Mississippi State University Extension Service

The Home Flock

The development and management of a small flock of chickens for the production of eggs and meat is a favorite activity of many rural families. This publication addresses many topics that the beginning poultry owner will eventually confront.

These topics include:

Start With Healthy Chicks

The "Home Flock" usually consists of 20 to 40 chickens kept to supply eggs and an occasional fat hen. An average family of five persons will require about 30 hens. To produce 30 pullets, start with 100 straight-run chicks or 50 sexed pullet chicks. Pullet chicks should be purchased if only layers are desired.

Chicks can be started at any time during the year. Baby chicks started in March or April are normally the easiest to raise up to laying age (6 months). The problem with starting birds then is that they begin production in late summer or early fall. Birds started in March or April generally do not lay as many total eggs as do birds started in November and begin production in April. The disadvantage of starting birds in November is that they are harder to raise through the winter months to laying age in April.

Usually the most desirable birds for a small flock are dual-purpose breeds such as Rhode Island Reds, Barred Rocks or Plymouth Rocks. However, if birds are to be kept for egg production only, it is best to choose birds bred only for that purpose (White Leghorn or Leghorn crosses). Chicks reared for slaughter as broilers should be chosen from one of the

commercial broiler strains. The commercial broiler strains have been developed by genetic selection for high meat producing traits.

Chicks being reared for broiler production should be debeaked at the hatchery or when first placed in the growout facility. The chicks being reared for egg production should be debeaked at 7 to 10 days of age to avoid problems in the rearing and laying house. Debeaking consists of the removal of the upper and lower beaks by means of a heated cutting and cauterizing blade. Debeaking helps primarily to prevent cannibalism but also helps to reduce feed wastage. The chicks should also be vaccinated in the hatchery for Marek's disease and at four days old for Newcastle disease and infectious bronchitis.

Prepare the Brooding House

Be sure the brooding area is prepared well in advance of the chicks' arrival. Allow one square foot of floor space per chick. The brooding house should be dry and provide the chicks with protection from cold or rainy weather. It should be well ventilated but free from drafts. The house should allow easy access to electricity and water and should prevent entry by rats, dogs, cats and wild animals.

The brooder is an artificial mother to the chicks and provides warmth to keep them comfortable during the first 4-6 weeks. Two common types of brooders are infra-red heat lamps and the hover-type, gas fired brooders.

The brooding area and equipment should be cleaned and thoroughly disinfected at least two days before the chicks arrive. After the area has dried thoroughly, cover the floor with 4-6 inches of dry litter material. Pine wood shavings or sawdust is recommended. Hardwood litter allows the growth of fungus-type organisms which can cause a poultry disease called aspergillosis or brooder pneumonia. Pine wood litter helps restrict the growth of the disease-causing organisms.

The brooder should be turned on and adjusted to the proper temperature at least 4 to 6 hours before the chicks' arrival. An 18-inch high, cardboard or wire mesh guard ring around the brooder will help keep the chicks near the heat, feed and water. The guard ring should be large enough to allow three feet of space between the ring and the outer edge of the brooder. The ring is removed after four to seven days.

Brooding the Chicks

The starting temperature under the brooder should be 90 degrees F at two and a half inches above the floor. This temperature is reduced five degrees each week until a 70 degree temperature is reached. A 70 degree brooder temperature should be maintained until the broilers are marketed or, in the case of pullets, until they are eight weeks of age. Beyond eight weeks, the brooder temperature should be kept between 60 and 65 degrees until the pullets reach maturity.

If the chicks are evenly distributed over the floor and are eating and drinking well, the temperature is adequate. If the chicks are huddled together beneath the brooder, the temperature is too low and should be increased. When the chicks are gathered near the brooder guard and panting, they are too hot and the brooder temperature should be reduced. Don't let the chicks become either chilled or over-heated. Close the brooder house on cool nights and allow plenty of ventilation on warm days.

Place feed and water around the brooder before the chicks are placed on the litter. During the first three weeks, fifty chicks will require two baby chick troughs (two feet long) and three, ½-gallon water fountains. For the first three days, additional feed can be placed on egg flats to teach the chicks to eat sooner. Feed troughs can be filled full the first day or two but should be filled no more than one-half to two-thirds full thereafter to reduce feed wastage. The water fountain can be placed on a short piece of board (1"x6"x6" inches) which will help keep the water clean.

Management of Broiler Chicks

A good, commercial, chick starter ration containing 23 percent protein can be fed for the first five to six weeks. This is followed by a finisher feed with 20 percent protein until the broilers reach the desired slaughter weight. A recommended feeding schedule and the nutrient levels of the ration are shown. The chicks should have access to the feed and water at all times.

The water fountains should be cleaned daily and the feeders cleaned frequently. Refill the waterers as needed to provide an adequate supply of cool, clean drinking water. When the broilers are three weeks of age, provide the equivalent of five, 1-gallon waterers or an eight foot automatic waterer. Also, provide two, medium-sized feed troughs (4 feet long).

A strict sanitation program should be established and followed for disease prevention. Damp litter tends to increase the incidence of disease. Remove all wet or caked litter as soon as possible and ventilate the house to remove the remaining damp air. Occasional stirring of the litter will help keep it dry.

Recommended Feeding Schedule

	Protein %	**Energy kcal/lb***
Broilers		
0-6 weeks	23	1450
6 weeks to slaughter	20	1450
Replacement Pullets (meat or egg type)		
0-6 weeks	20	1320
6-14 weeks	16	1320
14-22 weeks	12	1320

Layer/Breeder Hens (egg or meat type)	16	1280

*** Kilocalories of metabolizable energy per pound of ration**

Feeding Pullets

Management of replacement pullets is much the same as rearing broilers. The major differences are in the feeding and vaccination programs and in establishing a good lighting program. Proper management is of major importance in rearing a laying flock that will produce many high quality eggs throughout the year.

Meat-type chicks started as replacement pullets should be fed less concentrated diets than broilers so that body weights and sexual maturity are restricted. Many problems in laying flocks can be related to feeding of broiler-type diets to young pullets. Following a feeding schedule such as shown will help prevent overweight hens that overeat and have poor egg production records.

Pullet chicks should be fed a 20 percent protein starter ration for the first six weeks, followed by a 16 percent grower ration until the pullets are 14 weeks old. Between 14 and 22 weeks of age, egg-type pullets should be fed a developer ration containing about 12 percent protein. The developer ration may be fed until 24 weeks of age for meat-type pullets. The pullets are then fed a 16 percent protein laying ration.

A good disease prevention program should be considered when rearing pullets. One-day old chicks should be vaccinated at the hatchery for Newcastle, infectious bronchitis and Marek's diseases. The birds should be revaccinated at four to five weeks and 16 weeks of age for Newcastle disease, using the B_1type vaccine in the drinking water. The same method should be used at 16 weeks for infectious bronchitis.

Young pullets are usually vaccinated for fowl pox at 12 weeks of age using the wing-web stab method. In areas where fowl pox has previously been a problem or where mosquitoes are frequently found near poultry flocks, the pullets may have to be vaccinated for fowl pox as early as one day of age. To prevent outbreaks of coccidiosis, pullets should be provided a ration containing an effective coccidiostat until they reach 14-20 weeks of age. A summary of a good disease prevention program is shown. This program should be used as well as sound sanitation practices. Both are equally important in preventing disease.

Disease Prevention Program

Disease	Vaccination Schedule
Newcastle Disease	**In hatchery or at 4 days using the drinking water method. Revaccinate at 4 weeks and 16 weeks in the drinking water with B_1 type vaccine.**
Infectious Bronchitis	**In hatchery or at 4 days using the drinking water method. Revaccinate at 16 weeks using drinking water method.**

Marek's Disease	**In hatchery using subcutaneous injection.**
Fowl Pox	**Vaccinate at 12 weeks of age using wing-web stab method. As early as 1 day of age if mosquitoes are present.**
Coccidiosis	**Daily feeding of drug in ration (up to 14-20 weeks).**

The third important factor in raising pullets is good lighting. Not following a well designed program for only a few days may cause serious harm to the flock's development.

All lighting programs used with commercial flocks use the principles of decreasing light stimulation for growing pullets and increasing light stimulation after the pullets have reached a mature production age. Light is a very strong stimulating factor in poultry and must be carefully managed. Thumb rule: *Never subject pullets to increasing light and never subject layers to decreasing light.*

Until the pullets are three weeks old, they should be given 20 to 24 hours of light daily. Between three and 22 weeks of age, the birds should be put on a decreasing day length, lighting program. Determine the date when the pullets will be 22 weeks of age and find the nearest corresponding date in the table provided. Next to this date is the length of day which should be provided to the pullet at three weeks of age. This lighting duration should be shortened by 15 minutes each week until at 22 weeks the birds are receiving a natural day length for that time of year. The lights may be turned on before sunrise, turned off after sunset, or both, but the length of light received each day should correspond to the lighting schedule. At 22 weeks of age the pullets can be placed on a lighting program designed for laying hens.

Step-down Lighting Program for Pullets

Nearest Date When 22-weeks of Age	Daily Hours of Light
Jan 1	15 hr, 15 min
Feb 1	15 hr, 45 min
Mar 1	16 hr, 30 min
Apr 1	17 hr, 30 min
May 1	18 hr, 15 min
Jun 1	19 hr
Jul 1	19 hr
Aug 1	18 hr, 30 min
Sep 1	17 hr, 45 min
Oct 1	17 hr
Nov 1	16 hr
Dec 1	15 hr, 15 min

Poultry respond primarily to the length of the daily lighting period rather than the light's intensity. A 40-watt incandescent light bulb will supply sufficient light for a 10'x15' pullet or layer house which can house 50 broiler-type pullets or 75 egg-type pullets. If a reflectorized light fixture is used, a 25-watt bulb may be substituted.

All management practices used in rearing broilers should be followed when raising pullets except for those changes already discussed. The birds' comfort should always be considered for best results. Comfortable house temperatures and adequate floor space should always be provided. After the birds are eight weeks old, allow two and one-half to three square feet of floor space for each pullet.

Layer Management

The housing and management of layer hens can be carried out using one of two methods, caged layer production or floor production. Use of either method can keep the hens in production throughout the year if proper environmental and nutritional needs are met.

The poultry house should be located away from other farm structures. The ground should allow good water drainage. Adequate light fixtures are needed to provide at least ½ foot-candle of light intensity. Adequate light is present if the water and feed levels in the troughs can be seen after allowing enough time for your eyes to adjust to the dim lighting. Fresh, clean water should be available.

The house should have plenty of open wall space to allow for ventilation and sunlight. Wall openings from top to bottom give good summer ventilation. Place one-inch, poultry wire netting over all openings to separate the hens from other birds and animals, both wild and domestic. Removable curtains or doors are recommended so the openings can be opened or closed as the weather changes. Keep the house dry and comfortable by ventilating from all sides in the summer and closing most openings in winter.

The caged layer production method consists of placing the hens in wire cages with feed and water being provided to each cage. The birds are housed at a capacity of two to three hens in each cage, which measures approximately 12"x16"x18". The cages are arranged in rows which are placed on leg supports or suspended from the ceiling so the floors of the cages are about 2½ to three feet above the ground. Water is supplied by individual cup waterers or a long trough outside the cages that extends the length of the row of cages. The feed trough is also located outside the cages and runs parallel to the water trough on the opposite side of each cage. The cages are designed so the eggs will roll out of the cage to a holding area by means of a slanted wire floor. This method of housing is used primarily with egg-type layers kept for infertile egg production.

The floor production method is designed for either egg-type or broiler-type birds kept for fertile or infertile eggs. In commercial flocks this method is used when fertile eggs for hatching are needed. The birds are maintained in the house on a litter covered floor, giving the term floor production.

Provide horizontal roost poles two to three feet above the floor. Allow nine inches of roost pole for each hen with poles 15 inches apart. One nest 14 inches wide, 12 inches high, and 16 inches deep is needed for each four hens. A mash hopper five feet long and open on both sides is adequate for 25 hens. Three 3-gallon pans provide adequate watering space for 30 hens. Clean, scrub and disinfect the house and equipment thoroughly before placing the pullets in the laying house after it has dried. Put three inches of litter material in the nests and four to six inches of litter on the floor.

Regardless of which production method is used, the 22-week old pullets should be given an increasing daily light schedule after being placed in the laying house. If the pullets were raised on the lighting program outlined in this publication, the length of daily light should be increased 15 minutes each week after the birds enter the laying house. The increased light will stimulate egg production and help maintain production throughout the year. The day length increases should continue until the birds are receiving 16-18 hours of light each day. The day length should remain the same for the rest of the laying period. After the birds begin to produce eggs, the total duration of light, including both natural and artificial, should not be reduced.

The birds should be fed a nutritionally balanced commercial laying mash containing 16 percent protein. Use a special breeder ration if the eggs are being saved for hatching purposes. These breeder diets contain higher levels of vitamins that help produce higher hatchability and healthier chicks. Poultry older than 16-18 weeks do not require a ration containing a coccidiostat unless a coccidiosis outbreak occurs. If a commercially produced layer ration is provided, additional oyster shell, grit or grain is not needed.

Culling is the removing of non-productive or uneconomical hens from the flock. The first time to cull pullets is in the selection for the laying house. Remove all pullets which are permanently disabled or diseased. Do not be too critical of the birds at this stage since some will mature at a later age.

After the flock reaches a good production level, culling will eliminate costly feeding of unproductive birds and provide more space for the productive birds. For more information on culling poultry, consult the Mississippi Extension Publication 358, *Culling Hens*.

A problem often encountered in laying hens is prolapse of the oviduct. It is more frequent in the heavier and earlier maturing hens. The oviduct inverts and protrudes outward from the vent area. The inversion of the oviduct, if permanent, results in other birds pecking this area until the affected bird bleeds to death.

Prolapse of the oviduct can be caused as a result of genetic traits, early maturation, or a combination of genetics and poor management. Pullets which are overfed and over stimulated with light often begin egg production before their reproductive systems have had time to completely develop. An early problem sign is a high incidence of blood streaked, egg shells. If prolapse and pickouts become a problem, the beaks of the aggressive hens may be rounded or blunted using a hot cauterizing blade. The affected birds should

be removed from the flock and not returned. These birds will be prone to prolapse, and their return to the flock may incite more widespread pickouts by aggressive hens.

Broodiness is often a problem in floor production housing. It is characterized by a hen wanting to build a permanent nest and begin "setting". The problem can be solved by removing the hen from the flock and placing her in a wire-floored cage for three to four days. Ample feed and water should be supplied to the affected hen. The hen can then usually be returned to the flock with no further problem. The treatment can be repeated if the hen continues to be broody.

Near the end of the first year of lay, egg production may become so poor that the poultryman is faced with a decision of molting his birds or selling them. Molting refers to the life period when hens stop producing eggs, lose their feathers, and begin to grow new ones. It is believed that molting allows the female to rest and restore her body and reproductive system.

When economical, the poultryman may use one of a number of techniques to start the molting process. The "forced molt" will improve production above pre-molt levels, improve the feed efficiency, and improve egg shell and albumen quality.

The disadvantages are that production levels will fall more rapidly than before the molt. Also, a larger percentage of defective eggs will result with a non-productive period during the molt and a higher mortality during the molt. The economic factors should be evaluated carefully before starting a "forced molt".

Many methods have been used to initiate molt, but the most common is one which restricts the light and feed supply to the bird. To force a molt, remove all feed and artificial light for seven days or until all the birds are out of production, whichever is later. Then feed the birds 10 pounds of feed for each 100 hens and gradually increase the amount of feed until the birds are on full feed by the 45th day. The lighting program is resumed on the 35th day with 14 hours of light daily and a gradual increase to the previous lighting level by the 49th day.

Often people are concerned about a problem in laying flocks referred to as "bare back". Bare back is usually observed in older, floor layer or breeder flocks. As the birds age, the feathers become more tattered and broken, especially in high producing flocks. The continuation of egg production distinguishes this condition from molting birds. Normally the best laying birds in the flock will have the largest amount of "bare back" condition. This particular feathering condition is not a sign of disease or ill health and will correct itself after the birds undergo a natural or forced molt. This condition will not affect performance unless it occurs during the winter when affected birds may be more vulnerable to the cold.

Roosters

Do not keep roosters in the flock unless you have a specific need for fertile hatching eggs. Roosters do not contribute to egg production and occupy space and consume feed that can be more efficiently used for additional laying hens. Roosters are not required in a flock to maintain the production of eggs for consumption. If fertile eggs are desired, provide one rooster for every 10 to 12 hens.

Disease and Parasite Control

Coccidiosis is the most common disease found in young, unmedicated flocks. This protozoan disease, characterized by diarrhea, unthriftiness, and some mortality, is transmitted by the hens eating coccidia oocysts from contaminated droppings. The disease can be prevented by feeding rations containing a coccidiostat. A good coccidiostat is designed to prevent outbreaks of coccidiosis while allowing the birds to develop a natural immunity.

Laying hens will not require a feed that contains a coccidiostat. However, layers, especially young layers on littered floors, may experience coccidiosis outbreaks. If coccidiosis is diagnosed, treatment is normally given through the drinking water. In case of an outbreak, treatment measures should be started immediately.

Several other diseases may be seen, such as aspergillosis, infectious bronchitis, Newcastle, Marek's disease, fowl pox, epidemic tremors, Gumboro, necrotic enteritis, fatty liver syndrome, and blackhead. Many diseases can be prevented by using a vaccination program such as the one shown.

Watch for external and internal parasites such as intestinal roundworms, cecal worms, mites, ticks and lice. Refer to *Pesticides Used for Control of Poultry Insect Pests*, for approved pesticides to control external pests. Internal pests are controlled with compounds like piperazine for intestinal roundworms. Phenothiazine is used to treat cecal worms. Capillary worms are controlled by using Hygromycin or meldane, and tapeworms should be treated with butynorate. These are the four major internal parasites in poultry. Practice a rigid sanitation program.

Care of Eggs

A freshly laid egg loses quality rapidly if it is not handled properly. Plenty of clean litter in the nests reduces the number of dirty or cracked eggs.

The eggs should be gathered daily in mild weather and at least two times daily in hot or cold weather.

The eggs should be placed in a cooler immediately after gathering and stored at 50 to 55 degrees F. Do not store eggs with foods or products that give off pungent odors since eggs may absorb the odors.

Eggs saved for hatching purposes should not be washed. Only clean and slightly soiled eggs should be saved for hatching. Dirty eggs should not be incubated. Eggs should be stored in a cool place with the large ends up. It is not advisable to store the eggs longer than one week before setting them in an incubator.

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