Milk Quality & Products

Nebraska Career Development Event
Handbook and Rules for 2023-2027

1. PURPOSE

The purpose of the Nebraska Milk Quality & Products contest is to promote practical learning activities in milk quality and dairy products.

2. OBJECTIVES

Successful contestants will be able to:

a. Identify a variety of cheese based on color, aroma, texture, and taste.

b. Identify common “off flavors” in milk based on color, aroma, and taste.

c. Distinguish dairy products from non-dairy, alternative products.

d. Determine various levels of milk fat in dairy products based on color, aroma, texture, and taste.

e. Display general knowledge of the dairy and milk processing industry.

3. ELIGIBILITY

a. Participants in grades 9 - 12, at the time of the contest, are eligible.

b. Members who have just graduated the previous spring are eligible.

c. A school may enter up to 8 individuals.

d. A school's score will be made up of the top four scores. Other individuals will be eligible for individual ribbons.

4. REQUIRED ATTIRE

a. State Fair T-shirt (provided at check-in)

b. Pants (Nice Jeans are acceptable)

c. Close toed shoes

5. REQUIRED SUPPLIES AND EQUIPMENT

a. Pencil or Pen (required)

b. Bottle of Water (optional)

c. Crackers or another pallet cleanser (optional)

6. EVENT SCHEDULE

a. All individuals from a school will report at their designated time.

b. Individuals will be assigned a group.

c. Groups will rotate between each of the four stations (Written Exam, Cheese Identification, Milk Identification, & Milk Flavor)

d. Individuals will have 15 minutes to complete each of the four stations.

e. An official timekeeper will instruct students when to rotate to the next station.

f. There is no team activity.

7. ANNUAL THEME

Not applicable for this event.

8. EVENT FORMAT

a. Written exam - Completed as an individual
    a. 20 Multiple Choice Questions from past National FFA Tests

b. Practicums - Completed as an individual
    a. Cheese Identification
    b. Milk Flavor
    c. Milk Identification

9. SCORING

Individual Score Calculation	Score
• Written Exam (20 multiple choice questions)	40
• Cheese Identification	30
• Milk Flavor	40

• Milk Product Identification	30
Total Points Possible	140

Team Score Calculation	Score
• Individual Scores (4 x 140)	560
Total Points Possible	560

10. TIEBREAKER

To determine the award order for individuals involved in a tie, the following will be utilized in rank order:

a. Individual:
    a. Written Exam
    b. Cheese Identification
    c. Milk Identification
    d. Milk Flavor
b. Team:
    a. Ties will be broken by high individual scores

If 1-4 from each school are tied, then 5th and below could come into a tie breaker

11. PAST EXAMS

Past Exams are located on the UNL CDE Website

State Exams will include questions from past National FFA Milk Quality & Products tests which are available at: https://www.ffa.org/resources/cde/questions-and-answers

12. RESOURCE MATERIALS

Appendix 1. Product ID Scorecard

Appendix 2. ID Sheet Lists

Appendix 3. Exam Card

Appendix 4. Cheese Characteristics Matrix

Appendix 5. Off-Flavor Recipes

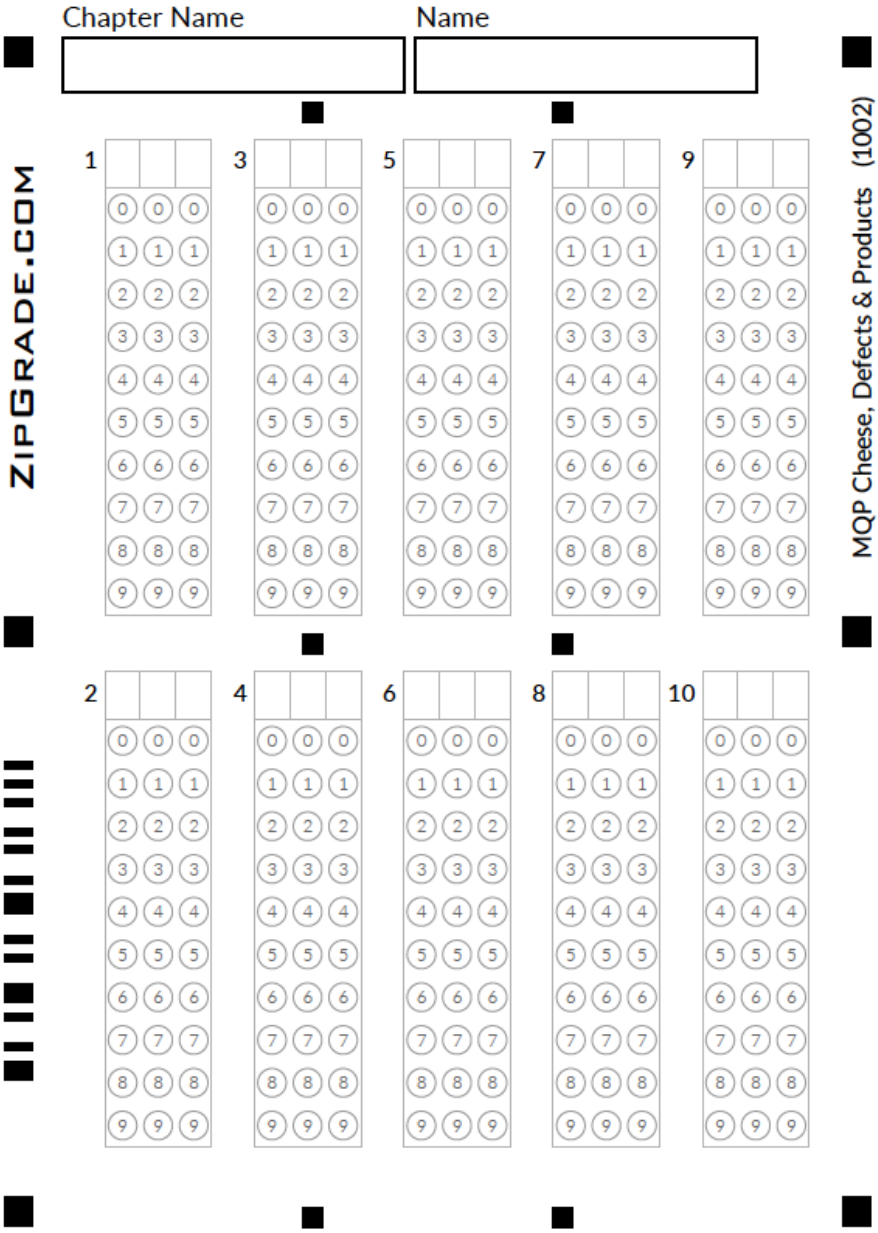
Appendix 6. Evaluating Milk

13. POST-CDE DEBRIEFING OPPORTUNITY

Immediately following the event, answer keys will be posted at each station and contest officials will be available to answer questions.

APPENDIX

Appendix 1. Product ID Scorecard


Chapter Name
Name
ZIPGRADE.COM
MQP Cheese, Defects & Products (1002)
1
2
3
4
5
6
7
8
9
10

Appendix 2. ID List Sheet

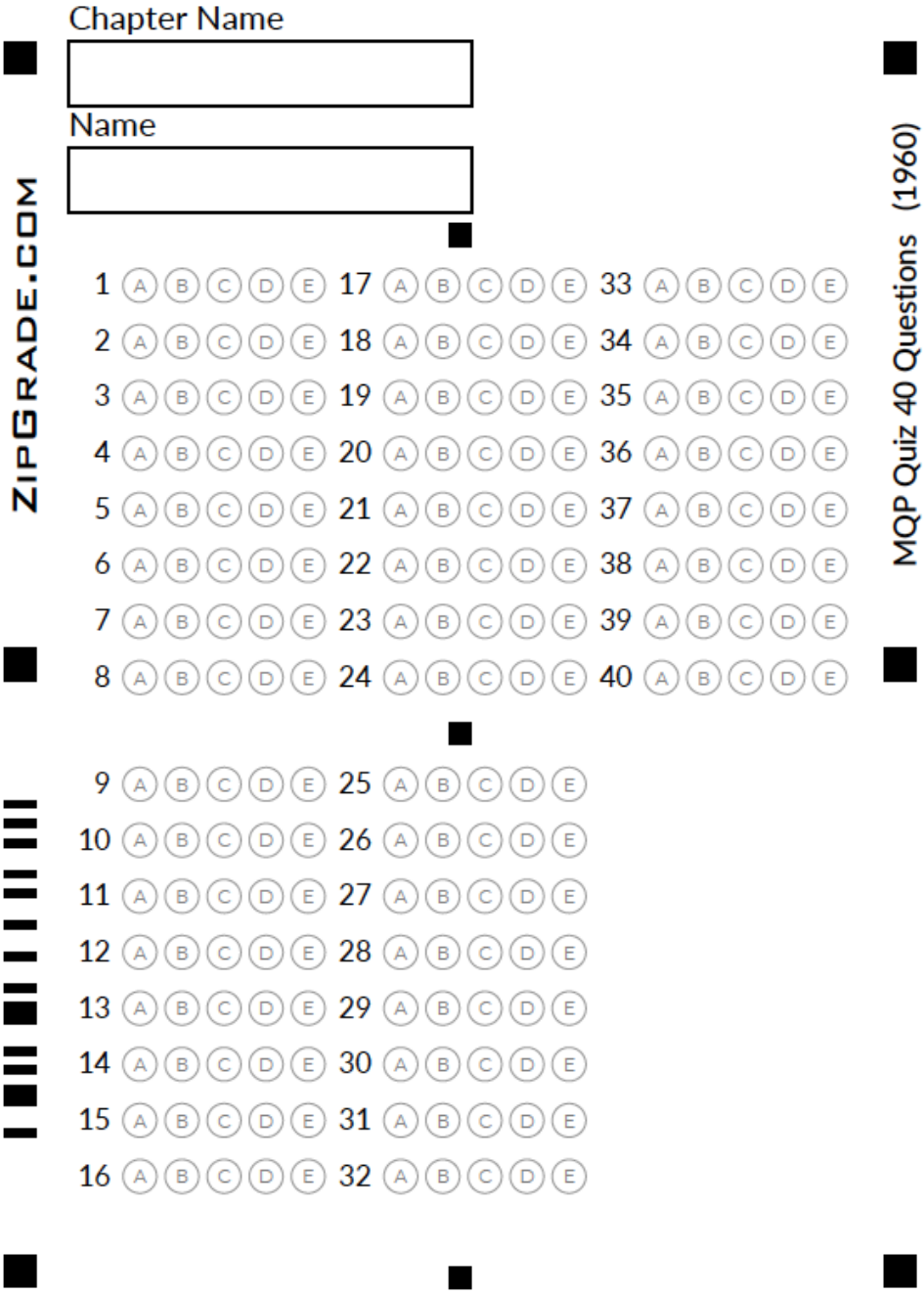
Millk Quality & Products - Identifcation List

Milk Product Identification	
Item Number	Product Name
100	0.05% Milk
101	1% Milk
102	2% Milk
103	3.25% Milk
104	Butter
105	Flavored Milk
106	Half & Half
107	Heavy Cream
108	Lt. Whip Cream
109	Non-Dairy*
110	Sour Cream

Milk Defect Identifcation	
Item Number	Defect
211	Acid
212	Bitter
213	Feed
214	Flat/Watery
215	Foreign
216	Garlic/Onion
217	Malty
218	No Defect
219	Oxidized
220	Rancid
221	Salty

Cheese Identification	
Item Number	Product Name
350	Bleu
351	Brie
352	Cheddar Mild
353	Cheddar Sharp
354	Colby
355	Cream
356	Feta
357	Gouda
358	Gruyere
359	Havarti
360	Monterey Jack
361	Mozzarella
362	Muenster
363	Parmesan
364	Processed American
365	Provolone
366	Queso Fresco
367	Ricotta
368	Swiss

Appendix 3. Exam Answer Sheet



Appendix 4. Cheese Characteristics Matrix

NATIONAL FFA
CAREER AND LEADERSHIP DEVELOPMENT EVENTS

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	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
Romano	34	38	no	yes	bacteria	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

Appendix 5. Off-Flavor Recipes

Milk Defect Identification Recipes

The FFA advisor can prepare his/her own milk samples in preparation for this area of the contest. The following are contaminants that can be added to milk to give the desired flavors. All defect samples will use 2% milk for the state contest.

Flavor	Sample Preparation
Acid	• Inoculate 1 quart of milk with 50 ml. of cultured buttermilk • Prepare 24 to 48 hours prior to use
Bitter	• Add a small amount of quinine sulfate. • Add 1 (NoDoz) or similar brand caffeine tablet to about 1 oz. of water and let it dissolve for 30 minutes. Then add the “caffeine solution” to a quart of fresh milk • One may increase caffeine tablets, to begin with, and add the solution to a smaller volume of water to help students get the taste
Feed	• Introduce some clean aromatic corn silage, let stand 1 hr. Then filter. • Add a half-ounce or one tablespoon of molasses and mixed with1 quart of milk • You can also use alfalfa tea and let steep and add the tea mixture to the milk
Flat-watery	• Add 25 to 50 ml. of water to one quart. • Add 4 to 6 ounces of distilled water to a court of milk • You may wish to use approximately 10% volume of the court of milk as water • Good quality tap water will work but some waters contain additional flavors
Foreign	• Expose milk to paint, kerosene, gasoline, bleach, mouthwash,or creosote in a covered container for one (1) hour. • Add one teaspoon of vanilla extract, Clorox, Lemon juice to 1 quart of milk • Anything can be used as long as it does not change the color
Garlic/ Onion	• Add 2-4 drops of garlic/onion extract to one quart. • You can also use garlic/onion powder • If you're using cut-up onion, filter through a coffee filter or cheesecloth and allow sitting for 30 minutes

Malty	● Add ½ ounce (15 grams) Grape Nuts® or Grape-Nuts Flakes®breakfast cereal to 3 ounces (about 100 ml) of milk and allow to sit for 20 to 30 minutes to create a stock solution. This stock solution should then be strained through cheesecloth, a coffee filter, etc. (in a funnel) into another container. Add 1 ounce of the stock solution to a quart of milk. ● Add 1 to 1.5 teaspoons (5 – 7 ml) of unflavored malted milk powder (available at some grocery stores) to a quart of pasteurized/homogenized milk.
Oxidized	● 15 minutes of direct sunlight or one to two drops of 1% copper sulfate per quart of milk. ● Expose one quart of pasteurized/homogenized milk in a clear glass or plastic (polyethylene) milk container to direct sunlight for 30 minutes to one hour. Note: This is the most common form of oxidized milk found in homogenized milk. Do not use a container that is colored (yellow) and keep the milk cool by placing in ice. Samples prepared in this way will probably develop the generic (metal-induced) off-flavor within 36 to 48 hours after light exposure.
Rancid	● Mix one part raw milk to 3 parts homogenized milk, let stand several hours, -add two to three drops per quart buturic acid. ● Add ½ ounce (15 grams) of blue cheese to a quart of pasteurized/homogenized milk and allow it to sit for 30 minutes.Filter for the final sample using a coffee filter or cheesecloth and funnel.
Salt	● Add common table salt to a quart of fresh pasteurized/homogenized milk. Determine the degree of saltinessby the amount of salt added to the milk.
No Defect	● Use fresh pasteurized/homogenized milk that has not been exposed to any of the treatments named.