "NO DEFECT."
 - Only apples or apple juice will be allowed for taste-bud refreshing. NO OTHER taste comparison products will be allowed.
- b. **Milk Fat Content of Fresh Milk Products**
 - 10 samples of fresh fluid milk products will be identified according to their content of milk fat. Scantron *SECTIONS WILL ONLY USE SAMLPEES 1-7*
 - Dairy Products: nonfat (skim) milk (.05%), lowfat milk (1.0%), reduced fat milk (2%), milk (3.25%), half and half (10.5%), butter (80%), sour cream (18%), flavored milk (0.05%–3.25%) light whipped cream (30%), heavy cream (36%).
 - *NO Non-Dairy Products: margarine, non-dairy creamer, non-dairy sour cream, non-dairy milk, non-dairy flavored beverage and non-dairy whipped topping. All of these are to be categorized as non-dairy fat. WILL NOT BE ADDED FOR 2024*
- c. **Identification of Cheeses**
 - 10 cheese samples to be identified
 - Cubes of cheese will be available for tasting
 - Apples or apple juice will be allowed for taste-bud refreshing
 - More than one sample of a given cheese may be used (cheese ID list can be found on page 6 reference lists)
- d. **Cheese characteristics**
 - 10 samples will be provided will be the same cheeses used in the identification portion, the seven items in the "characteristics" column are based on the information found in the Cheese Characterization Matrix below: Participants will select all characteristics that apply to each sample.
Answers will be recorded on the event-specific scan form.

CHEESE CHARACTERISTICS MATRIX:

A description of major varieties of cheeses popular among American consumers.

Variety	Moisture (%) (Maximum) ₁	Fat (%) (Minimum) ₂	Pasta Filata ₃	Brine/Surface Salted	Ripened by	Origin
Blue/Bleu	46	50	no	yes	mold	France
Brie	52.5	20	no	no	bacteria and mold	France
Cheddar Mild	39	50	no	no	bacteria	England
Cheddar Sharp	39	50	no	no	bacteria	England
Colby	40	50	no	no	bacteria	US
Cream	55	33	no	no	unripened	US
Feta	60	42	no	yes	bacteria	Greece
Gouda/Edam	45	48	no	yes	bacteria	Netherlands
Havarti	54	30	no	no	bacteria	Denmark
Gruyere	39	45	no	yes	bacteria	Switzerland
Monterey Jack	44	50	no	no	bacteria	US
Mozzarella	60	45	yes	yes	bacteria	Italy
Muenster	46	50	no	no	bacteria	France
Parmesan	32	32	no	yes	bacteria	Italy
Processed American	40	50	no	no	bacteria	US
Provolone	45	45	yes	yes	bacteria	Italy
Queso Fresco	59	18	no	no	unripened	Mexico
Ricotta	73	4	no	no	unripened	Italy
Swiss	41	43	no	yes	bacteria	Switzerland

1. *Some cheeses have a range in moisture permitted, but these are the highest permitted amounts.*
2. *Some cheese standards use percentage by weight of total solids (e.g., cheddar) while others use percentage by weight of the cheese (e.g., cream).*
3. *Curd is stretched in hot water to align the protein molecules and provide stretch to the curd*

e. Natural/Imitation - Identification of Real vs. Artificial Dairy Foods / Products

- Will be selected from those available in stores
- A score of 5 points is given for each correctly identified
- 10 samples to be identified
- Natural and/or artificial dairy foods / products will be selected from those available

- Standards for what constitutes natural & imitation dairy are similar to USDA and FDA Standards of Identity and Grading: If the first ingredient listed is not milk or a dairy cream product, it is considered an imitation dairy product
- Dairy and/or non-dairy food products maybe be selected from the following ID List but are not limited to and is also open to other items that will fit into this category that are not listed. Any items that are commercially available in retailers that fit into this category will be suitable.

Dairy Product & Non-Dairy Product Identification List

Butter	3.3% Whole Milk
Margarine	Plain Soy Milk
Real Shredded Mozzarella Cheeses	Half and Half
Real Shredded Cheddar Cheeses	Plain Coffee Whitener
Imitation Cheddar Cheeses	Chocolate Milk
Imitation Mozzarella Cheeses	Chocolate Drink
Cottage Cheese	Real Whipping Cream
Smoked Cheese	Non-Dairy Whip Topping
Spreadable Cheese Products	Plain Yogurt
Non-Fat Milk	Soy Yogurt
Buttermilk	Sour Cream
Cultured Milk	Vanilla Ice Cream
2% Milk	Coconut Milk
Almond Milk	Rice Milk
Cashew Milk	

SCORING

- a. Milk flavor Identification
Participants will receive 5 points for each milk defect correctly identified and 5 points for each flavor intensity correctly identified. (3 points are awarded for being one bubble away, and 1 point for two bubbles away.)
- b. Milk Fat Content of Fresh Milk Products Identification
Participants will receive 3 points for each product correctly identified.
- c. Identification of Cheeses
Participants will receive 3 points for each product correctly identified.
- d. Identification of Real vs. Artificial

Participants will receive 5 points for each product correctly identified.
- e. Cheese Characteristics
10 Samples

- f. Problem Solving- Dairy Industry Id of tools, supplies and equipment Identification- (50 points)

The identification portion will consist of equipment/materials that relate to the milk quality career area. There will be 10 stations with items taken from all applicable identification sheets. (5 points each) The equipment will come from a file on the Milk Quality & Products CDE link located at nmffa.org. Materials and equipment may be high quality pictures or real equipment and materials. This will be done on scantron under problem solving.

Reference Lists for Milk Quality and Products

Milk Intensity Scores

<i>DEFECTS</i>	<i>Slight</i>	<i>SCORES*</i>	
		<i>Definite</i>	<i>Pronounced</i>
Acid	3	2	1
Bitter	5	3	1
Feed	9	8	5
Flat/Watery	9	8	7
Foreign	5	3	1
Garlic/Onion	5	3	1
Malty	5	3	1
Oxidized	6	4	1
Rancid	4	2	1
Salty	8	6	4
No Defect	10		

**Suggested scores are given for three intensities of flavor. All numbers within the range may be used. Intermediate numbers may also be used; for example, a bitter sample of milk may score four.*

Cheese ID List

- | | |
|------------------|------------------------|
| 1. Blue/Bleu | 11. Monterey Jack |
| 2. Brie | 12. Mozzarella |
| 3. Cheddar Mild | 13. Muenster |
| 4. Cheddar Sharp | 14. Parmesan |
| 5. Colby | 15. Processed American |
| 6. Cream | 16. Provolone |
| 7. Feta | 17. Queso Fresco |
| 8. Gouda/Edam | 18. Ricotta |
| 9. Havarti | 19. Swiss |
| 10. Gruyere | |

DAIRY FOODS REFERENCE MATERIALS

- # 5017 Judging Miler Unit Parts and Cheese ID (6 color slides w/s) IMS
- # 0408 Questions and Answers on Federal Marketing USDA
- # 0409 Judging and Scoring Milk and Cheese (19 pages) USDA
-
- Instructional Materials Service
Texas A&M University
F.E. Box 2588
College Station, TX 77843-2588
Office: (979) 845-6601 FAX: (979) 845-6608
- # 9381P3 COMPUTER SOFTWARE - Milk and Milk Quality and Related Review, HOBAR
- # 9381M3 COMPUTER SOFTWARE - Milk and Milk Quality and Related Review, HOBAR
- HOBAR PUBLICATIONS 1234 Tiller Lane St. Paul, Minnesota 55112
Office: (612) 633-3170 FAX: (612) 633-2020

REFERENCES FOR NATIONAL DAIRY FOODS CDE

- NCQ-### Written test used in National FFA CDE: available for sale through the National FFA Catalog effective January following each career development event; (### = year)
- OTHER FOOD TECHNOLOGY TEACHING REFERENCES

- *Food Science* - Potter, Norman, Fourth Edition; AVI Publishing Co 250 Post Road East, P.O. Cox 831, Westport, Connecticut 06881
- #8673 - Complete Set Ag. Sc. 241 Food Technology; IMS
- *Food Science, Safety & Nutrition* - National FFA Foundation P.O. Box 45205 Madison, Wisconsin 53744 Office: (608) 829-3105 FAX: (608) 829-3195
- The Council
Wisconsin Milk Marketing Board
P.O. Box 15035, 5632 Mt. Vernon Memorial Hwy
Alexandria, VA 22309-0035 Office: (703) 360-8832
- *Hoard's Dairyman*, P.O. Box 801, Fort Atkinson, Wisconsin 53538
Office: (414) 563-5551
> Issues used are from September of previous year to August of current year.
- *Milk Facts* (updated annually) available from Milk Industry Foundation 888 16th Street, N.W.
Washington, D.C. 20006 > One copy may
be obtained free by request. Use previous year's issue.
- *Dairy Handbook*, TETRA Pak Processing Systems
8101 Corporate Woods Parkway Vernon Hills, IL 60061
- *The Cheese Reporter* (Publication Number: ISSN 0009-2142), published weekly by Cheese Reporter Publishing Co., Inc.
4210 Washington Ave.
Madison, WI 53704
Office: (608) 246-8430
FAX: (608) 246-8431
- *USDA Sediment Standards*, No. 7CFR58.2731. U.S. Department of Agriculture,
Agriculture Marketing Service
Dairy Division, P.O. Box 96456, Washington, DC 20250