

COLORADO STATE BOARD  
FOR  
VOCATIONAL EDUCATION

RURAL WAR PRODUCTION TRAINING PROGRAM

Course No. 6

INCREASING MILK PRODUCTION

Prepared in  
cooperation with the  
Colorado State College of Agriculture and Mechanic Arts  
and issued by

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## Teaching War Production Courses

The main purpose of the war production courses is to discuss with producers ways and means, and to assist them in outlining plans of action, by which the production goal can be reached in the shortest possible time and with the greatest efficiency.

### Duration of Courses

All the production courses are to be planned to cover not less than twenty (20) hours of instruction extending over a period of not less than two weeks. Each meeting should be two hours in length. One meeting a week for ten weeks or five meetings a week for two weeks will meet these minimum requirements. Any arrangements of meetings within the above limits may be made. It may sometimes be desirable to hold a course a little longer than ten meetings. This is permissible providing the application for the course specifies the exact number of meetings. No course is to be extended beyond this specified number of meetings.

### Determining the Course Content

Each course to be offered in this program must include only one of the commodities designated in the Rural War Production Program.

Before organizing a course the production situation of the critical farm commodity in the locality should be analyzed and the needs of the farmers determined.

In developing the course content emphasis should be placed on farm jobs and problems which lend themselves to an immediate increase in production. Some farmers may need to improve their feeding practices, some will need to use more sanitary measures, some will need to stress more careful management of their livestock and others will find it more desirable to improve other operations in the efficient production of the specific commodity made the basis of instruction of the course. Vegetable growers

may need to change the varieties grown; improve the fertility of their soils; plan ways and means of economizing on labor in harvesting and packaging their crops or improve other operations. Many changes are possible to bring about immediate increase of production.

By no means should a course be organized to cover all phases of the production and the marketing of one of the critical commodities in a general and informational way. On the other hand, the instructor should always have in mind the community practices which can be improved to secure greater or more efficient production. The instruction should, therefore, result in action on the part of each individual member of the class. This procedure definitely gears the instruction into meeting the present war needs.

#### Developing a Preliminary Outline of the Course

A preliminary outline of the course should be developed before the first meeting of the class. This outline will have to be made on a local community basis by each instructor.

In developing this outline he should confer with some of the leading producers in the community. It is possible that the advisory committee could be of assistance in this matter. In the second suggestive job of the outline on page 3, there is provided a scheme whereby the instructor can very definitely discover the problems that should be given emphasis in the course. The results of this meeting might naturally make some changes. However, it is always best to have a well developed plan before starting any undertaking.

A specific job or problem should be made the basis of instruction of each meeting. It is, also, very desirable in planning a course to finish at each meeting the subject taken up for discussion. Following this suggestion enables the instructor to start each meeting with a new job or problem. To aid an instructor in formulating a preliminary outline of a course there is presented on page 3 a suggestive outline of jobs and problems.

## INCREASING MILK PRODUCTION

### Suggestive Jobs and Problems for Meetings

1. The need for increased milk production.
2. Determining the important factors affecting efficient milk production.
3. Keeping good producing cows and culling the poor cows.
4. Selecting suitable and economical feeds for balanced rations.
5. Determining a number of efficient and economical rations for the community.
6. Providing ample suitable pasture.
7. Increasing milk production through better care and management of dairy herd.
8. Growing out good young stock.
9. Providing essential shelter.
10. Providing labor saving devices and equipment.
11. Handling and care of equipment.
12. Preventing and controlling diseases and pests.
13. Increasing production through use of better sires.
14. Producing high quality of milk.
15. Determining ways and means of conserving labor in the production and marketing milk and cream.
16. Determining the advisability of increasing the size of the enterprise.
17. Taking one or more tours of dairy farms.

Note. This is merely a suggestive outline, prepared to enable an instructor to select topics for ten to twelve meetings.

### Making plans for each meeting

Careful planning in advance of each meeting is highly essential. The farmers attending the class will have had considerable experience in the production of the commodity under discussion. The experiences of the farmers supplemented by experiment station data presented by the instructor should furnish the basis for the farmers to determine the approved practices necessary in attaining the production goals. Unless a farmer gets something out of each meeting that will be a real help to him, it is doubtful if he will continue in the class. All of this puts a real responsibility upon the shoulders of the instructor. Most careful planning should enable him to better assume this responsibility.

This preparation for each meeting may consist of the following:

1. Listing motivating cues; that is, ways of arousing interest.
2. Writing a number of important key questions to direct the discussion.
3. Listing in condensed outline form important functioning facts or data.
4. Recording specific functioning references.
5. Deciding upon and securing worthwhile illustrative materials.
6. Determining where and how to use illustrative material most effectively.
7. Deciding upon the possibility of getting some person to give authoritative functioning data or facts that may help in clarifying discussions and in reaching decisions.

For instance, in suggestive Job 1, "The need for increasing production" of the commodity, the important questions to direct the discussion may be:

1. What are the production goals for the commodity for 1943?  
(national, state and county)
2. Why is the increased production necessary?
3. What are the price prospects for 1943?
4. How efficient is our production?
5. Do we have a responsibility in trying to help more efficient production and increased production?
6. Can we or can we not increase production?

### The conference procedure

The conference procedure is recognized as one of the most desirable methods of conducting classes with adult farmers who have had considerable experience in the production of the commodity made the basis of the instruction. To give farmers an opportunity to discuss their experiences and opinions when trying to solve a managerial problem is the purpose of the conference. The members of the group may want to decide upon the value of some practice; they may want to establish a standard way of doing something; they may want to agree upon some course of action; or they may want to correct some unsatisfactory practice. Whatever may be the immediate purpose, the collective judgment of the group on some problem is obtained through a general discussion. To this discussion the instructor or some authoritative person may add needed functioning facts obtained from experimental data or other reliable sources that should be considered in reaching a decision.

The conference serves only as an effective way for helping men to think straight on some problem or on deciding upon some action. It is not concerned with the development of doing abilities in which case the instruction procedure would be used. Nor is it essentially concerned with imparting information, in which case the informing procedure would be used. This latter statement does not mean, however, that the instructor or other selected person should not add important reliable functioning facts to the pool of experiences and opinions gathered from the group in reaching a decision on the problem under discussion. Decisions should come from the group, however, and not from the instructor who is essentially a leader of a discussion group and whose primary function is to guide and direct the discussions and particularly the thinking of the group.

### The use of illustrative materials

At any meeting in which illustrative materials, such as strip films, pictures, charts and the like can have a functioning value, they should be used. This material may be used to present a preview, to clarify points or to confirm points developed in the discussions. These supplementary aids need careful selection and intelligent use. A list of available U. S. D. A. strip films is appended to this outline.

### Demonstration

In many instances a demonstration by the instructor or by some other person may be very appropriate and helpful in clarifying some ideas developed in a discussion. Often, too, demonstrations can profitably be given while the group is on a field trip or tour to observe some approved practices.

Since emphasis of the course should be centered on practices leading to more efficient and increased production of the commodity made the basis of instruction, everything done in a class not specifically contributing to these ends should be excluded. Time consuming activities of a general nature need to be avoided if practical results are to be immediately attained in the little time given to a course.

### Conducting the meeting

- Step 1. Begin the meetings on time and close them on the scheduled time. If some members wish to remain longer to further discuss some point, this is all right, but the class should be dismissed first.
- Step 2. Before starting a meeting it is an excellent idea to write on the upper part of the blackboard, in front of the group, the problem made the basis of discussion of the meeting. Doing this will greatly help in focusing and holding the attention to what was planned for the meeting. Cautiously side-tract irrelevant discussion and controversial questions. Let those who raised them remain after the group has been dismissed if they wish to discuss them.

- Step 3. Start off by clearly explaining the problem or question. Motivate it as best you can.
- Step 4. Put your first key question to the group. These key questions were to be part of the instructor's preparation for the meeting as previously suggested.
- Step 5. Get from the group facts, experiences, or cases pertaining to the question. This assembling of facts is the first phase of the conference procedure.
- Step 6. Record on the blackboard, whenever practicable, in the most condensed and outlined form, the essential functioning material presented. Add what may be needed to help out. This is the selection of functioning facts and the second phase of the conference procedure.
- Step 7. In some suitable way get an evaluation of the functioning facts. This is the third phase of the procedure.
- Step 8. Get from group members suggestions as to a solution or decision; and, if essential, get majority opinion. This is the fourth phase of the procedure. The development of a plan and the execution of a plan, the fifth and sixth phases, are individual matters, and are generally done outside of the meetings of the conference.
- Step 9. In a similar way try to bring the group to a decision in the other vital questions brought up in a meeting.
- Step 10. Before closing a meeting summarize the important questions that were discussed and the things agreed upon as a basis for action.

#### Follow-up work

Systematic follow-up work is an essential and necessary part of the War Production Program. The improved practices actually adopted, the improvements made in enterprise, and other results of the instruction needs to be known. Then, too, there is always an opportunity during supervision of rendering farmers additional assistance in carrying out their plans.

#### Attendance records

A record of the names of members of a War Production Class, together with the attendance of each must be kept and reported upon.



Some things to remember

1. There is a vital need for increasing the production of the commodities made the basis of instruction in the Rural War Production Training Program; namely,

Beef	Mutton, lamb and wool
Milk	Poultry for meat
Pork	Commercial vegetables
Eggs	Home garden vegetables

2. The production of these commodities can and must be increased.
3. The 1943 production goals for these commodities are much higher than they were for 1942.
4. This special rural training program for out-of-school rural youth and adults is an emergency measure that must be and can be an important factor in increasing the production of these critical commodities.
5. Food production goals can only be met if each farm and each community produces its share.
6. Instructors and producers must fully appreciate the need for increased production of these commodities.
7. Producers must have a wholehearted desire to help out in the situation as far as economically and physically possible.
8. Producers must analyze their utmost opportunities for more efficient production and for increasing the scope of their production wherever advisable.
9. Improved or most efficient methods will in nearly every instance increase production, and often with smaller units.
10. Losses due to diseases, pests, or management can be reduced and thus increase production.
11. A better quality of the product will increase production by preventing waste.
12. Ways and means of economizing on labor in production and in marketing can and must be worked out.
13. A greater use of labor saving devices is essential.

### U.S.D.A. FILM STRIPS

The following film strips can be purchased from the Photo Lab. Inc., 3825 Georgia Ave., N. W. Washington, D. C., at price indicated. When placing a purchase order, send a request to the Extension Service of the U. S. Department of Agriculture, Washington, D. C., asking for authorization of the sale and for the supplementary lecture notes. There is no charge for the latter. Authorization blanks can be secured from the local extension service if desired.

- No. 379 Marketing feeds through dairy cattle. 31 frames - 50 cents
- No. 515 Eradicating tuberculosis from livestock and poultry. 36 frames -  
50 cents
- No. 413 National poultry improvement plan. 48 frames - 50 cents
- No. 126 Selecting hens for egg production. 55 frames - 55 cents
- No. 133 Standard breeds of poultry. 48 frames - 50 cents
- No. 141 Breeds of sheep. 56 frames - 55 cents
- No. 44 Breeds of swine. 33 frames - 50 cents
- No. 53 Hog houses and equipment. 30 frames - 50 cents
- No. 142 Selecting and judging breeding hogs. 31 frames - 50 cents
- No. 271 Marketing eggs in the United States. 53 frames - 55 cents
- No. 275 Preparation of wool for the market. 44 frames - 50 cents
- No. 140 Farm dairy houses. 63 frames - 55 cents
- No. 429 Production of high quality cream for butter making. 30 frames -  
50 cents
- No. 503 Insect pest of garden vegetables and their control. 63 frames -  
55 cents

### Other Film Strips

The College Photo Shop, Colorado State College, Fort Collins, has a large assortment of strip films which it rents. If interested, write for its circular - Visual Aid and Photographic Service.

To give an idea of the variety of these strip films a few are mentioned here, together with their number:

- No. 60 Round worm and swine sanitation.
- No. 52 Poultry housing in Colorado.
- No. 39 How insects attack garden vegetables - control.
- No. 24 Farm sheep raising.
- No. 73 Swine management.
- No. 108 Poultry management in Colorado.

### Kodachrome Slides

The College Photo Shop has a very complete supply of Kodachrome Slides on all agricultural subjects. A set of about 50 slides can be made and rented as desired. These slides are colored and measure 2 x 2 inches. Then, too, it is possible to add one's own local pictures to a set. Kodachrome Slides are considered the very best visual aids in instruction.

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### Reference Material

#### Bulletins

1. Dairy cattle breeds. F. B. 1443
2. Care and management of dairy cattle. F. B. 1470
3. Dairy farming for beginners. F. B. 1610
4. Feeding, care, and management of young dairy stock. F. B. 1723
5. Care and management of dairy bulls. F. B. 1412
6. Feeding dairy cows. F. B. 1626
7. Testing cows for production every other month. Cir. 1, U.S.D.A. 5¢
8. The production of dairy cows as affected by frequency and regularity of milking. Cir. 180, U.S.D.A. 5¢
9. Better cows from better sires. Dept. Cir. 368, U.S.D.A. 5¢
10. Care of milk utensils on the farm. F. B. 1675 U.S.D.A. 5¢
11. Digest of suggestions for more profitable dairying. Colo. Extension Service publication.
12. Irrigated pastures. Colo. Extension Bulletin, D-18
13. Clean milk and cream; How to produce them. Colo. Ext. Bul., D-20
14. Mechanical milk cooling on farms. F. B. 1818, U.S.D.A.
15. More food. F. B. 1909

#### Books

1. Dairy cattle and milk production. Eckles, Anthony and Palmer MacMillan Co., \$3.60 (Considered an excellent and up-to-date book)
2. Feeds and Feeding. Morrison, Morrison Pub. Co., Ithaca, N. Y. Abridged edition \$2.20 if cash accompanies order. Complete edition \$5.00
3. Dairy cattle feeding and management. Henderson, Larsen and Putney. John Wiley and Sons, \$4.00
4. Keeping livestock healthy. 1942 Yearbook of Agriculture. U.S.D.A. Secure a free copy from your Senator or Representative in Congress.
5. Dairy science. Peterson J. B. Lippincott Co. \$4.00
6. Productive dairying. Washburn. J. B. Lippincott Co. \$3.50
7. Dairy profit. Fraser, The Interstate Printers and Publishers, Danville, Ill., Price, \$1.80
8. Dairy farming. Fraser, John Wiley and Sons, \$2.25
9. Animal sanitation and disease control. Dykston, The Interstate Printers and Publishers; Danville, Ill. \$2.85

F. B. (Farmers' Bulletins) are obtainable from County Agents, Bulletin Mailing Room, Colorado Extension Service, Fort Collins; and from your Senator or Representative in Washington, D. C.

## INCREASING MILK PRODUCTION

### Teaching Suggestions and Aids

Arranged in order of suggestive jobs and problems as given on page 3.

#### 1. The need for increased milk production.

- a. Since this will be the first meeting, get group acquainted.
- b. Explain purpose of course and nature of meetings.
- c. Explain the "Conference Procedure." See page 5.
- d. Secure data from County Committee on the 1943 milk production goals and estimated production in 1942.
- e. Record these data on the blackboard and discuss them.
- f. Gather from group members data on the average amount of milk and butterfat, per cow, they think they are getting.
- g. Present to the group these facts:
  - The average estimated production, per cow, in Colorado is:
    - 4500 pounds of milk
    - 180 pounds of butterfat
- h. A reasonable and profitable standard of production, per cow, is:
  - 7500 pounds of milk
  - 300 pounds of butterfat
- i. Can milk production be increased in this community?
- j. Emphasize the fact that production goals can only be met if each producer and each community does its share.
- k. A simple, preliminary community survey on average production, per cow, would help out.

#### 2. Determining the important factors affecting efficient milk production.

- a. This job might be considered with the first one.
- b. Get these factors from the group and record on blackboard.
- c. If necessary, suggest others to complete list.
- d. In general these factors pertain to the jobs listed on page 3.
- e. On blackboard develop a chart showing extent to which the factors are operating favorably and unfavorably.
- f. Determine with group the factors which should be given special attention. These should largely determine the course content.
- g. Do not enter into a discussion of any of the factors.

3. Keeping good producing cows and culling the poor cows.

- a. Secure copy of "Dairy Herd-Improvement Asso. Letter," Vol. 18, No. 8, Sept. 1942 from Bureau of Dairy Industry, U.S.D.A., Washington, D. C. The title is "Better Cows--Greater Returns."
- b. Write to Dairy Husbandry Extension Service, Iowa State College, Ames, Iowa, for copy of latest "Annual Summary of the Iowa Cow Testing Association."
- c. Present again a reasonable and profitable standard of production per cow. This is:
  - 7500 pounds of milk
  - 300 pounds of butterfat
- d. See Ch. 12, "Dairy Cattle and Milk Production," for discussion on selection of the individual cow.
- e. See, also, Ch. 36, "Dairy Science," p. 382.
- f. Discover knowledge that members of group have on individual production of their cows.
- g. Bring out advisability of weighing milk and keeping milk records. See Ch. 13, "Dairy Cattle and Milk Production."
- h. Bring out advantages and disadvantages of joining a cow testing association.
  - See Ch. 35, "Dairy Science."
  - See Ch. 27, "Dairy Cattle Feeding and Management."

4. Selecting suitable and economical feeds for balanced rations.

- a. Refer to Ch. 24, "Feeds and Feeding," Abridged 7th Edition.
- b. Record on blackboard typical feeds being fed.
- c. Make a classification of feeds being fed.
 

<u>Hays</u>	<u>Silage</u>	<u>Concentrates</u>
High protein	Kinds	High protein
Low protein		Low protein
- d. Discuss feed nutrients
 

Water	Fats
Minerals	Carbohydrates
Proteins	Vitamins

See Ch. 1 and pages 26-30 of Ch. 3 in "Feeds and Feeding," Morrison, Abridged 7th Edition.
- e. Develop functions of various feed nutrients. See F. B. 1626, "Feeding Dairy Cows."
- f. Record on blackboard the composition of a few feeds. Get these from "Table on Average Composition and Digestible Nutrients." See pages 433-453, 7th Abridged Edition in "Feeds and Feeding."
- g. Figure cost of a pound of:
  - 1. Total digestible nutrients in a few feeds.
  - 2. Digestible crude protein in a few feeds.

5. Determining a number of efficient and economical rations for the community.
  - a. Send for chart, "Grain Mixtures to Fit Your Roughage," Extension Service, Colorado State College, Fort Collins.
  - b. Record on blackboard a few rations being fed.
  - c. See chart mentioned above for calculating the digestible crude protein in the grain mixture of these rations.
  - d. Compare the digestible crude protein content of the local grain mixtures with the requirements given in the chart.
  - e. How efficient are the rations being fed?
  - f. How could the rations be improved?
  - g. A general guide for feeding producing cows.
    - 2½ lbs. hay for each 100 lbs. body weight.
    - Replace 1 lb. of hay with 3 lbs. of silage when fed.
    - 1 lb. of grain mixture for each 4 lbs. milk produced daily.
    - See F. B. 1626, "Feeding Dairy Cows."
  - h. How closely do local feeding methods compare with the above?
  - i. To what extent can the feeding practices be improved?
  
6. Providing ample suitable pasture.
  - a. Develop the importance of good pastures in economy in milk production.
    - A recent experiment at the Utah Station showed that 100 lbs. of total digestible nutrients furnished by:
      1. Irrigated pastures costs 29 cents
      2. Alfalfa hay costs 42 cents
      3. Silage costs \$1.32
      4. Barley (grain) costs \$1.68
  - b. Stress fact that pastures furnish protein, minerals and vitamins in ample quantities. Good pasture furnishes a succulent and palatable feed.
  - c. Secure from group success with different kinds of pastures.
  - d. For cows on good pasture feed approximately 1 lb. of grain mixture for each 4 lbs. milk produced daily.
    - See page 28, F. B. 1626, "Feeding Dairy Cows."
  - e. Suggestion for pasturing dairy cows.
    - Rotation of animals to prevent over grazing.
    - Temporary pastures for seasonal deficiencies in permanent pastures.
    - Prevent injury to pastures.

7. Increasing milk production through better care and management of the dairy herd.
  - a. Some factors are:
    1. Plenty of clean water easily accessible.
    2. Water tank heaters in winter.
    3. Regularity in feeding and milking.
    4. Kindness and gentleness in care.
    5. Comfortable surroundings.
    6. Proper length of dry period.
    7. Proper care of cow during dry period.
    8. Distribution of calving time for continuous and uniform milk flow.
  - b. Refer to Ch. 21 and 22, "Dairy Cattle and Milk Production."
  - c. Secure from group experiences with successful methods on care and management.
  - d. Determine possibilities of using labor saving methods in caring for the dairy herd.
  - e. See illustrated booklet on "Plan of Farm Buildings for Western States." It has plans for an economical cow shed and corral and for a hay rack. County agents have a copy.
  
8. Growing out good young stock.
  - a. Reasons for raising young stock.
    1. The average dairyman with ten cows needs two replacements a year.
    2. Culling and herd improvement necessitates the raising of additional young stock.
    3. Select heifers from best producers.
    4. Raising own replacements may avoid many disappointments.
  - b. Care of calf.

See Ch. 16 and 17, "Dairy Cattle and Milk Production."  
See Ch. 19 and 20, "Dairy Cattle Feeding and Management."
  - c. Care of growing heifer.

See Ch. 18 and 19, "Dairy Cattle and Milk Production."  
See Ch. 21, "Dairy Cattle Feeding and Management."
  - d. Obtain from group successful practices in raising calves and heifers.

9. Providing essential shelter.

- a. It pays to provide dairy calves with:
  1. Clean, comfortable quarters.
  2. Individual calf stanchions.
  3. Open pens, partially protected from wind, for exercise.
- b. It pays to provide the dairy heifer with:
  1. Clean, comfortable quarters.
  2. Open corral for exercise.
  3. A shed opened on one side for shelter.
  4. A means for watering.
- c. The dairy cow needs:
  1. A resting or loafing shed for protection from severe weather.
  2. A well drained corral with a rack for hay and a good supply of drinking water.
  3. A clean, well ventilated and lighted milking barn, free from drafts to prevent dust from getting in the air during milking.
- d. Have different men describe successful and economical ways of providing shelter.
- e. Pool experiences of group on housing and management of the herd sire. See Ch. 14 on selection, care, and management of the sire in "Dairy Cattle and Milk Production."
- f. See illustrated booklet in County Agent's office on "Plans of Farm Buildings for Western States." Send to Colorado Extension Service, Fort Collins, for list of available blue prints for these plans. Plan 5460 on a cattle shed, and 5464 on a cattle hayrack are excellent.

10. Providing labor saving devices and equipment.

- a. Have a discussion on how to economize on labor:
  1. In feeding dairy cows.
  2. In milking dairy cows.
  3. In cleaning the barn.
  4. In cleaning the corrals.
  5. In taking care of milk and cream.
- b. If possible, show film or pictures on labor saving devices and equipment. See page 9 of this outline.
- c. What suggestion do some members of group have on labor saving equipment? Have them describe it.
- d. Pool experiences on how labor can be economized in milk production.
- e. See:
  - Ch. 34 on milking machines in "Dairy Science," by Peterson
  - Ch. 31 on dairy barn equipment in "Dairy Cattle Feeding and Management."
  - "Plans of Farm Buildings for Western States."
  - Misc. Pub. 319, U.S.D.A., available in County Agent's office.
  - Plan 5464 shows an excellent corral hayrack.



11. Handling and care of equipment.

- a. This job could be handled with Job 10.
- b. Discuss operation and care of equipment to make last as long as possible.

Separator	Manure spreader
Milking machine	Milking pails and cans
Water heaters	
- c. Have group members relate particular schemes they have for efficiently caring for equipment.
- d. See Ch. 32 on production of high grade milk in "Dairy Cattle Feeding and Management."
- e. See illustrated booklet in County Agent's office on "Plans of Farm Buildings for Western States." It has plans for milk houses:-5502 and 5032. Blue prints for these can be purchased from the Extension Service, Colorado State College, Fort Collins.

12. Preventing and controlling diseases and pests.

- a. Some common dairy cattle diseases are:

Bang's disease	Lumpy jaw	Pink eye
Mastitis	Trichomoniasis	Acetonemia
Milk fever	Tuberculosis	Cowpox
Bloat	Foot rot	Ringworm
- b. Find out what diseases occur in the herds represented.
- c. Develop on blackboard a chart showing:
  1. The disease
  2. Symptoms
  3. Causes
  4. Preventive measures
  5. Cures
- d. It may be worthwhile to have a local veterinarian discuss this problem with the group.
- e. Some aids the farmer might have on hand for emergency cases:
  1. Clinical thermometer
  2. Drenching bottle
  3. Milk tube
  4. Trocar and cannula
  5. Syringe
- f. Some common dairy cattle pests are:
  1. Lice
  2. Flies
- g. Get experiences of group in controlling pests.
- h. See:

Ch. 24, "Common Ailments of Cattle in Dairy Cattle and Milk Production."  
Keeping Livestock Healthy, 1942 Yearbook, U.S.D.A.

13. Increasing production through use of better sires.

- a. Discover kinds of sires being used and compare production of off-spring.
- b. Factors to consider in selecting a good dairy bull.
  1. Pedigree
  2. Type
  3. Age of bull
  4. Production and type of half sisters
  5. Type and production of offspring.
- c. Discuss available sources, prices and possibilities of getting sons of "Proved Dairy Sires."  
See Misc. Pub. 487, U.S.D.A., "List of Sires Proved," in Dairy Herd Improvement Associations, June, 1942. 15 cents
- d. Discuss use of purebred bulls in grading up a dairy herd.

14. Producing high quality of milk.

- a. The high prices are a challenge for the production of high quality products.
- b. Factors in production of good milk and cream.
  1. Clean, healthy cows
  2. Clean, healthy milkers
  3. Clean barns and corrals
  4. Clean, sterile utensils
  5. Avoidance of dust during milking
  6. Proper and prompt cooling of product
  7. Frequent delivery of cream
- c. Demonstrate the sediment test, merely to show group that foreign matter in milk can be detected.
- d. Pool experiences of group on special methods used to get a high quality product.

Equipment	Methods of cooling product
Methods of cleaning cows, barns, and utensils	
- e. Determine local factors apt to cause bad flavors and ways and means of preventing these.

See:

Colorado Dairy Code, State Dairy Commissioner, Denver, Colorado

15. Determining ways and means of conserving labor in the production and marketing of milk and cream.

- a. Get opinions of group regarding more extensive cooperation in marketing milk and cream in order to save labor and transportation.
- b. Discover extent to which milking machines are used.
- c. Have a discussion on the advisability of more extensive use of milking machines.
- d. To what extent can labor and transportation be conserved in pooling purchases?
- e. Get opinions of group on other ways of conserving labor.
- f. Are there possibilities of getting emergency labor to help out during the war?
- g. Refer again to conclusions reached in Job 10.

16. Determining the advisability of increasing the size of the enterprise.

- a. Do the facilities of the farms represented lend themselves to an increase in size of the enterprise? To what extent? Consider:
  1. Feed produced
  2. Pasture available
  3. Shelter
  4. Equipment
  5. Capital available
  6. Labor
- b. What is the labor situation on the local farms?
- c. What are latest rulings of the Manpower Board on labor for dairy farms?
- d. Discuss the profitability of increasing the enterprise.
- e. Discuss availability and prices of good dairy stock.

17. Taking one or more tours of dairy farms.

- a. Plan for one or more dairy farm tours in connection with the course.
- b. Some Sunday afternoon would be a good time.
- c. Plan tour to conserve on use of cars and transportation.
- d. Do not neglect to make an outline on what is to be observed on each farm visited.

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