IMPORTANT NOTE: Please thoroughly read the Introduction Section at the beginning of this handbook for complete rules and procedures that are relevant to all National FFA Career Development Events.

I. PURPOSE

To enhance learning activities relative to the quality production, processing, distribution, promotion, marketing, and consumption of dairy foods.

To assist students to develop a sound perspective for utilizing decision-making.

II. OBJECTIVES

A. Develop abilities to utilize knowledge of high quality milk production and marketing.
   1. Quality Milk Production
      a. Regulations
      b. Grades and classes of milk
   2. Cleaning and Sanitizing
      a. General types of cleaners and sanitizers
      b. Water hardness
      c. Milkstone
      d. Equipment, teats and udders
   3. Cooling Milk
   4. Developing Marketing and Marketing Concepts
      a. Trends
      b. Economics
      c. Supply and demand
      d. Nutrition
   5. Federal Milk Marketing Orders, Economics, and Distribution
      a. Transportation
      b. Cooperatives
      c. Pricing
   6. Diseases Transmitted to Man via Milk
   7. Causes of Off Flavors in Milk

B. Develop abilities to utilize knowledge of the composition and quality characteristics of raw and pasteurized milk.
   1. Nonfat Solid Portion
   2. Milkfat
   3. Adulterants, including Water
   4. Bacterial Standards and General Methods of estimating their Numbers
   5. Sediment Test

C. Develop an understanding of the causes and control of mastitis, its influences on milk quality and yield and the use of mastitis detection methods in controlling the disease in production of abnormal milk.
   1. Causes
   2. Prevention
   3. Detection (California & Wisconsin Mastitis Tests and confirmatory tests)
   4. Treatment
   5. Regulatory programs
D. Develop an understanding that clean cows and a clean environment are necessary to produce quality milk.

E. Be able to identify cheese varieties.

F. Be able to identify and evaluate the flavor quality of milk.

G. Be able to differentiate dairy products from non-dairy products (imitations and substitutes).

H. Be able to identify defects of milker unit parts affecting milk quality.

III. EVENT RULES

1. Team make-up - Teams may consist of three or four members. Team ranking is determined by combining the scores of the top three students from each team. Teams that for whatever reason, have fewer than three members are not eligible for team awards, but students may receive individual awards.

2. It is highly recommended that all participants be in official FFA dress for all events.

3. Participant will report for instructions to the event superintendent at the time and place shown in the current year’s “Program for National FFA Career Development Events.”

4. Participants will be allowed three hours and forty-five minutes for the event.

5. Participants are not to use strong deodorant, perfume, chewing gum or other detractors to the taste and smell senses.

IV. EVENT FORMAT

A. EQUIPMENT

Materials provided by the student - two #2 pencils only

Provided - all paper and other supplies will be provided. Participants are not to bring clipboards, paper, etc. to the event. Participants are not to bring glass of any kind to the event.

B. TEAM ACTIVITY

Team problem solving (25 points possible)

All team members will be responsible for solving a selected situation from one of the following: sanitation, marketing and distribution, and current issues in dairy health.

C. INDIVIDUAL ACTIVITIES

1. MILK FLAVOR IDENTIFICATION AND EVALUATION

a. Ten milk samples to be scored on flavor (taste and odor). Time: 36 minutes.

b. Milk samples will be scored using the computerized scorecard. All samples of milk are prepared from pasteurized milk intended for table use and will score 1 to 10. (See Scoring Guide). Milk samples will be tempered to 60° F.

c. Participants 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.” (See Scoring Guide.)

d. Apples or saltwater will be allowed for refreshing. Only those cups provided at the event may be used.

Scoring Guide

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/ un-salable
2. SEDIMENT

a. Five sediment pads to be scored on degree of sediment. Time: 9 minutes

b. Score sediment discs according to the United States Department of Agriculture Sediment Standards for Milk and Milk Products. The Sediment disc represents the sediment in one pint of milk taken from a well-mixed sample and run through a sediment tester fitted with an orifice measuring 0.40 inches in diameter. (USDA Sediment Standard No. 7CFR 58.2731 will be used.)

Scoring Guide:

<table>
<thead>
<tr>
<th>USDA Sediment Score</th>
<th>Participant Score*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 mg. sediment</td>
</tr>
<tr>
<td>1</td>
<td>More than 0 mg.</td>
</tr>
<tr>
<td></td>
<td>but not more than .5 mg.</td>
</tr>
<tr>
<td>2</td>
<td>More than .5 mg.</td>
</tr>
<tr>
<td></td>
<td>but not more than 1.5 mg.</td>
</tr>
<tr>
<td>3</td>
<td>More than 1.5 mg.</td>
</tr>
<tr>
<td></td>
<td>but not more than 2.5 mg.</td>
</tr>
<tr>
<td>4</td>
<td>More than 2.5 mg.</td>
</tr>
</tbody>
</table>

*Participant scores only even numbers for sediment test.

' Suggested scores are given for three intensities of flavor: S-Slight, D-Definite, P-Pronounced.

Intermediate numbers may also be used; for example, a bitter sample of milk may score 4.
3. CALIFORNIA MASTITIS TEST

   a. The California Mastitis Test will be scored using computerized scorecard. Samples should be scored using even numbers from 0 to 8 inclusive. See item C for Scoring Guide for the California Mastitis.

   b. Eight samples of milk will be evaluated for abnormality, using the California Mastitis Test method.

   Time: 18 minutes

Scoring Guide:

<table>
<thead>
<tr>
<th>CMT Test</th>
<th>Participant Score*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>Appearance</td>
</tr>
<tr>
<td>Negative</td>
<td>Mixture liquid, no precipitate</td>
</tr>
<tr>
<td>T</td>
<td>Slight precipitate tend to disappear with paddle movement</td>
</tr>
<tr>
<td>1</td>
<td>Distinct precipitate but does not gel</td>
</tr>
<tr>
<td>2</td>
<td>Distinct gel formation</td>
</tr>
<tr>
<td>3</td>
<td>Strong gel formation, which tends to adhere to paddle. Forms distinct central peak</td>
</tr>
</tbody>
</table>

*Participant scores only even numbers for CMT test

4. MILKER UNIT PARTS

   a. Five milker unit parts to be scored on defects.

   Time: 18 minutes

   b. Milker units will be scored on the computerized scorecard. The flexible plastic parts are to be scored as rubber parts and rigid plastic or glass parts are to be scored as metal parts. Participants will be permitted to bring and use flashlights. Each defect will count one-half point in calculating the participant’s score. Units may have multiple defects.

   c. In accordance with the dairy foods industry, the score made by each participant is the number of points deducted when compared to the official score; therefore, the lower the score, the higher the rating.

        Cuts
        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 - dented or damaged | 0.5
        Metal parts - pitted or corroded | 0.5
        Metal parts - open seam | 0.5

   A combination of undesirable factors may score the milker unit zero. Milker units are scored as a unit, both inside and outside, and are not to be handled. Participants will score each item and indicate the defect in the proper column on the score sheet.

5. CHEESE IDENTIFICATION

   a. Cheese samples for identification will be selected from those listed on the computerized scorecard. Cubes of the cheeses will be available for tasting. See references for cheese identification. Note: More than one sample of a given cheese may be used.
b. A score of two points is given for each variety correctly identified. Uncolored cheeses may be used.

c. There will be ten samples of cheese to be identified. Time: 18 minutes.

6. PROBLEM SOLVING

a. Problem solving area to be divided into three parts, including the team activity. Time: 18 minutes.

b. Problem solving will be scored on the computerized scorecard provided or as directed by event superintendent.

c. The problem-solving portion of the National FFA Dairy Foods Career Development Event is designed to determine the team members’ ability to distinguish between real and artificial dairy foods/products and to apply concepts involved in decision-making processes of the dairy foods industry.

Part I - 20 points
Identification of real /vs. artificial dairy foods products.

Examples: (May also include products other than those listed)
1. Margarine vs. butter
2. Whipped cream vs. whipped non-dairy topping
3. Coffee whitener vs. half and half
4. Cheese vs. non-dairy cheeses (process American vs. process imitation).

Part II - 25 points
1. Principles of merchandising dairy foods.
2. Factors impacting the demand for, and commercial use of, milk and dairy foods/products.
3. Nutritional value of dairy foods/products and their role in the diet.
4. Current issues relative to the marketing of milk and dairy foods/products and new developments in dairy foods processing.
5. Trouble shooting to determine problems/causes affecting milk quality.

Part III- see Team Activity Section

7. WRITTEN TEST

The written test will be comprised of a total of fifty (50) multiple-choice items. The test will be given in two parts with one part consisting of twenty-five (25) questions on quality milk production and a second part of twenty-five (25) questions on milk marketing. An increased emphasis will be placed on general marketing and promotion.

V. TIEBREAKERS

If ties occur, the following events will be used in order to determine award recipients:
1. Milk Production Written Exam
2. Milker Parts
3. Cheese Identification

VI. AWARDS

Awards will be presented at an awards ceremony. Awards are presented to teams as well as individuals based upon their rankings. Awards are sponsored by a cooperating industry sponsor(s) as a Special Project, and/or by the general fund of the National FFA Foundation.

VII. REFERENCES

This list of references is not intended to be inclusive. Other sources may be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

A. Hoard’s Dairyman, PO Box 801, Fort Atkinson, Wisconsin 53538. Phone (414) 563-5551. Issues used are from September of previous year to August of current year.

B. 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.

C. Using the California Mastitis Test published by the University of Missouri-Columbia Extension Division, Columbia, Missouri 65211. (Single copy free, write for price quote for multiple copies).
D. *California Mastitis Test* can be ordered from NASCO for $11.00, catalog number 06059N. Toll free 1-800-558-9595 or toll call, 1-414-563-2446. NASCO, 901 Janesville Avenue, Fort Atkinson, WI 53538.

