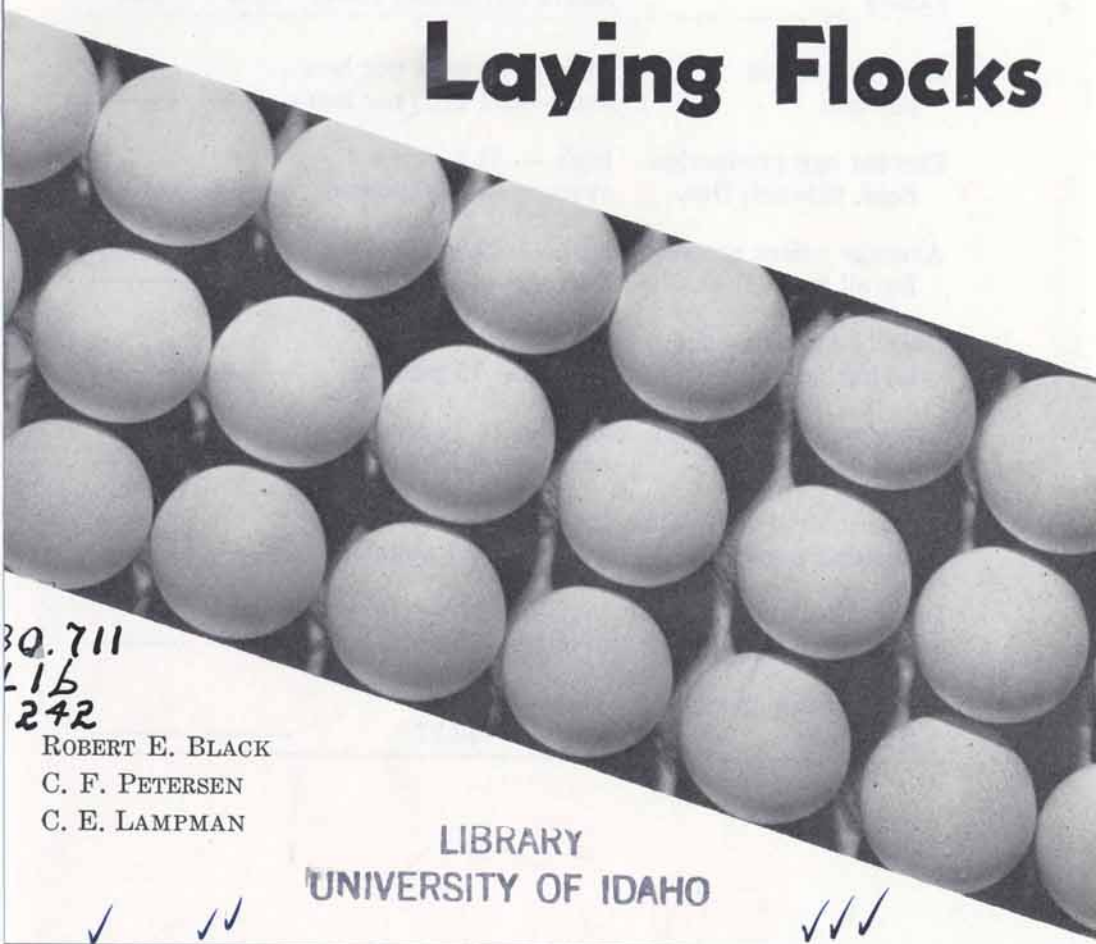




UNIVERSITY OF IDAHO

College of Agriculture

# Management Practices For Idaho Laying Flocks



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ROBERT E. BLACK  
C. F. PETERSEN  
C. E. LAMPMAN

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IDAHO Agricultural  
Extension Service

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## Setting Up Goals For Your Poultry Unit

THE following efficiency factors from a number of Idaho poultry flocks established under actual field conditions will serve as a guide to what you can expect from your own poultry operation:

Factors	Performance of better producers and averages of Idaho's 1951-52 flock survey	My farm	My goal
Egg production per hen	high—248 eggs per hen aver.—221 eggs per hen	_____	_____
Percent egg production Sept. through Dec.	high — 71.3 percent average — 57.0 percent	_____	_____
Average prices received for all eggs	high — 53.3c per doz. average—46.3c per doz.	_____	_____
Death loss during the laying period	low—4.5 percent average—15 percent	_____	_____
Labor required per hen per year	low — .78 hours average—1.8 hours	_____	_____
Feed required to produce one doz. eggs	low—4.5 pounds average—5.7 pounds	_____	_____
Income per hour of labor (based on \$1 per hour)	high—\$3.34 average—\$1.56	_____	_____
Labor income per hen per year	high—\$3.89 average—\$2.27	_____	_____

# Management Practices for Idaho Laying Flocks

ROBERT E. BLACK, C. F. PETERSEN AND C. E. LAMPMAN\*

**P**OULTRY business is constantly changing, with small flocks on the decline. In their place we find larger commercial operations. Management practices essential for high egg production and profitable poultry production become more and more important with this change. Good practices are the key to profitable production. With good care, a hen will produce to the limit of her capacity. With half-hearted care, she will produce in a half-hearted manner. In addition to having well-bred birds and providing good feed and

housing, the successful poultryman must "cater" to his flock.

Factors that will help you reduce the amount of time required to care for your flock are of great importance in good management. Many of those discussed in this bulletin are aids in saving labor as well as improving production. Feeding, supplying water, and caring for eggs are all time-consuming chores. An efficiently managed farm reduces this labor to a minimum. Time saved can be devoted to other farm work or to increased poultry numbers.

## Choosing the Breed and Strain

This is the first step in profitable poultry production. Because of great specialization within the industry, certain breeds and strains of birds are bred to do a particular job. To meet your goal, it is essential to select a breed and strain that has the inherent ability for high egg production. Only birds that have the ability to produce 200 or more eggs a year are profitable. It costs no more to raise and feed this bird than one that can produce only half as many eggs. Good management will help you get the maximum number of eggs that any bird has the ability to produce but will not per-

mit you to make a hen capable of laying only 100 eggs per year lay any more than that number.

**White Leghorn or Heavy Breed**—The Single Comb White Leghorn is the leading breed for production of white-shelled eggs. Hybrids and incrossbreeds are also increasing in popularity. For the general farm flock, fairly good egg production can be obtained with a dual-purpose bird such as the New Hampshire or White Rock. They also possess some desirable meat-bird qualities.

There may be a great deal of difference between strains of

\* Extension Poultryman; Associate Poultryman and Poultryman, Agricultural Experiment Station, respectively.

birds within any breed. The factors to consider in the selection of a breed and strain are:

(1) Inherent capacity to live through the first laying year.

(2) Ability to produce 200 eggs per year.

(3) Ability to produce good-sized eggs.

**Buy Chicks Carefully**—Do not buy on price alone. Chick cost is actually the smallest expense represented in the cost of producing a pullet. Buy your chicks as close to home as possible. The local hatcheryman who is following a progressive improvement program will produce chicks that have the ability to make your poultry flock pay. Chicks shipped great distances frequently reach the purchaser in bad condition caused by mishandling and exposure to weather and disease.

**Buy Chicks Early**—One of the most important elements involved in making your poultry enterprise a success is the time of year the baby chicks are purchased. Buy yours chicks in January, February or early March. With such a start they will be in good production and egg size will be reasonably good by early Sep-

tember. Egg prices are usually substantially higher from August through December than any other period. A few additional eggs during this season can make a great difference in your poultry profits.

**Pullets or Second-Year Hens**—Records kept over a long period show that an all-pullet flock will outlay an old-hen flock by 50 eggs per bird each year. If you have early hatched pullets, most of these extra eggs are produced during the fall and winter when egg prices are highest.

An all-pullet flock has less disease. It is best to sell all the layers after their first laying year and replace them with an all-pullet flock. By keeping only birds of the same age together, you have fewer disease problems. If any old hens are retained, they should be housed separately from the pullets, preferably in another building.

It requires about 17 pounds of feed to carry a hen through her molting period, while it requires about 25 pounds of feed to produce a pullet. The year-old hen will sell for more than enough to make up the difference in feed costs.

## Housing Pullets

**Clean and Disinfect House**—It is very important to house pullets in a clean, dry house. In many cases old hens have developed resistance to diseases which may be present and which will result in mortality among exposed pullets. By thoroughly cleaning the house before you put in your pullets you reduce the chances of disease.

Begin by scraping all material from the floor and sides of house, and equipment such as roosting racks, nests, feeders and waterers. Scrape the walls and floor thoroughly. Scrub with a solution of lye and hot water, using a pound can of lye to 5 gallons of water. (Be careful with this solution. It will burn your skin.) Disinfect the house after

it has dried. Creosote products are commonly used. Most creosote disinfectants are used in 3 to 5 per cent solutions. Follow the recommendations of the manufacturer.

Clean and disinfect all poultry equipment, using the same disinfectant. Bear in mind that disinfectants are of little value unless all dirt is removed first.

**Treat for Mites and Lice—**Treat your roost and nests for mites. Anthracene oil (carbolinum) is a good material for this purpose. It can be sprayed or painted on. Be sure to cover all perches, nests and cracks where mites may hide. After treating the house for mites, let it air for several days. When properly applied this treatment will take care of your mite problem for one year. **In using carbolinum, protect your eyes, nose and exposed areas of the body.** Waste motor oil and kerosene, although cheap and effective, do not have the lasting effect of carbolinum. Retreating will be necessary every few weeks.

**Moving Pullets In—**When are pullets ready to move into the laying quarters? The pullets should "move in" when the first few eggs are laid. Bring in those pullets with bright red combs and which have started "plumping up." Slower developing pullets should be left on range. This will give them an opportunity to develop properly and prevent overcrowding the laying house at first.

Culling should begin with housing. Extremely small and very late developing pullets should be culled. Place only good pullets in the laying house.

**Help Pullets Adjust—**When the pullets are laying or ready to lay, rough treatment or poor management will result in reduced production and cull birds. "Baby" them the first few days. Give them lots of feed where it is easy to find, and keep plenty of water available. Watch the flock to prevent floor layers. Make sure they go to roost at night. Give them plenty of fresh air, similar to range conditions. Extra attention during this first week in the laying house is as important as the first week in the brooder house. A few hours now will eliminate the necessity of spending many hours throughout the year to correct mistakes or bad habits the birds can develop easily.

**Proper Litter Management Important—**Floor litter in the poultry house has two primary functions. The first and most important is the production of a high percentage of clean eggs. This is



Sawdust litter 8 to 10 inches deep remains dry and loose after several months' use.

accomplished by litter that absorbs moisture from the droppings. Secondly, litter that is kept dry adds to the warmth of the house and the comfort of the birds.

There are a number of different materials that can be used successfully for litter. Shavings, sawdust, chopped straw, peat moss, and various combinations of these materials are used. Idaho poultrymen usually can get shavings, sawdust or chopped straw. **Regardless of the material used, it must be dry when put in the house.**

**Start Litter Early**—The proper time to start a new litter program is late summer when pullets are placed in the laying house. Start with 3 to 4 inches of clean, dry material. Each week add about 2 inches that the birds can break up so that by November you have 10 inches of dry, loose litter. In a house with proper insulation and ventilation this litter need not be removed until the pullets have completed their first laying year and you are ready to house another pullet flock.

**Ventilation Needed**—Ventilation plays an important part in poultry house management. Insulation is necessary for proper ventilation during cold weather. Insulated walls and well-managed deep litter are warm surfaces that will not condense moisture given off by the hens. A good ventilation system will move this undesirable moisture out of the house and bring in

fresh air. (See *Extension Circular 141 and Farm Electrification Leaflet 22.*)

Experience has proven that certain management practices are very important in helping to maintain dry, loose litter. Keeping down moisture depends upon:

(1) **Location of all the water and some of the feed on the roosting rack.** This will concentrate a great deal of moisture in an area that is not accessible to the chickens.

(2) **Clean out damp or wet spots.** You can control damp spots and improve damp litter by using hydrated lime at the rate of one pound for every 3-5 square feet of floor space. Work lime into the litter with a fork and supply ventilation to remove lime dust and ammonia gas. When excessive caking occurs, remove and replace with dry litter.

(3) **Frequent stirring aids litter management.** Litter tends to cake directly in front of the roosting rack and around waterers and feeders if they are placed on the floor. Frequent stirring plus the application of lime will eliminate caking and keep the litter in a much drier and satisfactory condition. Feeding some scratch grain in the litter also helps to keep the litter stirred.

(4) **Adequate ventilation** to remove excessive moisture.

## Water for Layers

A hen will consume 100 pounds of feed and drink 200 pounds of

water a year. Plenty of fresh, clean water is essential for the



Automatic water equipment reduces labor. Installed on top of roosting rack, it results in drier litter and cleaner eggs. Feed available on rack also keeps litter drier and improves egg production.

health of the flock and for high egg production. Water is also one of the least expensive items to supply to the flock. A hen's body is 55 per cent water and an egg is 74 per cent water.

**Many Types Available**— Numerous watering devices are used today. Most of them are automatic. Running water inside the laying house will save you the job of carrying 9 to 10 tons of water each year for each 100 hens. "Dew-Drop" waterers, V-type troughs, continuous-flow and automatic founts are all popular.

**Prevent Spillage**— The first and most important point to con-

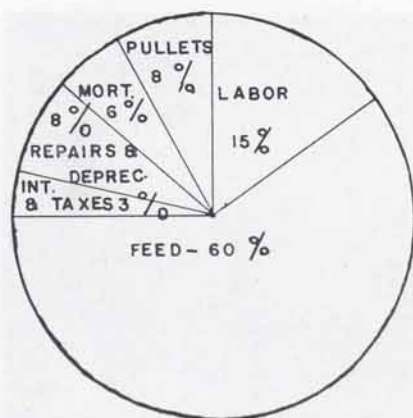
sider is that the watering device be **wasteproof**. Location of the water is also important. When possible, place all the watering equipment over the roosting rack. This eliminates wet spots in the litter due to spilled water. Provide a drain that carries all excess water out of the house. If watering equipment must be placed on the floor, place the water container on a wire covered rack. If V-type continuous flow waterers are placed on the floor, put them at neck height to reduce spillage. If Dew-Drop waterers are used, provide a trough under the valves to catch excess water and carry it outside the house.

## Feeding for High Production

**How Important is the Feed?**— Although there is no "one" item necessarily more important than others, feed is by far the most costly part of egg production. As

the chart shows, feed represents about 60 per cent of the cost.

**How Much Feed is Needed?**— Feed consumption varies with weather conditions, size of birds,



quality of ration, and level of egg production. This last factor is the one of importance to you as an egg producer. The following table shows the amount of feed that will be consumed by 100 White Leghorns each day depending upon the rate of production. It is apparent that 60 to 70 per cent of the feed is required for body maintenance and that increased egg production is obtained with only a slight increase in feed consumption.

#### Maximum Feed Consumption is Desired.

Per cent Egg Production	Total Feed Intake Per 100 Hens
0	20
10	21
20	22
30	23
40	24
50	25
60	26
70	27

Feed a high-quality ration. Low-quality will result in reduced egg production and more feed per dozen eggs. Many producers reduce feed costs by using

a commercially prepared concentrate combined with homegrown grains.

#### What Feeding System? —

There are two principal feeding systems used in Idaho. The "all-mash" system which has all the necessary ingredients mixed into one feed is proving popular with many commercial producers. This system has the advantage of reducing the labor required for feeding. It also reduces the hazard of birds consuming too much grain. The other system consists of feeding a regular laying mash, containing approximately 20 per cent protein, and feeding a whole grain or a mixture of grains with it. This system is the most common. One advantage of feeding grains in the litter is that the birds keep the litter stirred. Care should be taken to make sure your birds consume over 50 per cent of their feed as mash. High egg production generally requires that birds consume about 60 per cent as mash. A successful practice is to encourage hens to eat all the mash they want and to vary the amount of grain to maintain the desired percent of each. Good results can be obtained with either system. If you are feeding a commercial feed, follow the manufacturer's recommendations.

**Noon Lunch** — Wet mash is not generally recommended because, once started, it is difficult to stop without loss in production. The practice is beneficial where production has not reached a desired level or where maximum production is desired to take advantage of high seasonal egg prices. To be successful, the feeding must be done with regularity and the amount fed only



what the birds will clean up in a few minutes.

**Adequate Feed Space Important**—Allow plenty of feeding space. Provide 40 to 48 feet for each 100 birds. This means two 10-foot feed hoppers or three 8-foot feed hoppers for each 100 birds. Birds with such feeding room produce at a higher rate and the shy birds which do not compete successfully for feed have a better opportunity to eat enough to be reasonably good layers.

The location of the feeders is important. Place part or all the mash hoppers on the roosting racks. This serves two purposes. First, you keep the floor litter drier and cleaner by concentrating the droppings under the roosting rack. Second, shy birds tend to spend a great deal of time on the roost. By placing your feed there they will have a chance to eat and you will pre-



Save poultry feed. Use reel over feeders. Don't fill hoppers over half full.

vent many of them from becoming culls.

**Do You Waste Feed?**—Never load your feed hopper over half full. Remember that feed is an expensive item and the only feed you get any benefit from is that which the birds eat. Feed wasted in the litter by spillage and overfilling the feed hoppers is an additional expense to you. The following chart illustrates the amount of feed wasted from hoppers at different levels of filling:

	Per cent waste	
	Leghorns	Heavies
Full trough	46	29
2/3 full	15	7
1/2 full	5	2
1/3 full	2	1

Make sure your feeders do not leak. Inspect them frequently. Use the feeder that has a reel or paddle running across the top. This prevents birds getting in the feeder and wasting feed.

**Changing Feed**—The question of changing feed frequently arises. If you do not get satisfactory production, check first on such factors as disease problems, housing conditions, and management practices. Only after checking these should you consider changing your feeding system. If any change is justified, do it slowly, for any sudden change in the feeding program can throw birds out of production.

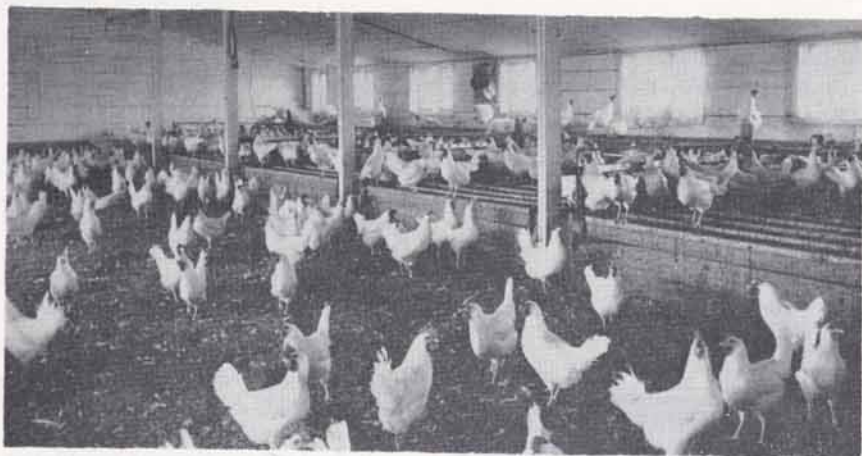
**Control Rats**—Keep your building in repair to keep rats out. Three rats eat and waste the feed required to feed two hens. Also, rats are carriers of disease and they increase the cost of repair and upkeep of buildings.

## Use of Dropping Pits

The dropping pit rack is the most common type of roost used in Idaho. This rack should be wired off to prevent birds getting under it. Where feed and water are placed on the roost, the roost should cover at least one-third of the floor area of the laying house. Droppings accumulate and are cleaned out when necessary.

Properly handled, droppings can be kept quite dry and the

odor can be minimized. Hydrated lime may be sprinkled over the droppings once a week at the rate of 10 pounds of lime for 100 hens. Superphosphate may also be used. Sprinkle it over the droppings at the rate of 10 to 14 pounds for 100 hens. Superphosphate increases the value of droppings for fertilizer much more than lime. Dry sawdust can be sprinkled over the droppings but this material will not add fertilizer value.



Using one-third of floor space for combination roosts, feeders and waterers. Distributes birds throughout pen and helps keep litter dry. Note fan in back wall to remove stale air and moisture.

## Nests

Nests serve one basic purpose and that is to enable the producer to gather a greater percentage of clean eggs. In order to get a top price, eggs must be clean. Cleaning dirty eggs is a time-consuming chore. Provide one nest for each 4 or 5 layers. If community nests are used, provide 1 square foot of space for each 4 or 5 hens.

**Types of Nests Used** — The most common nest in Idaho is the individual compartment. The community-type nests are used by some producers, and a few use roll-away nests. Regardless of the type, be certain you provide enough nesting space for your birds. An inadequate number of nests will result in more dirty and broken eggs. Cannibal-

ism hazards are also increased when birds are crowding the nesting space.

**Use Clean, Deep Nest Material** — Shavings, sawdust, chopped straw, or nest pads are very satisfactory nesting material. The main point is that **nesting ma-**

**terial, like litter, must be clean and dry.** At the first sign of wet or dirty nests, replace immediately with clean, dry material. The number of cracked and dirty eggs will be reduced by gathering eggs at least three times each day.

## Culling

Culling is essential for high egg production. Low producers do not pay. They cost you money. It takes the production of one or two good producers to keep a cull in your flock. So make it a practice to be on the lookout for culls each time you go into the poultry house. Culls are easy to recognize. (See *Extension Circular 107.*)

**What makes a cull?** — There are three major factors that develop cull birds in your flock. Two of these are under your control. First, the presence of any of a number of diseases and parasites will result in reduced production and cull birds. Poor management practices, such as inadequate feeding or water space and unsatisfactory housing, make culls of what should

be good producers. The third factor is determined by breeding. Many strains and breeds have genetic inheritance for winter pause. This is a condition which results in interruption of egg production for two or more weeks.

Keeping your flock at a high annual rate of production (60 per cent or better) cuts down the feed cost per dozen eggs.

Percent production	Leghorns	Heavies
	Pounds feed per doz. eggs	Pounds feed per doz. eggs
20	12.0	14.4
40	6.6	8.1
60	5.0	6.0
80	4.2	5.0

## Care of Broody Hens

Broodiness or "setting" is sometimes a problem in certain breeds. Egg production usually stops during this period. Broody hens can be "broken" quite easily by placing them in a wire

cage suspended above the floor. Catch them the first day they want to set. **Do not** restrict feed or water during the breaking up process.

## Light

**Give the hens enough light**— Birds need 13 to 14 hours of light each day. This means that in Idaho we need artificial lights from October to April. Provide

one 75-watt bulb for every 200 square feet of floor space. Use reflectors covering the total floor and roost area to get the maximum benefit from the lights.

Be consistent with artificial light. It is important that birds be given a 13 to 14-hour day each day rather than 10 hours one day and perhaps 16 hours the next.

Morning lights are preferred since they do not require any extra wiring or need for dimming. Simple automatic devices can be used to turn lights on.

## Keep Your Hens Healthy

Disease may hit your flock in spite of all the precautions you take. A few rules you should observe at all times to protect your flock are:

1. *Keep out visitors.* Many times diseases are carried on shoes and clothing.
2. *Do your own culling.* Keep poultry buyer's equipment out of your house.
3. *Do not mix birds of different ages.* Older birds may be disease carriers that have developed adequate resistance.
4. *Screen all openings.* Keep all openings — doors, windows and ventilators — screened to keep out wild birds. They are our greatest source of mites and lice.

**Lice and mites reduce egg numbers** — Lice and mites are serious external parasites of poultry. Close confinement of chickens provides an excellent opportunity for these parasites to develop rapidly once they are established. Lice and mites irritate the birds, lower their vitality, reduce egg production, and may in extreme cases cause death. Lice spend their entire life cycle upon the chicken. They feed upon scales and dried portions of the skin at the base of the feathers. **Be prepared**—inspect your birds and equipment regularly. Too much damage has been done when your birds show the effects of lice and mites.

**Control of lice** — There are a number of preparations that can be used to control lice. Lindane will work satisfactorily. It can be used as a roost spray or sprayed directly upon the litter. One treatment will control lice for about 3 months.

To make lindane roost paint, add one-half pint of 20 per cent lindane emulsion to one gallon of water. Clean the perches thoroughly and paint or spray the mixture on the upper surfaces until they are wet. This preparation should be sprayed on about one-half hour before the birds go to roost. One pint will cover about 250 feet of perch.

Another effective method in controlling lice consists in the application of undiluted 40 per cent solution of nicotine sulfate (Black Leaf 40) to the top surface of the roosts with a paint brush. A half pint is enough for 100 to 125 linear feet of roost space. This is done about 20 minutes before the birds go to roost. One treatment will not eradicate them. Some of the lice are not killed and the eggs are not destroyed. Treatments should be repeated every 10 to 14 days until the birds are clean. **Black Leaf 40 is very poisonous and should be handled with care.**

**Common chicken mites** — The common chicken mite, called the red mite or roost mite, is by far the most prevalent mite affect-

ing poultry. It is the common summer parasite. Mites feed on the birds at night; during the day they leave the bird and remain hidden in crevices.

**Control** — Sanitation, ventilation, and elimination of cracks in which mites can hide is required. All windows and openings must be properly screened to keep out birds such as sparrows as they are our most common source of mites and lice.

The lindane solution used for

lice will control mites. The longest-lasting material and most popular product for mite control is anthracene oil (carbolineum). This can be sprayed or painted on the roosts, and wooden nests. The best time to treat for mites is before you house your pullets. One treatment will last a year.

**Fowl pox.** If pox is a problem in your area, immunize the pullets against fowl pox by vaccination while they are on range and before egg production begins.

## Respiratory Diseases

Respiratory diseases are a very serious problem in certain sections of Idaho. Sound management practices, a good sanitation program, and an adequate ventilating system will aid in their prevention.

Infectious bronchitis, Newcastle disease, and chronic respiratory disease all have similar symptoms. Therefore, a laboratory diagnosis is essential to determine the specific disease involved to assure proper treatment.

**Infectious bronchitis** is a serious disease in laying flocks. Egg production drops rapidly. Egg quality and shell quality suffer for a long time. This disease can be prevented by vaccination. Many vaccines are now available. Vaccines must be used carefully and exactly according to manufacturer's directions. In

areas where bronchitis is a problem vaccination is recommended.

**Newcastle disease**, like bronchitis, has caused serious losses in parts of Idaho. Its effect on a laying flock is much the same as bronchitis. Egg production stops and egg quality is very poor for a considerable period. Newcastle disease can also be prevented by vaccination. A number of vaccines are available which must be used according to manufacturer's directions. If Newcastle disease is a problem of your area, vaccination is recommended.

**Chronic respiratory disease** is becoming more serious. There is no specific treatment or vaccine at the present time for this disease. Varying results have been obtained by feeding high levels of various antibiotics.

## Cannibalism

**Cannibalism costly.** — Cannibalism can develop at any age. Overcrowding, inadequate roosts

and shortage of feeders and water equipment are generally responsible. If the habit de-

velops, check all management and equipment to correct the fault.

The following practices should be followed if your birds begin picking at any age:

1. Allow more room if crowded.
2. Apply anti-pick salve to injured birds.
3. Give birds fresh, green feed.
4. Feed whole oats in hoppers (especially during developing period).
5. Darken nests.
6. Remove pickouts or blowouts immediately.
7. Provide adequate ventilation.

If the habit develops and management changes do not improve the situation, there are two general practices that will usually stop the trouble. One is to apply a mechanical anti-pick device to the beak of each bird. This may cause birds in production to "slump" as it interferes with their feeding habits until they become adjusted.

The most general practice now is to debeak all birds. This is accomplished with machines that cut off by cauterizing one-third to one-half of the upper beak. This can be done without injuring birds or production if the birds are handled carefully. Many poultrymen follow a practice of debeaking all pullets when they are placed in the laying house.



Upper beak of White Leghorn pullet being debeaked with electric machine to reduce cannibalism hazard.



Illustration of hen properly debeaked. About one-half of upper beak removed.

Prolapse is generally caused by birds being too fat. The loss from this problem results from picking and cannibalism. If debeaking is done, less harm will

result from the occasional prolapse. Having an adequate number of nests and keeping birds from laying on the floor will reduce the problems.

## Maintain High Egg Quality

With minor exceptions, such as blood spots and thin shells, all eggs are of the highest grade and quality when produced. It is now your responsibility to maintain that quality so the eggs reach the consumer with high quality.

**Produce eggs of high quality, then sell them on a graded market to receive the premium price.**

**Watch these factors**—The following program is essential to produce top quality eggs:

1. Keep birds confined.
2. Keep nests filled with clean material.
3. Clean soiled eggs (washing not recommended).
4. Gather eggs at least three times each day (Improves quality, reduces dirties and broken eggs.)
5. Cool eggs in an open basket.
6. Hold eggs in cool storage—50 to 60° F.
7. Hold eggs in high humidity—70-80% relative humidity.
8. Pre-cool egg cases.
9. Pack eggs small end down.
10. Market eggs at least once each week. Twice is preferred.

CO-OPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS,  
UNIVERSITY OF IDAHO, COLLEGE OF AGRICULTURE, AND  
UNITED STATES DEPARTMENT OF AGRICULTURE  
COOPERATING

JAMES E. KRAUS, Director

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**Rations for Your Laying Hens.** Extension Bulletin No. 177.

**Barley—A Valuable Feed for Egg Production.** Experiment Station Bulletin No. 238.

**Idaho Broiler Production.** Extension Bulletin No. 226.

**Brooding and Rearing Pullets for Profitable Layers.** Extension Bulletin No. 196.

**Cull for More Egg Profits.** Extension Circular No. 107.

**Practices for Conserving Egg Quality.** Extension Circular No. 71.

**The Idaho Farm-Flock Laying House.** Extension Bulletin No. 244.

**Laying Flock Ventilation.** Farm Electrification Leaflet No. 22.

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