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The Small Poultry Flock

FOR MEAT, EGGS, YOUTH PROJECTS

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Increasing food prices have resulted in renewed interest in family production of fryers and eggs. It must be remembered that increased food prices have resulted from increased production costs. This is true for poultry as well as other areas of agriculture. Livestock and poultry feeds are much higher in cost than the recent past. Therefore, if you are planning to enter or return to a small family poultry enterprise, don't expect to produce eggs or meat at very low costs. However, you do have some advantages, especially if you presently have a building that can be utilized. Your labor will be supplied by the family and can be an enjoyable experience for children and also used in youth projects such as 4-H and Scouting. Feed costs can be reduced by use of table scraps.

Before you decide to start a poultry flock, find out about zoning ordinances in your area. Check with your County Agricultural Agent relative to possible restrictions and also other problems you might encounter.

To be successful you should:

1. Select the proper breed of poultry.
2. Have a satisfactory poultry house.
3. Follow good management practices during brooding, rearing and laying periods. This is especially important to prevent or control poultry diseases.
4. Use complete well-balanced feeds.

Each of these important areas of production is briefly discussed in this bulletin. For additional information, contact your County Agricultural Extension Agent.

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The author of this publication, C.F. Petersen, is a professor and poultry scientist, Department of Animal Industries, and poultry specialist, Cooperative Extension Service.

Select a Desirable Breed

Selection of a desirable breed will be determined by whether you are interested in egg or fryer production or both.

For **egg production,** choose White Leghorns for both rate and economy of production. **For fryer production,** use a strain specifically bred for meatiness and rapid growth. Most Idaho hatcheries can supply fryer or broiler-strain chicks.

If you are interested in both fryers and layers, purchase sexed female Leghorn chicks for layers and a broiler strain for fryers. The dual purpose breeds, such as New Hampshire and White or Barred Plymouth Rocks, are satisfactory although more difficult to obtain today because of specialization for egg or meat production. Cockerels from these breeds can be grown for meat production and the pullets kept for egg production. These breeds consume more feed and generally do not lay as well as Leghorns.

If possible, pick up your chicks from an area hatchery or feed dealer. This prevents the possibility of chicks becoming chilled or contracting diseases through express travel. Your local hatcheryman or feed dealer can also be of service by answering your questions and supplying needed supplies and feed.

Provide Satisfactory Housing

Many types of houses are satisfactory. Major considerations should include floor space, insulation, ventilation, lights and floor or cage management for layers.

Floor Space

This will be determined by the size of flock. Provide about 1 square foot of floor space per bird if you are interested in raising broilers or fryers. This will also be satisfactory if you start with equal numbers of both sexes, using the cockerels for fryers and keeping the pullets for layers, especially if an outside run is available. Three square feet per bird should be provided for layers.

Insulation

A well insulated building is desirable to assure adequate warmth during cold weather. The house should be warm enough to maintain temperature at a minimum of 50°F during winter months. If temperatures are lower, more feed will be required to maintain the birds and egg production will decline or stop. Large buildings with small numbers of birds are difficult to keep warm. They will need supplementary heat. The walls and ceiling of any single wall structure will need insulation.

Ventilation

Ventilation is extremely important to remove moisture produced by respiration, droppings and watering equipment. The tighter the house, the more important ventilation becomes, especially during cold weather. Inadequate ventilation will result in damp litter and increased disease hazards.

Fig. 1. Practical application of some important housing features: The entrance to a community type nest is at lower left. Ventilation fan is in the back wall and a light, properly shaded, is over the feed and water area. Feed and water are installed on the roost area to help keep the litter dry and clean, and the roosting rack itself — flat, elevated and screened — helps keep the birds away from droppings. A supply of water is kept in the can on the wall.

Controlled ventilation can be supplied by a small exhaust fan located in one wall of the house near the ceiling and opposite from the air intake area. Intake area should be about 100 square inches per 500 cfm (cubic feet per minute) fan capacity. A 6-to-8 inch fan will supply about 500 to 800 cfm. This fan capacity will be adequate for 100 to 125 hens. The intake area should be fairly narrow (3 to 4 inches deep) and of sufficient length to provide adequate intake. The area should be adjustable to permit restriction during cold weather. The fan should be installed with a thermostat to permit adjustment depending on internal and external temperatures.

Gravity ventilation can be utilized by installing a flue through the ceiling and roof to a cupola above. This system works on the principle that warm air (containing more moisture) rises and is exhausted through the flue. Flue size should be about 50 square inches (7 x 7 inch) for each 100 square feet of floor space. It should be installed to permit restriction of the opening during colder weather. Air intake areas should be provided as with fan ventilation.

Lights

Lights are not necessary for brooding fryer or pullet chicks if the house has windows. Supplementary lights are advised for laying hens, since 14 hours of light increases egg production by stimulating the ovaries. Install a 40 to 60 watt light 6 to 7 feet above the floor for every 200 square feet of floor area. For convenience, install a clock in the light circuit to turn the lights on in the morning at a time that will allow 14 hours of light ending with dusk.

Floor or Cage Management

Strict sanitation is necessary in a floor operation. This method is almost always used for raising fryers and young pullets for layers. Clean the house completely between broods or flocks. Follow this with a good disinfectant. Creosote products are commonly used. Shavings and sawdust are preferred for litter since they absorb more moisture than straw. Straw is satisfactory if chopped. Dry litter is essential for bird comfort and disease prevention. To help keep litter dry, provide ventilation and prevent water spillage.

The roosting area should be screened from the birds using poultry netting or 1 x 2 inch or 1 x 4 inch galvanized wire netting. Hexagonal poultry netting will last for only about 2 years. The heavier wire netting will last for several years. Provide 8 inches of roost area per bird with the roosting poles 14 inches apart and 18 to 24" above the floor. Roosts are not necessary for fryer production.

Cages

Cages for layers have an advantage because they can be installed in any satisfactory building such as a garage or work shop. The 8-inch wide cage is recommended for one-bird cages. The hen in a cage depends upon you for water, food and comfort. Flies can be a problem. You will need to spray the droppings once a week during fly season. For fly control, obtain Current Information Series 196 from your County Agent. If you do not have a poultry house available and you are interested only in producing eggs, you may prefer to use cages. It is then advisable to purchase young pullets 20 to 22 weeks of age or yearling hens from a commercial poultryman.

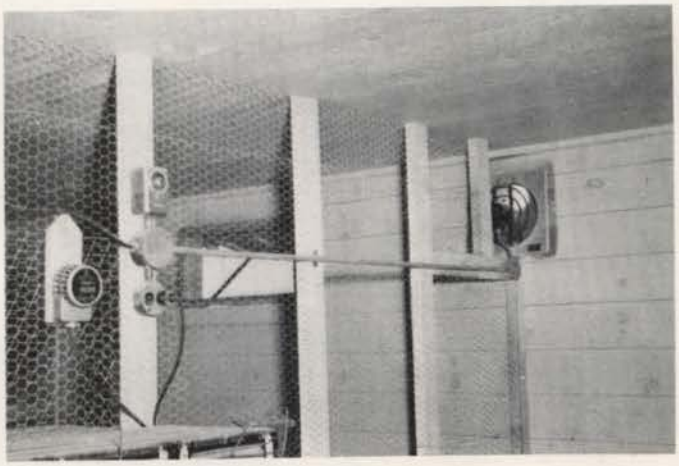

Fig. 2. Properly installed ventilation equipment with exhaust fan in the side wall wired through a thermostat and timer to control fan operation. Intake openings for fresh air are located on the wall opposite the fan. Note the window in background. This can be used in place of the fan in warm weather.

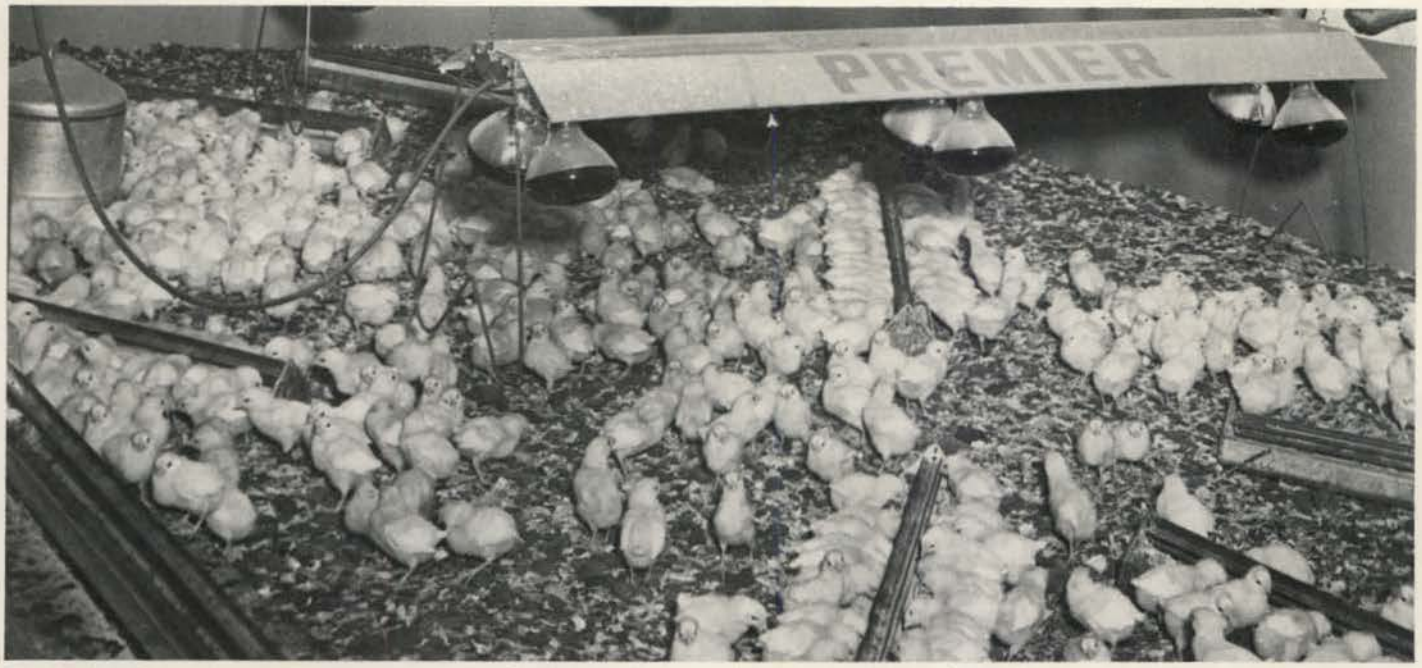

Fig. 3. A desirable brooding arrangement. Note feeder and waterer placement and use of the chick guard to keep the chicks near the source of heat.

Care for the Chick

Brooder Selection

Gas, electric and infrared lamps are good sources of heat for brooding chicks. Gas is used for most commercial operations but the initial cost will be higher. Electric brooders and infrared lamps work in a well-insulated house but should not be used during winter months without an additional source of heat. They are satisfactory for late spring and summer brooding. They can be purchased in single or multiple lamp units with or without frames and with or without thermostats. Infrared lamps come in 125-, 250-, and 375-watt sizes. The 250-watt size is most commonly used for poultry brooding. One will accommodate up to 100 day-old chicks.

Suspend the lamp so that no surface of the lamp can get closer than 15 inches from the litter. Depending upon house temperature, the lamp should be 18 to 24 inches above the litter for day-old chicks and raised as the environmental temperature and age of birds increase. Let the chicks tell you when the temperature is right. They are cold if they crowd under the lamp. Supply more heat by lowering the lamp (no closer than 15 inches) or add more lamps. If the chicks are too warm, they will move away from the heat, to their comfort zone. Raise the lamp, use a smaller one or turn it off during the warm part of the day.

Some precautions to consider with these lamps include:

1. Use porcelain sockets approved for infrared lamps.
2. Support the lamp or brooder with a chain or wire. Do not use the cord that carries the electricity.
3. Use 3-wire cord with ground wire attached to the metal lamp shield and terminated with ground-type connectors and outlets.
4. Be certain that the wiring to the house is adequate for the number of lamps to be used.
5. Keep spare lamp and fuses on hand.
6. Check lamps regularly to make sure they are screwed firmly into the sockets.

Preparation for Brooding

Prepare brooder house for chicks several days before you purchase them. The litter should be 3 to 4 inches deep. Add more as needed and remove wet spots around watering equipment and feeders. Stirring litter weekly will help keep it loose and increase moisture absorption. Place water and feeders near brooder. For the first week place a metal or cardboard chick guard 12 to 18 inches high around the brooder to prevent floor drafts and to confine chicks to the "comfort zone." Have the brooder heat source operating for at least 24 hours before chicks arrive.

Provide the chicks with a starter mash in feeders and clean water in drinking fountains. Allow 1 inch of space at feeds and ½ inch at drinking fountains for each bird. As the chicks grow, feeder and water space must be increased. The size and especially the depth of the feeders must be increased to prevent feed waste as the chicks grow older. Keep mash and water available at all times.

Finishing Broilers or Fryers

Modern broiler breeds will reach an average weight of 4 pounds or more in 8 to 10 weeks. They can be finished in the same space allowed for early brooding if floor space available is approximately 1 square foot per bird. They should be changed from a starter to a finisher feed at about 5 weeks of age. With good housing, management and absence of disease, each bird will consume about 10 pounds of feed from day-old to 8 or 9 weeks of age.

Young growing birds from 8 weeks of age to laying age (about 20 to 24 weeks) generally receive the least attention. The result may be occurrence of disease and lack of uniformity in sexual development. Continue to supply comfortable dry quarters and a complete grower or developer

feed. You can supplement this with grass clippings and table scraps. If table scraps are fed, they should be fresh and clean. Do not feed amounts that will not be consumed within a relatively short period of time. High moisture foods will spoil rapidly in warm weather and can result in sickness and death from toxin poisoning.

Outside runs, especially if they are grasses, will be beneficial to birds. They will reduce feed cost and help avoid the concentration of birds that leads to wet litter and cannibalism. Wet areas or stagnant water increase disease hazards and are undesirable.

Care of Layers

The modern hen is bred to lay at a high rate if you manage your flock properly. Begin the 14-hour light schedule when production rate reaches about 20 percent. Cull the flock regularly to remove unthrifty or unhealthy birds. Provide 4 to 6 inches of feeder space per bird.

Since feed represents from 2/3 to 3/4 of the total cost of egg production, it is important to prevent feed waste. Be sure your feeders do not leak and that birds do not "bill" feed out of the feeder. Feeders should never be filled over half full to prevent waste. They should be a minimum of 4 inches deep, preferably 6 inches.

Provide one nest for every 4 birds. Most producers prefer individual nests because the closed community nest is hot, eggs get dirty and broken and usually more floor eggs result. Keep the nests filled with dry clean litter. Cleaner eggs and less breakage will occur if eggs are gathered 2 or 3 times each day.

Poultry litter must be kept dry. This is more difficult during cold weather. An insulated house is essential to confine heat produced by the birds. Adequate and controlled ventilation is necessary to remove moisture produced. The dropping pit must be wired off to keep the manure away from the birds. Enlarging this area and placing some or all of the feed and water over the dropping pit will markedly reduce the wet litter problem. Stir weekly and if the litter does become wet and caked, remove and replace as needed during winter months.

Cannibalism

Featherpicking and cannibalism can occur at any age. Overcrowding, inadequate feeder and water space and houses that are poorly ventilated and too warm are generally responsible.

If this habit develops and management changes do not improve the situation the most general practice is to debeak all birds. Birds can be debeaked at any age but it is not generally recommended during the first few weeks because of the added stress it places on young chicks. Unless cannibalism develops earlier in the growing period, debeak pullets at 16 to 18 weeks of age, before sexual maturity.

Obtain an electric debeaker from your hatchery or feed supplier. These can generally be rented at low cost. They are desirable because they cauterize as they burn the beak, resulting in little or no discomfort. A knife or sharp heavy scissors can be used but bleeding will occur. Those tools also do not allow you to remove enough of the beak.

Hold the bird in one hand and with the other hand, grasp the neck near the head. Part the upper and lower beaks with your forefinger, keeping the tongue under the finger. Be careful not to shut off breathing with the fingers under the throat. Place upper beak over debeaker beak support and bring the hot knife slowly down through the beak, cauterizing as it burns. If the beak bleeds, push it against the hot cutting surface to cauterize. Remove ½ to 2/3 of the upper beak and the tip of the lower beak. Debeaking will prevent picking for 5 months or longer.

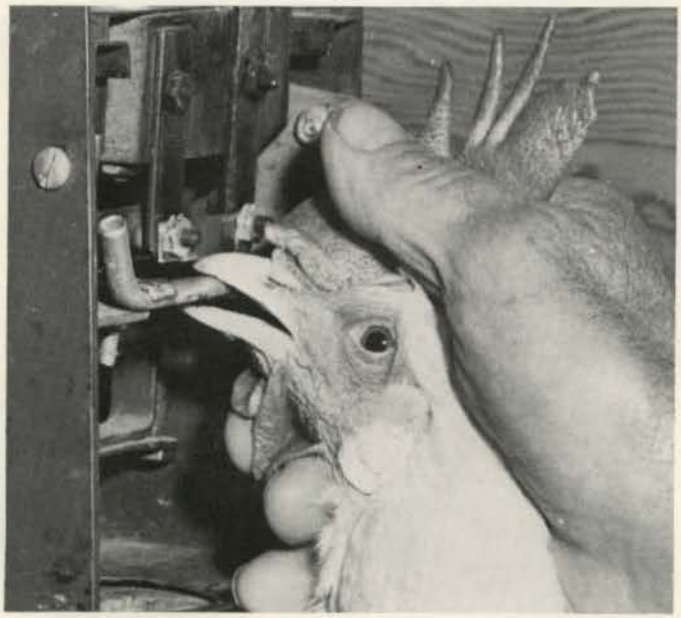

Fig. 4. Debeaking birds will reduce feather picking and cannibalism. Most practical method of debeaking is to use an electrical debeaker as shown here.

Fig. 5. Correct debeaking will remove about half of the upper beak, as shown here. Debeaking may be done at any age but should be done before laying begins.

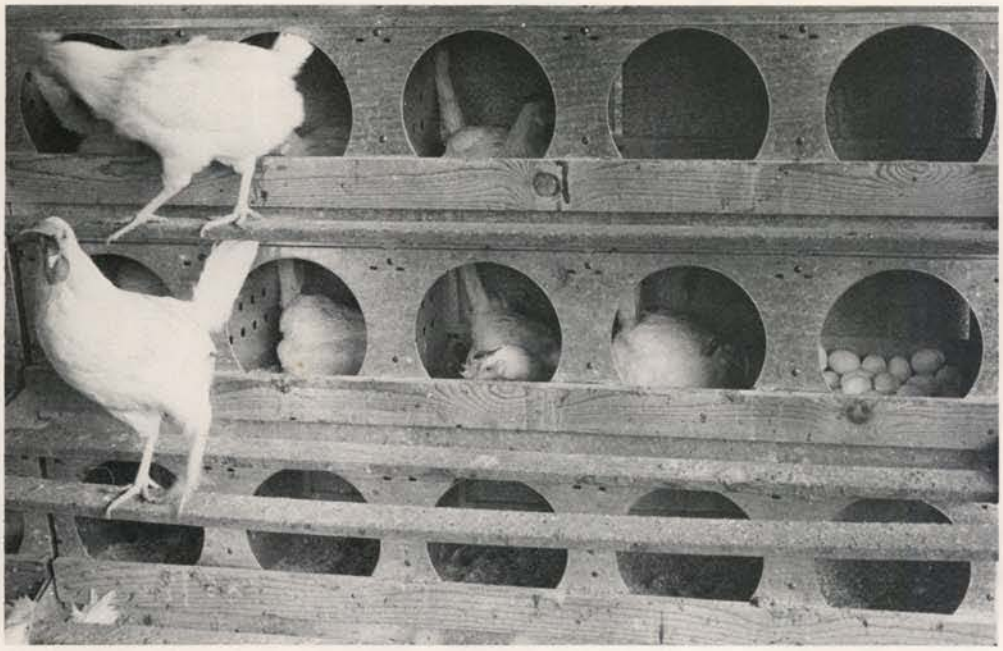

Fig. 6. Individual nests with clean, dry nesting material will result in cleaner eggs. These nests are metal but they can also be made of wood.

Disease Control

Healthy chicks, a good environment and clean dry litter are essential to reduce disease hazards. Diseases may still occur in spite of all the precautions you take. Here are a few rules you should observe at all times to protect your flock:

1. Keep out visitors. Your neighbors may also have poultry and diseases are carried on shoes and clothing.
2. Do your own culling. For information on culling, check with your County Agent.
3. Do not mix birds of different ages or sources. Older birds may be disease carriers.
4. Screen all openings. Keep out wild birds. They are our greatest source of mites and lice.

Coccidiosis

This is a major disease problem in poultry raising, especially during the early weeks of life. It is caused by a microscopic parasite and spreads through damp litter, soil and droppings. The organism invades the intestinal tract and may localize in the ceca (blind gut) resulting in bloody droppings. Intestinal types cause inflammation of the intestinal walls. The birds will be weak and listless, with drooping wings and ruffled feathers. Bloody droppings and diarrhea may occur. Mortality may be high. Growth will be retarded even with treatment.

The disease can be prevented by continuous low-level feeding of a coccidiostat drug. Be sure when you purchase your starter, broiler finisher and pullet grower feeds that they contain a drug recommended to prevent an outbreak of this disease. Birds develop immunity with increasing age and the preventive drug should not be added to the layer feed.

If an outbreak should occur, obtain a coccidiostat drug from your feed supplier that can be added to the drinking water. Follow manufacturer's directions closely.

Respiratory Diseases

The major respiratory diseases that may infect your flock are bronchitis and Newcastle disease. They are difficult to distinguish as both result in difficult breathing, sneezing and gasping. Newcastle may also result in nervous symptoms including paralysis, tremors and retraction of the head.

There is no satisfactory treatment for these diseases, but chicks can be vaccinated to prevent them. Check with your chick supplier or feed dealer. Vaccines are available which can be administered in the drinking water. Again follow the manufacturer's instructions. They can be administered at any age after the first 7 to 10 days. During that time they may have some parental immunity and the vaccine would not be effective.

Marek's Disease

This disease is also known as Range Paralysis. A vaccine is available and must be administered at 1 day of age. Check your source of chicks and request that the hatchery supply chicks vaccinated for Marek's. The cost is small.

Lice and Mites

These external parasites are an ever-present problem. Thorough cleaning of the house and elimination of wild birds are important to prevent an infestation. They irritate the birds, lower vitality and reduce egg production. **Be Prepared.** Inspect your birds and equipment — nests and roosts — regularly.

There are a number of preparations that can be used to control these parasites. Sanitize and spray the poultry house, roosts and nests before birds are housed. Check with your poultry and feed supply for acceptable products to use if an infestation occurs.

Check with your County Agent if additional help is needed.

Feeding and Nutrition

Most people who keep a small flock of chickens for either meat or eggs use commercially prepared feeds. These feeds usually are excellent quality and formulated to meet the specific requirements for protein, minerals and vitamins as needed for different ages. Feeding only grain will be disastrous. Grains are deficient in all essential nutrients. Their main contribution is supplying an excellent source of energy. Whole grain can be fed if the mash portion is properly adjusted to correct the inadequacy of grains. Grit should also be supplied if whole grain is fed.

Most feed manufacturers prepare complete feeds for various ages and purposes for which poultry are fed. No other feeds are necessary. Some companies also prepare grower and layer rations which are intended to be fed with whole grain on about a 50-50 basis. Follow the recommendations of your feed supplier.

The following rations are generally available and should be fed as indicated.

1. **Starter mash** — should contain about 20% protein. For **Leghorn chicks for layers,** feed starter mash or broiler starter to 6 or 8 weeks of age or 2 pounds per bird. For broiler chicks, feed starter mash or broiler starter to 5 weeks of age.
2. **Broiler finisher** — 17 to 18% protein. Feed broilers from 5 weeks to market age.
3. **Developer or grower mash** — 14 to 15% protein. Feed to pullets for layers from 6 to 8 weeks to time egg production reaches 10%. Whole grain can be fed from 12 to 20 weeks in gradual increasing amounts up to 50-50 ration.
4. **Layer mash** — Feed continuously to laying hens from 10% lay on as only feed unless formulated to be fed with grain. Check with supplier to determine if oyster shell supplement is required. If the ration contains 3 to 4% calcium, no supplement will be needed.

Feeds can be purchased as mash, crumbles or pellets. Crumble feed will result in slightly better feed consumption with young chicks and less wastage. It is preferred to mash form if the cost is about the same. Its increased cost does not justify its use for growing pullets or layers. Some nutrients, especially vitamins, are slowly lost by oxidation if feeds are stored for long periods of time. Use the older feed first and try to keep storage to less than one month, especially during summer months.

If you want to prepare your own rations, some suggested formulas for various purposes are shown in the table. The grains in each formula will assure adequate energy. You can use protein concentrates other than those suggested, but we do advise you to contact your County Agent regarding use of specific products not listed. Also remember that fish meals and meat scraps supply considerable calcium and phosphorus. If you reduce or eliminate these two animal sources, you will need to adjust the mineral feeds to correct the calcium and phosphorus levels.

Table 1. Suggested Poultry Formulas

Ingredients	Starter Ration	Broiler Finisher	Developer Ration	Layer Ration
Corn, ground (can be 1/2 milo or wheat)	66.0	72.0	30.0	45.0*
Barley, ground (can be mixed grain)	----	----	49.0	24.5*
Alfalfa meal (dehyd. or sun-cured)	2.5	2.5	5.0	2.5
Fish meal	2.0	----	----	----
Meat scraps	5.0	5.0	5.0	5.0
Soybean meal	22.0	18.0	9.0	14.5
Limestone flour or oyster shell flour	1.0	1.0	1.0	7.0
Dicalcium phosphate or bone meal	1.0	1.0	1.0	1.0
Iodized salt***	0.5	0.5	0.5	0.5
Vitamin concentrate	Add	Add	Add	Add
Coccidiostat drug	Add	Add	Add**	----
TOTALS	100.0 lb.	100.0 lb.	100.0 lb.	100.0 lb.

*The amount of barley can be increased with an equal reduction in corn during spring and summer months if the cost of barley is lower. This level of corn is needed during cold months to supply adequate energy.

**If weather conditions are dry, this drug can be discontinued when pullets are 14 to 16 weeks of age.

***Obtain a vitamin preparation that also contains trace minerals (iodine - manganese - iron - copper - zinc, etc.) or use a source of salt that includes these trace minerals.

Vitamins are very important and most feeds used in poultry formulas **do not** supply a sufficient amount of many vitamins. You will need to purchase a "vitamin concentrate" to include in your home-mixed rations. The vitamin concentrate should contain vitamin A, vitamin D, riboflavin, niacin and vitamin B12. It may contain others but these 5 are most likely to be deficient in common poultry feeds. The concentrate can be purchased from most feed manufacturers.

You will need only small amounts of the vitamin concentrate, generally 5 to 10 pounds per ton of feed — or ¼ to ½ pound per 100 pounds of feed. Mix these small amounts carefully and thoroughly. You will also need to purchase a coccidiostat drug to include in the starter and grower feeds. This is added at even smaller levels, generally less than 1 pound per ton of finished feed. Follow the manufacturer's instructions closely to assure a thorough mix for full protection and to prevent a toxic condition from excess drug intake.

Home Dressing of Poultry

Poultry can be dressed at home with little or no special equipment. The primary concern during dressing is sanitation. Use clean equipment and prevent contamination of the carcass with fecal material or the contents of the crop or intestine.

Slaughter and Feather Removal

Hang the bird by its feet, sever the jugular vein behind the lower jaw, allow complete bleeding.

Immerse the bird completely for 60 to 90 seconds in water heated at 125 to 140°F. Test by pulling tail and wing feathers. Overscald (too hot or too long) causes skin tears and loss of yellow color in the skin. Remove feathers immediately after scalding and as rapidly as possible without tearing the skin.

Evisceration

Remove feet at the hock joint. Remove the oil gland on the tail — start 1 inch forward of the gland, cut to the tail vertebra then to the end of the tail. Cut the head off. Split the neck skin, starting from the shoulders and going to the end of the neck. Pull skin away from the neck. Remove crop, trachea and esophagus and cut off neck.

With the bird on its back, cut around the vent and gently pull out until a few inches of the intestines are out. About 1½ to 2 inches below the point of the breast, make a horizontal cut about 3 inches long. Pull the vent and intestine through the horizontal cut and remove the viscera.

Remove the heart, liver and gizzard from the viscera. Remove gall bladder from the liver, but avoid cutting the gall bladder. Split the gizzard from the edge of the large lobe and remove the yellow lining.

Remove the ovaries or testes and lungs. These are located in the bird's back. Be certain the body cavity is clean.

Packaging

Wash the carcass and giblets thoroughly. Chill in ice water 2 to 3 hours. Remove from chill water and drain. Place giblets in small plastic bag or wrap in wax paper. Place giblets in crop area of carcass. Place legs of the carcass under the strip of skin left after the horizontal cut below the breast. Place carcass in plastic bag, draw out as much air as possible and tie the bag with a wire tie. Air can be forced out of the plastic bag by submerging the bag in water to a point above the carcass.

Storage

Dressed poultry can be stored in the home refrigerator for several days, but it should be frozen if it is to be stored for more than 7 days.

Laws

Federal law requires that all poultry dressed for sale be processed in plants inspected by the U.S. Department of Agriculture or in plants under state inspection that is equal to USDA standards. A producer may process poultry for his own use without inspection, but he cannot legally sell any surplus dressed birds without inspection.

Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, James L. Graves, Director of Cooperative Extension Service, University of Idaho, Moscow, Idaho 83843. We offer our programs and facilities to all people without regard to race, creed, color, sex, or national origin.

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