

*Miss. Series 127*

COLORADO STATE BOARD  
FOR  
VOCATIONAL EDUCATION

RURAL WAR PRODUCTION TRAINING PROGRAM

Course No. 14

INCREASING VEGETABLE PRODUCTION (Commercial)

Prepared in  
cooperation with the  
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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 Commercial Vegetable Production

### Suggestive Jobs or Problems for Meetings

1. The need for increased commercial vegetable production.
2. Determining the important factors influencing efficient commercial vegetable production.
3. Determining the advisability of and the extent to which commercial vegetable production could be increased profitably in the community.
4. Determining the things that might be done to improve or to increase commercial vegetable production in the community.
5. Determining the market facilities for commercial vegetables.
6. Determining the irrigation water needs and supply.
7. Determining the proper place of vegetables in efficient crop rotation.
8. Determining the kinds and varieties of vegetables to meet market demands.
9. Determining labor needs and supply and labor saving practices.
10. Determining the demand on soil fertility made by vegetable crops.
11. Determining ways and means of improving methods of seedbed preparation.
12. Using effective seed treatment methods and controlling vegetable diseases.
13. Growing plants in hotbeds and cold frames.
14. Planting and transplanting vegetable seeds and plants.
15. Cultivating vegetable crops.
16. Determining how to use and apply irrigation water efficiently.
17. Controlling insect pests.
18. Improving harvesting and packing methods to conserve labor.
19. Determining ways and means of conserving labor in marketing vegetable crops.

Note. This is merely a suggestive outline, prepared to enable an instructor to better 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-track 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 pests 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 numbers:

- No. 60 Round worms and swine sanitation.
- No. 52 Poultry housing in Colorado.
- No. 39 How insects attach 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.

## INCREASING COMMERCIAL VEGETABLE PRODUCTION

### Reference Material

#### Bulletins

1. Vegetable seed treatments. F. B. 1862, U.S.D.A.
2. Small irrigation pumping plants. F. B. 1856, U.S.D.A.
3. Containers for fruits and vegetables, F. B. 1821, U.S.D.A.
4. Culture and pests of field peas. F. B. 1803, U.S.D.A.
5. Hotbeds and coldframes. F. B. 1743, U.S.D.A.
6. Pea diseases and their control. F. B. 1735, U.S.D.A.
7. Bean diseases and their control. F. B. 1692, U.S.D.A.
8. Diseases of cabbage and related plants. F.B. 1439, U.S.D.A.
9. Damping off and its control. Colo. Extension Cir. D-8
10. Cutworm control. Colo. Extension Cir. 104-A
11. Vegetable crop pests. Colo. Extension Cir. D-6
12. Vegetable disease control. Colo. Extension Cir. D-9
13. Diseases of tomatoes and their control. Colo. Extension Circ. D-11
14. Field peas. Colo. Extension Circ. D-16
15. Diseases of peas and beans and their control. Colo. Extension Cir. D-21
16. Field beans in Colorado. Colo. Extension Cir. D-28
17. Standard varieties of vegetables for Colo. Cir. 22, Hort. Dept., C.S.C.
18. Asparagus. Cir. 20, Hort. Dept., Colo. State College
19. Growing baby lima beans. Cir 6, Hort. Dept., C.S.C.

#### Books

1. Vegetable Crops, Thompson; McGraw-Hill Book Co., \$5.00
2. Commercial Fruit and Vegetable Products. Cruess; McGraw-Hill, \$5.00
3. Vegetable Growing. Knott; Lea and Febiger, Philadelphia, \$3.25
4. Truck Crop Plants. Jones and Rosa; McGraw-Hill Book Co., \$5.00  
(Considered an excellent up-to-date book.)

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 COMMERCIAL VEGETABLE PRODUCTION

### Teaching Suggestions and Aids

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

1. The need for increased commercial vegetable production.
  - a. Get group acquainted.
  - b. Explain purpose of course and nature of meetings.
  - c. Explain the "conference procedure." See page 5.
  - d. Obtain data from County Committee on 1943 commercial vegetable goals and present this to group.
  - e. A preliminary survey of major commercial vegetables produced in community will help in deciding on vegetables to consider in course.
  - f. Obtain data from marketing agencies on 1943 needs.
  - g. "Food production is of equal importance with the production of planes, guns, and ships."
  
2. Determining the important factors influencing efficient commercial vegetable productions.
  - a. As far as possible get factors from the group and record on blackboard. Suggest others to complete list. In general these are in line with the jobs on page 3.
  - b. Make a table showing extent to which the factors are operating favorable or unfavorable.
  - c. Determine the factors which should be given special attention. These should largely determine the course content.
  
3. Determining the advisability of and the extent to which commercial vegetable production could be increased profitably in the community.
  - a. Might handle jobs 3 and 4 in one meeting.
  - b. Can vegetable production be increased in community?
  - c. Are local soil types suitable for increased vegetable production?
  - d. Is sufficient water and labor available?
  - e. What are the marketing facilities and outlets?
  - f. Can producers pool labor to increase production?

4. Determining the things that might be done to improve or to increase commercial vegetable production in the community.

a. Possibilities:

Pooling shipments.

Increasing soil fertility.

Planning a crop rotation system for better utilization of water and labor.

Pooling labor at critical periods.

Pooling transportation facilities.

Pooling of spraying equipment.

Pooling orders for supplies.

Possibilities of getting emergency labor.

Getting schools to assist. Using women, etc.

b. Rate these items in order of importance and practicability.

c. Is more extensive successive cropping possible?

(Two crops on same land in one season.)

d. Is companion cropping practiced? Get examples.

5. Determining the market facilities for commercial vegetables.

a. Determine the primary market outlets.

b. Determine the secondary market outlets.

c. What are the possibilities of improving marketing facilities and securing others?

d. What are the prospects of expanding market outlets or demands?

Advertising; trucking assembly points.

e. Consider the advisability of getting some buyers to attend this meeting.

6. Determining the irrigation water needs and supply.

a. Have group make an analysis of available water supply.

b. Can water supply be increased?

Pumping; renting additional water?

c. Consider fitting crops to seasonal water supply.

d. Develop a chart showing water demands of important vegetable crops grown in locality.

Peas and snap beans as early crops; potatoes and cabbage as late crops.

7. Determining the proper place of vegetables in efficient crop rotation.
  - a. Develop clear understanding of rotation of crops.
  - b. Bring out importance of crop rotation in vegetable production.
  - c. Get from group a few type rotations built around vegetable production as the important cash crop.
  - d. Bring out possibilities of livestock enterprises to increase soil fertility.
    - Pasturing sweet clover or alfalfa.
  - e. Discuss possibilities of feeding livestock for a source of manure as a by-product.
  - f. Develop a cropping system adapted to available equipment, labor, and water supply.
  
8. Determining the kinds and varieties of vegetables to meet market demands.
  - a. Develop a table showing seasonal market prices and local supplies for important crops.
  - b. Discuss varieties in accordance with market demands.
  - c. Secure from Horticulture Department, Colorado State College circular on suggested varieties of vegetables for Colorado.
  - d. Pool experiences of group on leading varieties grown and the success with these.
  
9. Determining labor needs and supply and labor saving practices.
  - a. Have group members determine regular and seasonal labor needs.
  - b. Consider local labor supply in comparison with needs.
  - c. Consider possibilities of labor saving practices.
  - d. Consider possibilities of more efficient use of labor supply.
  - e. Consider possibilities of imported labor, help from local employment service, changing school schedules, employment of women.

10. Determining the demand on soil fertility made by vegetable crops.
  - a. Start with a discussion of basic facts on soil fertility.
  - b. Bring out importance of soil fertility, in the production and quality of vegetable crops.
  - c. Bring out importance of organic matter.
  - d. Develop the proper use and place of commercial fertilizers.
  - e. Explain plant food demands of different vegetable crops. A chart might help out.
  - f. Bring out again the importance of crop rotation in maintaining soil fertility.
  - g. Explain importance of organic matter in improving ability of soil to absorb water and to give up water to the plants.
  - h. Pool experiences on making compost heaps.
  
11. Determining ways and means of improving methods of seedbed preparation.
  - a. Some important points:
    - A firm, compost and level seedbed free from clods is essential because the need for shallow planting.
    - Thorough seedbed preparation is the most important labor-saving practice.
    - Bring out importance of leveling because of the shallow irrigation ditches.
    - All organic matter should be turned under in fall, if possible; to be past the period of decomposition at planting time. This involves the availability of essential elements of plant food.
  - b. Pool experiences of group and operations in getting a good seedbed.
  
12. Using effective seed treatment methods and controlling vegetable diseases.
  - a. Send for circular on seed treatment published by Extension Pathologist, Extension Service, Colorado State College.
  - b. Discuss recommended treatments and practices.
  - c. Stress importance of doing a thorough job.
  - d. Refer to F. B. 1862, Vegetable Seed Treatments, Colorado Extension Circular D-9, Vegetable Disease Control.

13. Growing plants in hotbeds and cold frames.

- a. Refer to F. B. 1743, Hotbeds and Cold Frames; Colorado Extension Circular, D-8, Damping Off and its Control; Colorado Station Bulletin, 328, Hotbeds and Cold Frames.
- b. Pool experiences on soil mixtures and care and management of hotbeds and cold frames.
- c. Get and evaluate methods of conditioning plants for transplanting.

14. Planting and transplanting vegetable seeds and plants.

- a. Stress importance of planting at proper depths.
- b. See that planting machinery is in order and properly adjusted to prevent waste of seed.
- c. Develop proper spacing between rows.
- d. Pool experiences in transplanting and evaluate results.
- e. Develop procedures used in conditioning plants for transplanting.
- f. Pool experiences of group with plant protectors.

15. Cultivating vegetable crops.

- a. Develop ways and means of preventing crusting.
- b. Cultivation should be shallow.
- c. Cultivate only as often as necessary to kill weeds.
- d. Irrigation furrows should be far enough away from plants to prevent root pruning.
- e. Pool experiences on best tools and cultivating methods.
- f. Pool experiences on cultivation after irrigation.



16. Irrigating.

- a. Develop a chart showing water demands of various important vegetable crops grown in community.
- b. Bring out importance of light and frequent irrigation.
- c. Runs should be short so that not more than one hour is necessary to complete a set.

17. Controlling insects.

- a. Refer to: Colorado Extension Bulletin, 104-A, Cutworm Control; Bug News No. 3, by Sam McCampbell
- b. The two classes of insects: Sucking (aphids); Chewing (potato beetle)
- c. Control measures for sucking insects. (contact sprays)  
Wettable: Blackleaf 40; lime-sulphur; soaps and oils.  
Dust: Blackleaf 40 and hydrated lime; lime-sulphur.
- d. Control measures for chewing insects. (stomach poisons)  
Arsenate of lead; calcium arsenate; Paris green.
- e. Many good commercial products are no longer available. The problem is to make best use of what is available, and to use it most effectively.
- f. Job offers opportunity to pool experiences on: sprays used, time of spraying, methods and results.

18. Harvesting and packing commercial vegetables

- a. Develop with group ways and means of conserving labor in harvesting and packing.
- b. Discuss possibilities of pooling labor.
- c. Develop importance of proper stage of maturity.
- d. Develop pre-cooling practices if used in locality.
- e. Stress should be given to prevent injury from bruising, rough handling and mechanical injury from harvesting machinery.
- f. Might consider storage in connection with this job.

19. Conserving labor in marketing.

Some possibilities:

- a. Community packing sheds.
- b. Pooling of transportation to markets.
- c. Assembly points for loading or sales.
- d. Get examples of instances where labor could have been conserved.

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