

War Time Production of Poultry and Eggs

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Fig. 1.—Eggs in Abundance. This flock raised according to the essentials given in this Circular produced 82 eggs per hen in 123 days, from October 1 to January 31 this year, under practical farm conditions.

Poultry has a place on every Missouri farm. The flock may be small and intended to supply the family with nutritious eggs and poultry meat in abundance, or it may be considered as one of several livestock enterprises that are the major sources of net farm income.

The housing of 5 good pullets each fall for every member of the family will insure all the eggs needed for home use. Enough poultry meat will also be available because the culling of poorer individuals, combined with broilers raised along with pullets each year, make it possible to serve poultry meat once each week as an

essential part of complete food planning for family health and nutrition. Some canning of poultry meat or the use of a freezer locker may be desirable to spread the consumption of broilers over a longer period. The supply of eggs, however, from daily production will be adequate throughout the year if good production practices are followed.

On those farms where poultry is kept in larger numbers to provide a surplus for market, ample supplies of eggs and poultry meat should always be available for family use.

The larger percentage of Missouri producers keep more poultry than is needed for home use. In many instances the number kept is too great for the amount and kind of equipment provided and yet is not large enough to comprise an economical unit for market production.

Under war conditions, the need for eggs makes it logical to suggest that flock size be determined by the amount of housing capacity available for the laying flock. This may be determined by calculating the number of square feet of floor space in the laying house and dividing this figure by 3 or 4, since this number of square feet of floor space is necessary for each layer.

After flock size has been determined on this basis, it is then possible to base all production plans and practices on the flock of the size that can be comfortably housed.

The next step involves a careful examination of all production and marketing practices to insure the most efficient use of feed and labor for the production of larger supplies of poultry products, principally eggs.

A monthly standard of egg production per hen is given, as a measure of the minimum level of efficiency that should satisfy any producer who wants to do his or her part in the war time food production program.

Month	Eggs per Hen	Home Supply from 5 Hens
October	9	45
November	9	45
December	10	50
January	10	50
February	12	60
March	18	90
April	18	90
May	18	90
June	15	75
July	12	60
August	11	55
September	10	50

Total Production per Hen 152 Eggs.

These levels of egg production are easily obtainable and will provide at least an egg a day for each member of the family on the basis of 5 hens for each person, and a small marketable surplus as a margin of safety for home food supplies. Higher levels of production can be reached as a means of paying feed costs for producing home needs and the surplus for market. The number of eggs one person should consume in a year has an average farm value of \$6.00 or more and the average amount of poultry meat consumed has a farm value of \$10.00 or more. If purchased at retail prices, this food would cost \$23.00 or more a year for one person.

The amount and kind of equipment available for poultry production largely determines the success that can be attained. This equipment need not be expensive and practically all of it may be made on the farm. A war time scarcity of certain materials makes it desirable to build the needed equipment at home. Lower costs are also involved.

Equipment available and the production practices that can be used are closely related. The following list has been prepared to enable the checking of existing equipment against that which is needed. Standard or essential production practices are also listed to permit a comparison of present procedure with that necessary for successful poultry raising as measured by net profits.

Check List of Essential Poultry Equipment and Practices

A. Equipment for Chicks and Young Stock

1. Enough feeders and water fountains.
 - a. Two chick size feeders 3 feet long for each 100 chicks to 5-6 weeks.
 - b. Three intermediate size feeders (3 feet long) from 5-6 weeks to 3 months of age, for each 100 chicks.
 - c. One 3-gallon fountain per 100 chicks. (With small flocks of 25-50 chicks the fountain may be used throughout the growing period.)
 - d. Three 4-foot range feeders for each 125 pullets.
 - e. One barrel water fountain for each 125 pullets.
2. Range Shelters.
 - a. One 9x12 in size for each 125 pullets 12 weeks to maturity (or)
 - b. Small range shelter 4x6 for family size flock of 25 to 30 pullets.

3. Dependable Brooder Unit.
 - a. Coal, wood, drum-type oil stoves or electric brooders.
 - b. Homemade electric or wood burning units.

B. Equipment for Laying Flock

1. Comfortable Laying House.
 - a. Well ventilated—without drafts—one square foot of ventilation space for each 15 square feet of floor space.
 - b. Tight walls and ceiling or roof insulation.
 - c. Roosts—on level—with 2 to 4 feet of space above the birds when roosting. Allow 6 to 8 inches of roosting space per bird.
 - d. Nests—one for 4 to 5 hens.
 - e. Floor space—not crowded—at least 3 square feet per bird.
 - f. Water-tight concrete floor.
 - g. Heater type water fountain. One of 5-8 gallon capacity per 100 hens.
 - h. Feeders—2 mash hoppers 5 feet long, feeding from both sides for 100 hens.
 - i. One 10-foot grain and wet mash trough per 100 hens.
 - j. Culling corral.
2. Yarding System: Only $\frac{1}{4}$ acre is required per 100 hens, but this amount is necessary to permit development of a practical sanitation program.

C. Standard Production Practices

1. Hatch early; heavy breeds in February and March, light breeds in March and April.
2. Secure chicks from production bred parent stock that has been tested carefully for pullorum disease. Carefully selected females should be mated with males whose dams have produced at least 200 eggs in 12 months.
3. Do not over-crowd brooding quarters—provide a minimum of 40 square feet of floor space per 100 chicks.
4. Supply complete rations of good quality constantly.
 - a. Begin with an all-mash chick starter for first 8 weeks.
 - b. Change to growing mash and grain, fed free choice in hoppers, for pullets until they reach maturity.
 - c. Supply a good quality laying mash constantly without a shortage at any time.
 - d. Feed grain night and morning during the winter months and only at night during summer months. (In the case

of light breeds or with special feeding programs, provide a constant supply of grain in hoppers.)

5. Avoid parasite infestation and infection.
 - a. Brood chicks on clean ground, using a three-year rotation of brooding ranges. A range shelter may be used for confinement brooding to 8 weeks as a sun porch. Then move the shelter to clean ground—used for poultry only once in three years.
6. Protect brooding ranges from contamination—do not spread poultry manure on these areas.
7. Use lye water, at the rate of 1 can of lye to 12 gallons of cold water, as a standard disinfectant in brooder houses, laying houses, and for disinfecting other equipment, such as feeders, culling coops, etc. Disinfect all market coops before taking them to the laying house or brooder house and upon returning them to the farm.
8. House pullets in permanent laying quarters as soon as the daily egg production reaches 5 per cent of the total number of pullets.
9. Allow the onset of laying to occur naturally, without the use of forcing practices. Withhold the use of wet laying mash as a noon feeding practice until cold weather arrives. Continue it from the onset of cold weather through April 1, when it should be discontinued gradually and again resumed in June with the adult flock.
10. Provide one per cent fish oil or other Vitamin D supplement in the laying ration from October 1 to April 1.
11. Confine the laying flock around the kind of feed required to produce eggs until noon each day during the breeding season and throughout the summer months.
12. Confine the pullet flock in the laying house from housing time until early spring.
13. Cull the laying flock at least once each month (twice a month preferably during the months of June, July, August, and September). In addition, remove any birds that go out of condition as rapidly as they appear.
14. Avoid the use of mineral mixtures, worm preparations and other nostrums. (Healthy pullets should not be wormed when blood testing is done.)
15. Quarantine any adult stock brought onto the farm for at least two weeks before placing them with the flock. This

also applies to birds returned from poultry shows, laying contests, etc.

16. Dispose of all diseased birds by burning.
17. Disinfect all coops (owned or borrowed) each time they are brought on the farm.
18. Feed all grain in troughs or hoppers.
19. Seed cereals (wheat, oats, and barley) in a mixture in adult flock yards at rate of $3\frac{1}{2}$ -4 bushels per acre. Rotate ranges for increased pasturage.
20. Provide legume hay in racks for birds during winter months.
21. Control lice and mites. Exclude sparrows from poultry houses. Clean up thoroughly and these parasites can be avoided.
22. Control fowl pox. If the disease has occurred in the neighborhood, vaccinate pullets when they are 10-12 weeks old. Consult your county extension agent for details.

Feeding and Watering Equipment

The feeding and watering equipment suggested is important, because steady, rapid growth depends upon ample supplies of feed that must be available without making it necessary for the chicks and young growing stock to trample on each other to get it, or to go without feed or water. The equipment used must avoid feed waste, since 65% of total cost of raising young stock is feed cost. Plans for making this equipment are given in Extension Circular 419, "Homemade Poultry Equipment."

Range Shelters

Most mortality in young stock and much of the disappointing and profit taking experiences of low egg production and high adult mortality are directly traceable to parasite and disease problems encountered in raising chicks.

A range shelter is the all-around answer to this problem because it is easy to move it to uncontaminated ground after it has been used as a sun porch for confinement raising near the dwelling, during the first 8-10 weeks. See Figure 2.

For family size flocks a combination brooder, sun porch and range shelter can be made at a cost of \$10.00 or less. This includes a brooding unit for 50 chicks and range roosting quarters, since the combination sun porch and shelter is 4x6 feet in size. See Figure 3.

The range shelter for 125 pullets is 9x12 feet in size. It is likewise easily moved and may be used in conjunction with the brooder house as a sun porch.

Unless this type of equipment is provided it is practically impossible to raise thrifty, profitable pullets.

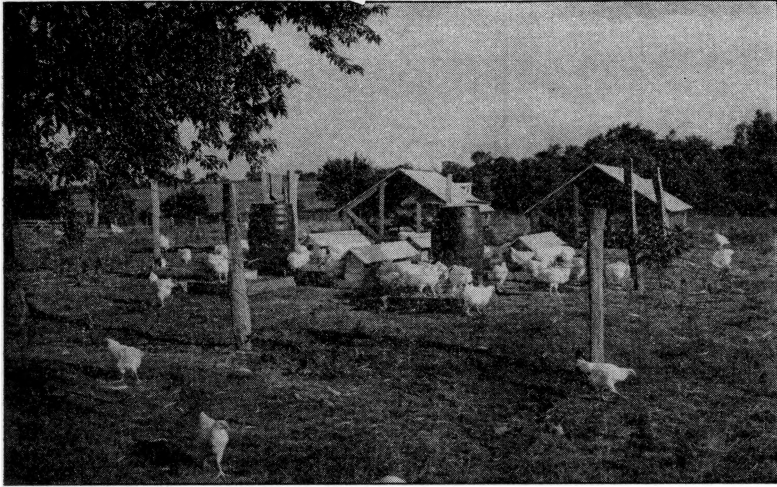


Fig. 2.—The range shelter can be located in a pasture or edge of some cultivated field such as corn. A few strands of barbed wire or woven wire will keep other livestock away.

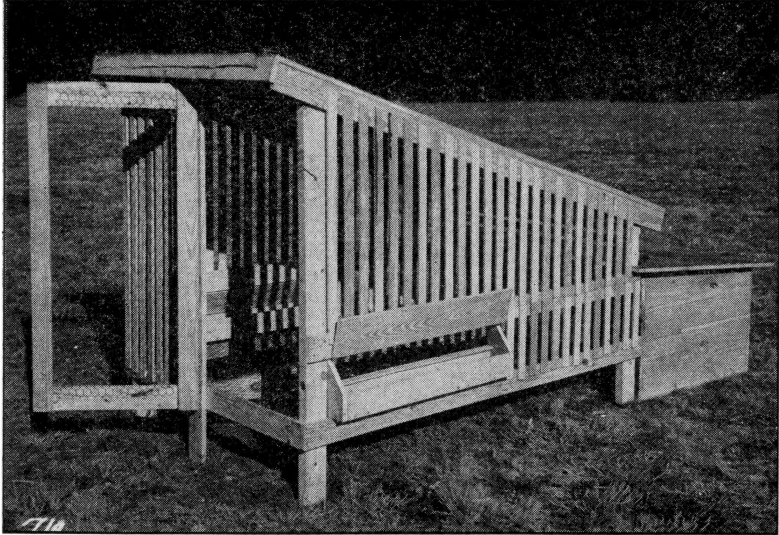


Fig. 3.—A combination brooder house, sunporch and range shelter for a family size flock.

Both of the above types of shelters may be built with temporary roofs. The sides and ends may be made of plaster lath,

or cotton or burlap sacks, instead of poultry netting. This reduces costs and saves vital war metals. A total of 15 feet of inch mesh poultry netting, 2 feet in width, is required for the small shelter and 36 feet of inch mesh netting 3 feet in width is required for the larger shelter.

Range Feeding and Watering Equipment

Range feeders and barrel water fountains equipped with an inexpensive float valve save much labor, by reducing the number of times it is necessary to visit the summer range. (Figures 4 and 5.) They also insure plenty of available water and avoid feed waste and spoilage.

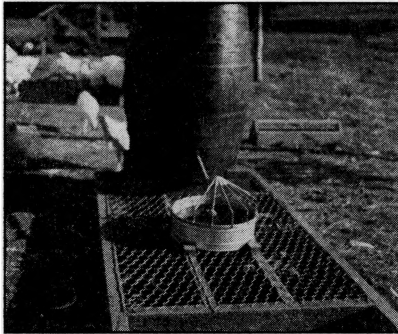


Fig. 4.—This type of range water fountain reduces labor and is easy to construct. The cost of needle valve and float is about \$1.00.

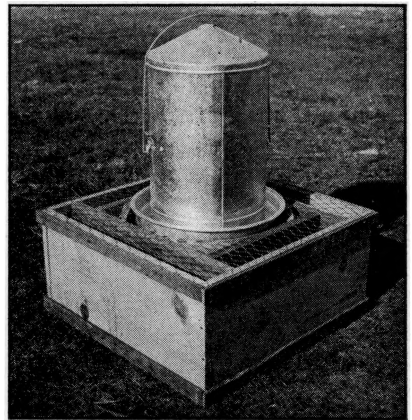


Fig. 5.—One water fountain of this type, which has a kerosene heater for winter use, is necessary for each 100 hens.

Dependable Brooder Units

Brooding chicks without chilling or overheating depends on the right kind of heating equipment. Overheating is just as serious a fault as chilling.

The brooder unit for the family flock depends upon either kerosene lamps or electric units. Electric units for homemade brooders may be purchased or two electric lamp bulbs may be used. One 150-watt flood lamp and a 250-watt R-40 Drying Bulb may be used for this purpose.

Homemade wood burning units may be made from one 50-gallon and one 30-gallon oil drum, with a few lengths of pipe.

Comfortable Laying House

Comfort in the laying house depends on tight walls, roof insulation, and adequate ventilation. Roof insulation can be effected by packing straw between rafters. Straw walls 12 inches thick are quite satisfactory and roofing paper tacked on the outside of a building will make old walls draft-proof and warm.

The opening on the south side of the house should be calculated to provide 1 square foot of ventilation area for each 15 square feet of floor space. In houses less than 18 or 20 feet in depth the chickens should be protected from draft by placing a muslin covered frame in the opening. This frame should be hinged at the bottom and left open from the top. In this way the fresh air that enters the house does not cause a draft over the roosts in houses that lack depth. These frames should be removed during the period from April through October. The opening should be located at a height of 2 feet from the inside floor level.

Roosts.—The laying flock should not be forced to breathe the foul air that accumulates along the ceiling. For this reason the roosts should be placed at a height that permits a 2 to 4 foot space above the birds when they are perched on the roosts.

Floor Space.—Crowding must be avoided and a minimum of 3 square feet of floor space provided for each hen. Less space results in faulty ventilation and too much competition. Diseases and poor production result in higher costs, less profit and fewer eggs than can be obtained when proper amounts of floor space are provided. This essential cannot be emphasized too strongly in this war emergency, when the tendency is toward attempting to keep too many chickens with existing equipment. Both purposes for keeping larger flocks—that is, profits and larger production—are defeated by overcrowding.

Furniture for Biddy.—Nests and the amounts of feeding and watering equipment must equal the minimum figures given in the check list. Lesser amounts constitute over-crowding, with consequent lower production.

Culling and the Culling Corral.—Culling is a continuous process, which is simply done by removing the hens as they stop laying from any one of several causes. Prompt culling saves feed, and culling is more likely to be promptly done if an easy means of catching the birds is at hand. Plans for this equipment are given in Extension Circular 419, "Homemade Poultry Equipment."

Yarding System

Mature birds do not require large amounts of range. An area of $\frac{1}{4}$ acre per hundred hens is adequate. Rotation of yards is desirable, but one yard is far better than none. This yarding program makes it possible to develop and keep clean range locations for young stock near the dwelling. Nearby locations provide for the use of this basic sanitation principle, which is consistently ignored if such range cannot be provided easily.

Standard Production Practices

Raising Young Stock.—Early hatching is necessary to provide a year-around supply of eggs and to permit the sale of a larger portion of annual production at higher prices, in the early fall months. Success with early hatched chicks depends upon production breeding and thrifty growth of quality pullets. This cannot be achieved if they are crowded in brooding and growing quarters, poorly fed, and infested with parasites.

The use of all of the production practices involved depends upon the equipment previously listed and discussed.

Managing the Laying Flock.—Management of the laying flock is comparatively simple when good pullets are placed in a comfortable laying house just as the onset of laying begins.

A continuous supply of laying mash every day in the year, plus grain, will result in profitable egg production. Sixty-five per cent of total feed requirements is used for body maintenance and this utilization takes place before egg production can be expected. Economical feeding, therefore, means full feeding, and any reduction in feed supply results in fewer eggs.

More eggs can be obtained by confining the hens within the laying house until noon each day. This insures adequate laying mash consumption and makes it possible to yard the flock successfully with ordinary 5 foot poultry fencing. Chickens allowed early morning range are difficult to pen because they search for food.

Supplementary Management Practices

Moist Mash.—Moist laying mash mixed with hot water during the period from December to April and with cold water from June through the period of molt in the fall aids in securing more winter and summer eggs. Enough water should be added to make a crumbly, but not sticky, feed. This mash should be given at noon in amounts that will be consumed in 15 minutes.

This practice should not be used with pullet flocks starting to lay and should be discontinued gradually over a 7-10 day period in spring.

Artificial Lights.—Artificial lights may be used to get more eggs in the winter and to delay molt in the fall. Lighting of mature hens should be started about the first of August to delay molting for a larger percentage of the flock until November. Pullet flocks may be lighted in October. After the use of lights has been started it must be continued until late March or early April, and then discontinued gradually. A total of 12 to 14 hours of feeding time is usually provided.

Avoid Egg Waste

More than a million dollars are lost each summer and fall in Missouri, due to the production of fertile eggs. These fertile eggs become inedible in 48 to 72 hours, with the temperatures normally prevailing at that time of year, unless care is taken to cool them promptly and store them in a cool cellar or basement and market them twice each week. This loss is serious enough during peace times, but is absolutely inexcusable in the war emergency.

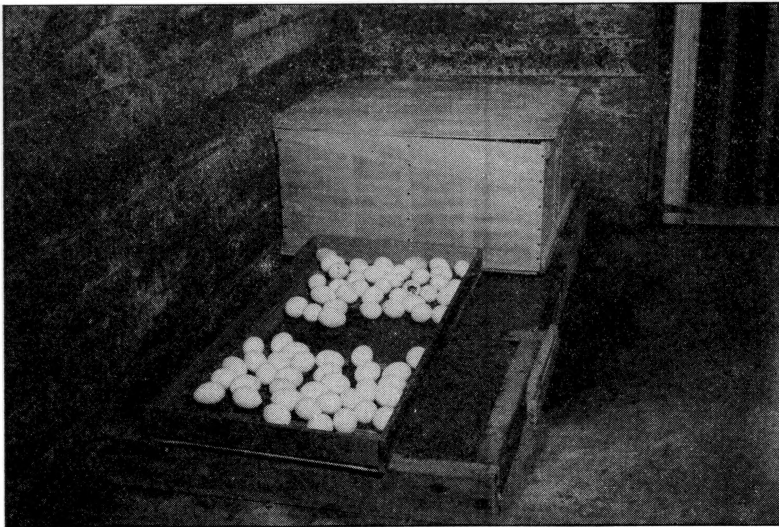


Fig. 6.—The cooling and storage of eggs in this manner helps to maintain quality and avoids waste.

The loss of every egg that becomes inedible or is otherwise wasted because of careless handling and breakage on the farm or in the marketing process robs some refugee child of his egg ration of one egg a week, in contrast to our own adequate supply.

Maintenance of quality can be assured by the production of infertile eggs gathered three times daily and cooled quickly in wire bottom trays in a cool cellar or basement. The tray should be placed over a bed of moist sand 6 inches in depth. The sand should be kept loose and moistened daily. After the eggs have cooled overnight they should be placed in a case and marketed twice each week. See Figure 6.

Male birds should be confined away from the flock or sold on the market as soon as the hatching season is over, dependent upon their breeding value.

Culling.—Culling is a simple but continuous process. Non-layers can be quickly identified by the dried and shriveled appearance of the comb, which is covered with white scales. During the summer months those hens that show the dried comb characteristic may also show evidence of molt. During the spring months those hens that go broody more than three times should be marketed.

These few considerations are all that need to concern the producer interested in securing a minimum of 50% egg production by proper feeding and the elimination of the boarder hens, every one of which, if allowed to remain in the flock, would require profits from two good layers to pay her feed costs.

All the other finer points of culling are of little importance in the business of producing more eggs profitably and without waste in the war emergency.

More complete information on all of these points is presented in other publications of the University of Missouri College of Agriculture, some of which are listed below.

Extension Circular 419, Poultry Equipment Made At Home

Extension Circular 404, Missouri Range Shelter

Extension Circular 446, A Combination Brooder and Range Shelter

Extension Circular 384, Poultry House Remodeling

Extension Circular 429, Low Cost Poultry Housing

Extension Circular 424, Feeding for Egg Production

Extension Circular 188, Culling for Egg Production

Extension Circular 428, Quality Egg Production and Marketing

Extension Circular 445, Control of Fowl Pox

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