Dairy Foods

Purpose

This CDE is designed to assist students in gaining knowledge and under-standing of important aspects of quality and marketing of milk and cheese.

Objectives

Student should develop the following skills and abilities:

I. Identify and estimate the intensity of 10 off-flavors that may occur in raw milk and associate the defects with cause and prevention.

II. Identify each of 15 varieties of cheese.

III. Identify defects in design and conditions of milking machines and relate these defects to milk quality, udder health, and milking efficiency.

IV. Identify selected dairy products based on milk fat content and real/dairy products versus artificial/non-dairy.

V. Solve problems related to economics of milk production and marketing.

VI. Answer questions about milk composition, quality and marketing, including Federal Milk Marketing programs.

Crosswalk with Show-Me Standards

Objectives – Students participating in the Career Development Event should be able to:		Show-Me Standards	
		Knowledge Standards (Content Areas)	**Performance Standards (Goals)**
1.	Identify and estimate the intensity of 10 off-flavors that may occur in raw milk and associate the defects with cause and prevention.	MA.1	1.3, 1.8
2.	Identify each of 15 varieties of cheese.	SC.3	3.1, 3.5, 3.6, 3.8
3.	Identify defects in design and conditions of milking machines and relate these defects to milk quality, udder health, and milking efficiency.	HP.3	4.4, 4.7, 4.8
4.	Identify selected dairy products based on milk fat content and real/dairy products versus artificial/non-dairy		
5.	Solve problems related to economics of milk production and marketing.		
6.	Answer questions about milk composition, quality and marketing, including Federal Milk Marketing programs.		

Corresponding Secondary Agriculture Curriculum			
Course and/or Curriculum:	Agricultural Science I Food Science and Technology	**Unit(s):**	Introduction to Animal Products Unit II – Food Processing Lesson 3 – Milk Processing Lesson 4 – Processing Dairy Products

Event Format

The Dairy Foods CDE shall consist of the following seven (7) components:

1. Milk Flavor - Ten (10) milk samples will be scored on flavor (taste and odor). Samples will be prepared from pasteurized milk and will score 1-10. Contestants are to use whole numbers when scoring "Flavor" of milk. Check only the one most serious defect in a sample even if more than one flavor is detected. If no defect is noted, check "No Defect." Defects are worth two points each. Form 3a is provided for practice and scoring.

2. Milker Units - Five (5) sets of milker unit parts will be scored based on defects present. The flexible plastic parts are to be scored as rubber parts, and rigid plastic or glass parts are to be scored as metal parts. Contestants will be permitted to bring and use flashlights. Form 4a is provided for practice and scoring.

3. **Cheese Identification – Ten (10) cheese samples for identification will be selected from those listed on the answer sheet, Form 4b. Cubes of cheese will be available for tasting.**

4. **Milk Fat Content Identification - Students will identify five (5) dairy products distinguished by their milk fat content. Products will come from the list on Form 5A. Duplicate samples may be used. NOTE: On Dairy Foods Scansheet (Form#: 479-3), use the back-side of the Scansheet, Part II Test, questions 1-5 to enter answers for this activity. If using the Scansheet, a list of the products, as labeled A. – E. above should be provided on the table next to the samples.**

5. **Real & Artificial Identification -** Five (5) samples will be identified as either Real (Dairy) or Artificial (Non-Dairy) valued at 4 points each. The following choices are recommended: butter/ margarine, whipped cream/topping, cheese/cheese product, real milk/artificial milk, sour cream/artificial sour cream, half and half/artificial coffee creamer OR other suitable real or artificial products.

6. Problem Solving - participants will answer ten (10) multiple choice problem solving questions.

7. Written Test –
    a. Participants will answer fifty (50) multiple choice questions. Questions will refer to milk production (composition and quality) and milk marketing.

8. Contestants will be allowed three hours for the event with five segments being allotted 36 minutes each.

9. The Dairy Foods CDE will utilize a positive scoring system to rank contestants and teams.

Event Scoring

1. MILK FLAVOR

A. Two factors are scored for each milk sample. The first score is generated by correctly identifying the flavor defect in the milk sample. The second score is generated by scoring the intensity of the flavor defect within the sample.

B. Two (2) points will be awarded for correct identification of the flavor defect. Possible flavor defects are listed in the Milk Flavor Scoring Chart below.

C. Ten (10) points will be awarded for correctly scoring the <u>intensity</u> of the flavor defect. For each position away from the correct "score", 1 point is deducted. See the Milk Flavor Scoring Chart below and footnotes as a reference on scoring intensity of flavor defects.

D. A milk sample scored as No Defect should be scored with an intensity score of 10.

Example:
- Official Scoring on Milk Sample #1 is Malty / 5.
- Contestant marks their card as Malty / 3.
- 2 points are awarded for correctly identifying the flavor defect. 8 points are awarded for the intensity ranking as the student was 2 positions away from the correct intensity score (1 point * 2 positions = 2 point deduction). The contestant receives 10 out of 12 possible points for this Milk Sample #1.

Milk Flavor Scoring Chart			
	SCORES[a]		
OFF FLAVOR	Slight	Definite	Pronounced
Acid	3	1	_ [b]
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
No Defect	10		
Oxidized/Metallic	6	4	1
Rancid	4	1	_
Salty	8	6	4

[a]Suggested scores are given for three intensities of flavors: S--slight, D--definite, P--pronounced. Scores may range from 1 to 10. On a quality basis: 10 = excellent, 8 to 9 = good, 5 to 7 = fair, 2 to 4 = poor, and 1 = unacceptable. Intermediate numbers may also be used; for example, a bitter sample of milk may score 4.

[b]Where a dash is entered, a product with an intensity of "off flavor" will not be used in the event.

2. MILKER UNIT PART CUTS

   A. Five (5) milker unit parts will be evaluated. Eight (8) points will be possible for each sample.

   B. Contestants will evaluate the milker unit parts for defects. Each milker unit part will receive a deduction based off the Milker Part Defect Deduction Chart below. Contestants will mark their score card in two ways.
     1. Identifying which defects are present in the milker unit part. Each defect is worth 0.5 points.
     2. Providing a contestant's score for the milker unit part based on the deductions for defects. Each deduction is worth 0.5 points.

Example: Milker Unit Part # 1 is only a Rubber Part and is **officially scored** as:

   A. *Checked or Blistered, Poorly fitted,* and *Dirty or Milkstone*.
   B. The Official Score for Milker Unit Part #1 is then: 4 – (3 defects X 0.5) = **2.5**

   The **contestant** marked Milker Unit Part #1 as:
   A. *Checked or Blistered* and *Leaky*.
   B. They gave the Milker Unit Part #1 a score of **3.0**

The contestant would be awarded **2.5** points for the identification of defects (they lost points for <u>not</u> marking *Poorly Fitted* and *Dirty or Milkstone* **AND** lost points for marking *Leaky*) and **3.5** points tabulating the deductions with a final score for Milker Unit Part #1 of **6** points.

Milker Part Defect Deduction Chart	
Milker Part Defect	**Deduction**
Rubber parts--dirty or milkstone	0.5
Rubber parts--checked or blistered	0.5
Rubber parts--leaky	0.5
Rubber parts--poorly fitted	0.5
Metal parts--dirty or milkstone	0.5
Metal parts--badly dented or damaged	0.5
Metal parts--pitted or corroded	0.5
Metal parts--open seams	0.5

Note: Calculate score per sample as: 4 - (number of defects x .5) = contestant score.

   A combination of undesirable factors may score the milker unit zero.

3. CHEESE IDENTIFICATION

   A. Ten (10) Cheese Samples will be identified valued at 3 points each. **NOTE: Please see list of cheeses possible on Form 4b below.**

4. O kmlHc v'Eqpvgpv'K gpvHecvkqp

C0Five (5) samples will be identified based on their milk fat content from the list on
Form 5A valued at 4 points each. Duplicate samples may be used.

70Real / Artificial Identification

   A. Five (5) samples will be identified as either Real (Dairy) or Artificial (Non-Dairy) valued at
4 points each. The following choices are recommended: butter/margarine, whipped cream/
topping, cheese/cheese product, real milk/artificial milk, sour cream/artificial sour cream,
half and half/artificial coffee creamer.

6. Problem Solving

   A. During an eighteen minute period, then (10) multiple choice problems will be answered
based on the Dairy industry.
National FFA Problem Solving - 5 previous years to be used as reference. Milk Problems
can be found on the National FFA website under Career and Leadership events. Click on
Milk Quality & Products, then Event resources, open Past Tests & Practicums (Q&A)
folder. The current link is: https://ffa.app.box.com/s/s2tjtfi5jwix5yt82w993omy0c38q148

7. WRITTEN TEST

  A. Fifty (50) questions valued at one (1) point each. Written exam will combine marketing &
production (milk composition and quality

STATE Event Scoring

Events	Points Possible
1. Milk Flavor – Ten (10) milk samples at 12 points each	120 points
2. Milker Units – Five (5) milker unit parts at 8 points each	40 points
3. Cheese Identification – Ten (10) cheese samples at 3 points each	30 points
4. Milk Fat Identification – Five (5) samples as at 4 points each 5. Real / Artificial – Five (5) samples as at 4 points each	20 points 20 points
6. Written Test – 50 questions at 1 point each 7. Problem solving- 10 problems at 2 points each	50 points 20 points
Total Points	**300 points**

1. The team score shall be the sum of the different scores of the top three individual team members. The state Dairy Foods CDE will utilize a "high point" scoring system. The team with the highest team score will be classified the winner.
2. Grade differences are determined on each form by difference between the Official Score and the Contestant's Score.

Event Rules and Regulations

1. Contestants will report for instructions to the Superintendent at the time and place shown in the Schedule of Events.
2. Contestants will be allowed three hours for the event with five segments being allotted 36 minutes each.

References

10-4170-A Dairy Foods: <u>Producing the Best</u> (IML 2005) Available on DESE Ag Ed website under

      Food Science Curriculum tab.

<u>Modern Livestock and Poultry Production, 8<u>th</u> Edition</u>. By James R. Gillespie.

<u>Chapter 46. Marketing Milk.</u>

National FFA Problem solving - 5 previous years to be used as reference. Milk Problems can be found on the National FFA website under Career and Leadership events. Click on Milk Quality & Products, then Event resource, open Past Tests & Practicums (Q & A) folder. The current link is https://ffa.app.box.com/s/s2tjtfi5jwix5yt872w993omy0c38q148

Forms

      See following pages for Form 3a, Form 3b, Form 4a, Form 4b, Form 5a and Form 5b.

DAIRY FOODS CDE
Milk Flavor

Name: _____ Contestant No: _____

School: _____ School No: _____

Write scores only on the line marked for contestant's score. Mark (X) in space opposite the defect noted and in proper sample column. DO NOT WRITE in space indicating official score, grade difference, grade on defects, rubber parts, and metal parts.

Perfect Score	Defects	Sample Number										Total Grades
		1	2	3	4	5	6	7	8	9	10	
Milk Flavor No Defect 10 points	Contestant's Score											
	Official Score											
	Grade Difference											
	Grade on Defects											
	Bitter											
	Feed											
	Flat-watery											
	Foreign											
	Garlic or Onion											
	High Acid											
	Malty											
	Metallic/Oxidized											
	Rancid											
	Salty											
	No Defect											
										TOTAL		

DAIRY FOODS CDE
Milker Units

Name: _____ Contestant No: _____

School: _____ School No: _____

Perfect Score	Defects	Sample Number					Total Grades
		1	2	3	4	5	
Milker Unit — No Defect 4 points	Contestant's Score						
	Official Score						
	Grade Difference						
	Grade on Defects						
	Rubber Parts						
	dirty or milkstone						
	checked or blistered						
	leaky						
	poorly fitted						
	Metal Parts						
	dirty or milkstone						
	badly dented/damaged						
	pitted or corroded						
	open seams						
						TOTAL	

DAIRY FOODS CDE
Cheese Identification

Name: _____Contestant No: _____

School:_____School No: _____

	Varieties	Sample Number										Total Grades
		1	2	3	4	5	6	7	8	9	10	
Identification of Cheese (Incorrect Identification 2 points ea.)	**Grade on Identification***											
	1. Blue											
	2. Brie/Camembert											
	3. Cheddar (mild)											
	4. Cheddar (sharp)											
	5. Cream/Neufchatel											
	6. Edam/Gouda											
	7. Feta Cheese											
	8. Havarti											
	9. Monterey (Jack)											
	10. Mozzarella/Pizza											
	11. Munster											
	12. Processed American											
	13. Provolone											
	14. Romano											
	15. Swiss											
										TOTAL		

DAIRY FOODS CDE
MILK FAT CONTENT IDENTIFICATION

Name:_____Contestant No: _____

School:_____School No: _____

Five samples will be provided numbered 1-5. Contestants will indicate which numbered sample matches dairy food product by placing an "X" in the correct box. Only five samples will be provided, but duplicates may be used.

Milk Fat Content					
	Sample				
	1	2	3	4	5
A. Non-fat					
B. Lowfat					
C. Milk					
D. Half/Half					
E. Whipping Cream					

NOTE: On Dairy Foods Scansheet (Form#: 479-3), use the back-side of the Scansheet, Part II Test, questions 1-5 to enter answers for this activity. If using the Scansheet, a list of the products, as labeled A. – E. above should be provided on the table next to the samples.

DAIRY FOODS CDE
REAL/ARTIFICIAL PRODUCTS
(Dairy vs. Non-Dairy)

Name: _____ Contestant No: _____

School: _____ School No: _____

Under each sample number, place an "X" for Real if the product is made from real milk.
Place an "X" for Artificial if the product is not made from real milk.

	Product Type	**Sample Number**					**Total Grades**
		1	**2**	**3**	**4**	**5**	
	Real (Dairy)						
	Artificial (Non-Dairy)						
	Grade Difference						
					TOTAL		