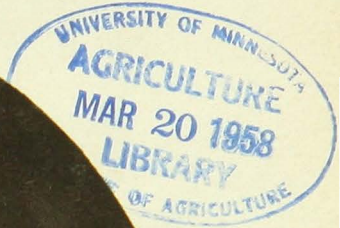


RAISING CHICKS for Flock Replacement

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Agricultural Extension Service
UNIVERSITY OF MINNESOTA

U. S. DEPARTMENT OF AGRICULTURE



Raising Chicks for Flock Replacement

Poultry flocks are getting larger. You may within the next few years be expanding the size of your poultry operation. However, in raising pullets for replacement, the object is the same whether you keep 200 or 2,000 hens. You want to raise pullets that will make rapid growth, with a minimum of loss, and that will be ready to lay at the desired time. The principles you should follow, too, are the same—good chicks, comfortable housing, room to grow, well-balanced rations, and protection against disease.

On the other hand, the size of flock may determine how you will accomplish these things. If you have a flock of 1,000 or more birds you will want to consider:

1. Whether to raise chicks in complete confinement, or put pullets on range for the latter part of the growing season.
2. Whether to raise more than one brood each year to distribute egg production more uniformly throughout the year.

These in turn will influence the kind of housing and the equipment for feeding and watering that will use your time to the best advantage.

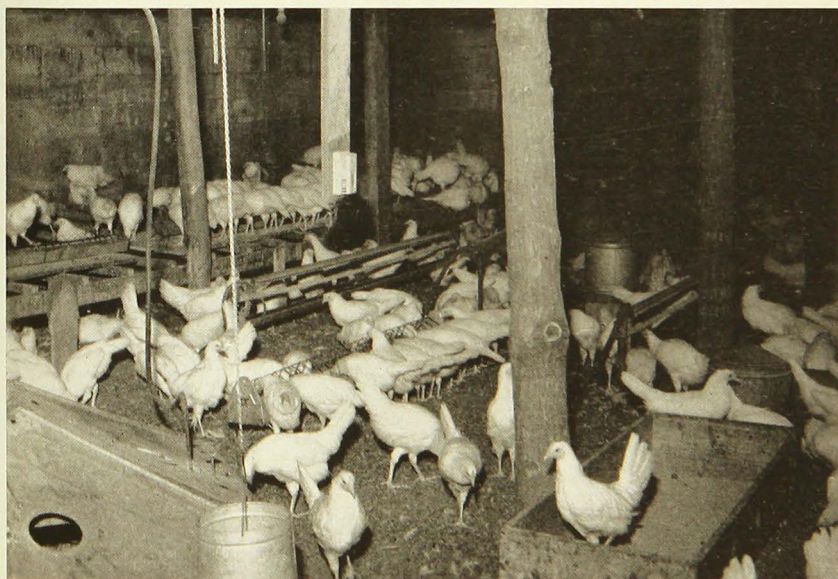
Labor is an important consideration in the larger flock. With the small, sideline flock, however, you may find certain labor-saving practices and equipment more costly than the saving of time will warrant.

All-Pullet Flock

In almost every case, the all-pullet laying flock will be the most profitable. There are several reasons for this:

1. Production will suffer if hens and pullets are housed together. Make it a rule never to keep old hens, unless they can be housed separate from the pullets.
2. The old hens require more feed for body maintenance and lay approximately 20 percent fewer eggs than they did as pullets.
3. The larger eggs laid by old hens cost more to produce.
4. The older hens produce eggs of lower interior and shell quality than those they laid as pullets.
5. Oversize eggs do not fit the regular egg-case fillers or cartons, increasing breakage.
6. Studies in Iowa showed higher mortality in pullets when kept with old hens.

There may be individual cases of flocks large enough so that hens and pullets can be kept separate. Even here, however, the old hens are not likely to be profitable, unless you are sure of a special market which will pay an extra price for the over-size eggs at least in proportion to their extra size.



PRICE PER DOZEN (CENTS)

38

37

36

35

34

33

32

31

30

**MINNESOTA EGG PRICES
BY MONTHS
(5-YEAR AVERAGE)**

JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV D

Time of Hatch

The best time to buy your chicks will depend on when you want them to start laying, counting on $4\frac{1}{2}$ to 6 months to reach maturity. With one hatch a year, you will ordinarily do best with February-hatched pullets to bring them into lay in the late summer when the egg price is normally rising. This will also insure their laying full-size eggs by the time large eggs are at the best premium.

In times of uncertain prices, you may be tempted to delay making a decision as to the number of chicks to buy. This is almost certain to result in disappointment. You may not be able to get the kind of chicks you want. Also, you will probably have your chicks so late that they will not come into lay soon enough to profit from the peak prices of the fall.

If you plan to raise a second flock of pullets, the time of hatch will depend on when you want to bring them into lay and the way you are using the houses. With two houses, pullets may be raised in each one and continued there as hens. In this case, a late February and an early December hatch will provide a good schedule of egg production. That will also vacate the houses, ready for the next batch of chicks, at about the time the hens are reaching the end of laying—at 20 to 21 months of age.

The late fall or early winter chicks should be given artificial light to provide a day of 12 to 14 hours, until the days reach that length as spring approaches.

Buying the Chicks

Not all chickens will give you equal results. It will pay you to look for sources of chicks bred for high livability and high production rate. Be sure to look for chicks from stock tested for pullorum disease and fowl typhoid.

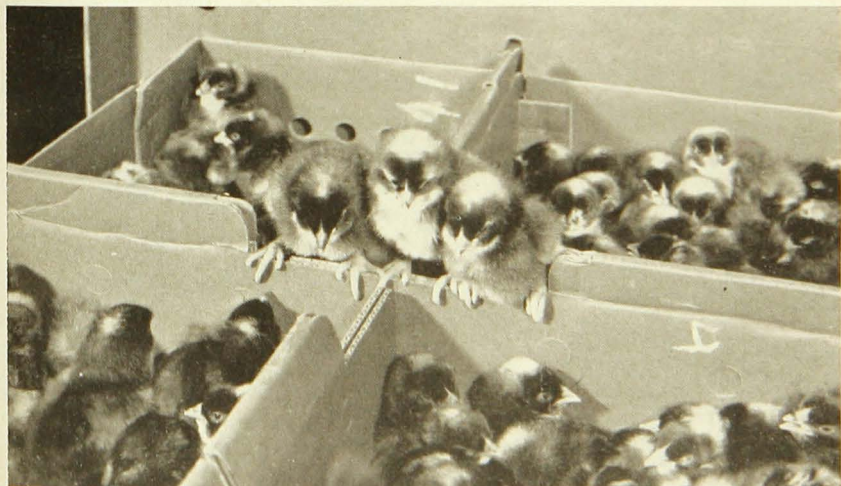
Buy your chicks as close to home as you can get the quality you want. Long distance shipping increases the danger of disease. Buy nothing but day-old chicks as a further protection against disease.

If you need information on where to buy chicks, the Minnesota Poultry Improvement Board, State Office Building, St. Paul, will supply you with a list of the hatcheries under their supervision. The list shows the rating of each hatchery as to breeding and disease control. The term "Certified" means the hatchery flock has been mated to R.O.P. males, from stock of known high production. They will cost more than the "Approved" grade but are usually worth the extra price. The term "Clean" indicates the highest degree of freedom from Pullorum and Typhoid.

Your own past experience and that of your neighbors will also be helpful in deciding what kind of stock to buy and where to get it.

In placing your order for chicks, allow for 8-10 percent death loss and for some birds that will have to be culled out. In that way you will be more sure of having only well-developed, thrifty pullets for the laying house.

Most people find pullet chicks the most satisfactory. Pullets grow best without competition from the cockerels. Also, poultry meat prices are generally too low to assure any profit from raising farm poultry for meat. A few cockerels to be raised with the pullets to supply the home freezer may be economical as a means of having fresh killed birds for this purpose. Sexing errors may provide enough males for home use.



The Brooder House

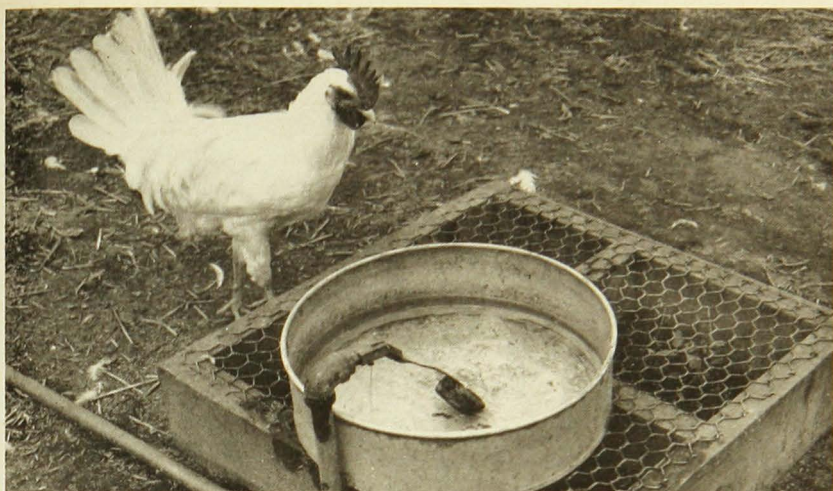
Chicks are best brooded in lots about 350 for each brooder. For a flock of this size you will find the most economical housing in a movable, un-insulated brooder house, about 12' x 14', that can be moved to range when pullets no longer need heat.

This is a good method for a flock of any size. But if you raise as many as 1,000 chicks (which would require three movable brooder houses), you will find a single insulated permanent house will be preferable. Such a house has several advantages:

1. You can raise the pullets in complete confinement.
2. It cuts the labor of caring for the chicks.
3. It reduces fuel cost per chick.
4. It can be provided with running water and electric wiring on a permanent basis.
5. If well enough insulated it will serve as an all-season building, suitable for housing part of the laying flock all year, or for brooding at any season.
6. It is large enough to be used for other kinds of livestock at some future date.

Build the house to allow about one square foot for each two chicks. By the time the pullets mature they will need at least 2 square feet per bird. Build the house large enough to provide this extra room or provide wire roosting shelters for the overflow. A shelter suitable for 250 pullets is shown in Extension Folder 193, "Range Shelter for Pullets."





Equipment

One of the cheapest types of insurance for good growth is having enough feeders at all times so that every chick can eat at any time. Use troughs feeding from both sides, allowing space as follows:

For 100 Chicks

to 2 weeks	Two 2-foot troughs
2-10 weeks	Two 4-foot troughs
10-20 weeks	Two 6-foot troughs

For use on range, use covered feeders to protect both feed and pullets against rain or hot sunshine. Otherwise there will be more waste of feed and the birds may not eat enough for the most economical growth. Range feeders should be of large enough capacity to require filling only 2 or 3 times each week.

Two important labor-savers for pullets on range are running water and bulk storage of feed.

Have water available at all times. Running water is essential as a labor-saver in the larger flocks, or for flocks on range. For small flocks of pullets on range the water may be supplied from a large tank or barrel and piped to the waterers.

Place waterers and feeders on platforms covered with poultry netting or one-inch mesh hardware cloth to protect chicks against diseases that are spread through droppings. The moist conditions around feeders and waterers where droppings accumulate most heavily furnish ideal conditions for the spread of such diseases as coccidiosis and worms.

Automatic feeders may prove economical in flocks of several thousand chicks.

Give Them a Good Start

The best start for your chicks means first of all to be ready for them. Have the house thoroughly cleaned and disinfected, litter replaced, and the brooder going for 2 or 3 days to make sure that it is properly regulated and the house is a comfortable temperature.

Many different types of brooders are used with good results. The important conditions are:

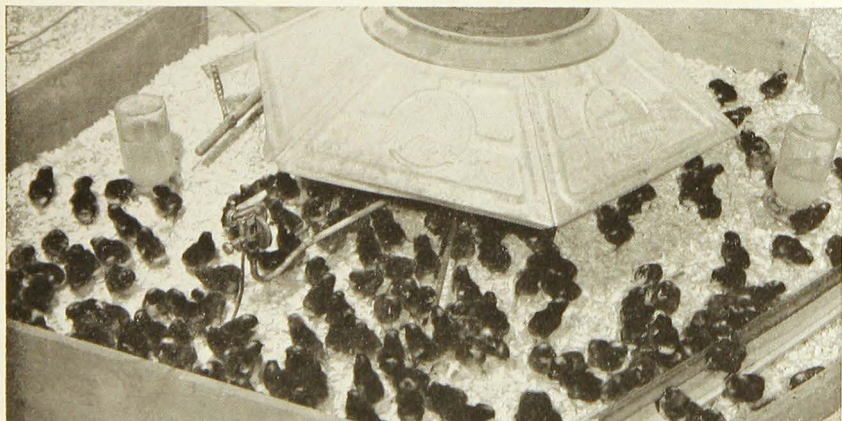
1. A light fluffy litter, such as crushed corncobs, to a depth of about 3 or 4 inches at the start.
2. A starting temperature of about 95° F. available to the chicks. With a conventional hover this should be the temperature at the height of the chicks' backs at the outside edge of the hover.
3. A choice of temperature. Chicks grow best if they can get away from the warmest areas. In fact, best growth and feathering are produced if the outer areas of the house are cold.
4. Confinement to an area around the brooding area until the birds learn to move in and out safely. Set up a ring of cardboard or building paper around the brooder, at a distance that will provide as low as 70° F. at the outside. Enlarge the circle as chicks move farther from the heated area, until they have free run of the brooder house.

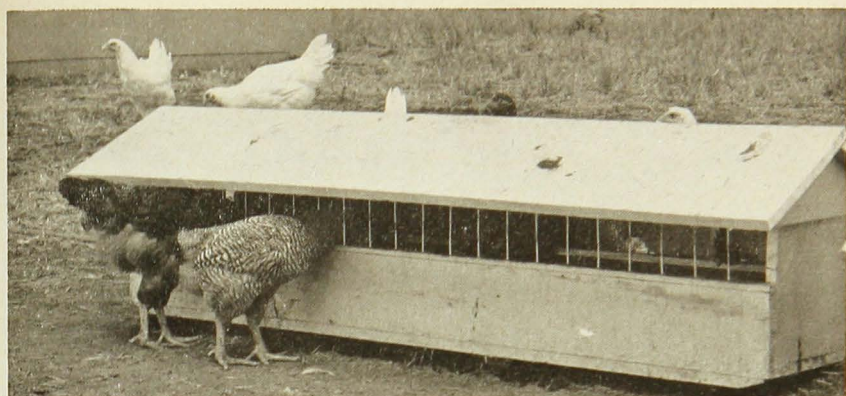
Place feeders and waterers so that they extend part way into the heated area, but move them farther away as you find the chicks spending less time in that area. Never let them get empty.

Use full feeders at the start. For the first few days, put feed out on egg-case flats to be used until chicks use the feeders regularly.

Cannibalism may be a serious problem. Avoid crowding the birds, regulate the temperature so that they can always get away from the heat, have enough feeders. Chicks can be debeaked at any age if necessary.

Encourage activity by keeping the litter well stirred.





Sanitation Is Still the Key

Preventing disease is always better than any form of cure. You will have best control of *Coccidiosis* and *worms*, the two most common filth diseases, by preventing the conditions which allow them to spread.

These conditions are:

(1) Presence of the parasites. (2) Warmth. (3) Moisture.

Under practical conditions the parasites are always present. You can, however, keep the numbers of parasites low enough to avoid serious trouble.

In the brooder house—

Use a deep, fluffy litter and keep it stirred so that the parasites are mixed with the litter instead of being exposed on top.

On range—

Use a range not used by poultry for the past two years. Warmth is necessary to the growth of the chicks.

Moisture can be controlled—

Provide sufficient ventilation in the brooder house.

Place feeders and fountains on screen platforms.

Keep the litter stirred so that it will dry out. A built-up litter will, in itself, help in the drying process because the chemical and bacterial action tends to produce heat.

Move feeders and waterers every day or two to avoid heavy contamination of the ground.

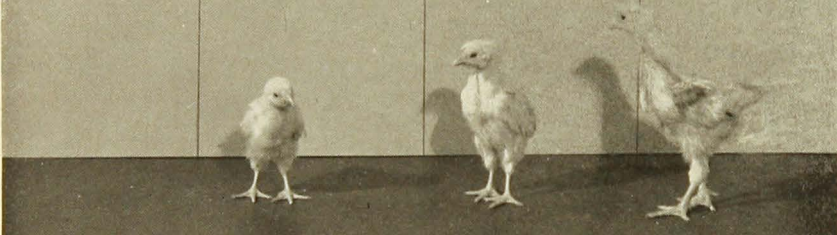
In outbreaks of coccidiosis it is sometimes necessary to use a coccidiostat in the feed.

Fowl Paralysis or Leukosis—

The best control consists in raising the chicks completely separated from the old flock.

50 YEARS OF PROGRESS IN FORMULATING POULTRY RATIOS

	1905	1930	1955
WT. IN LBS. 24 DAYS OLD	.26	.40	.65
LBS. OF FEED PER LB. OF GAIN	2.5	2.2	1.5



The image shows three chicks of increasing size from left to right, corresponding to the years 1905, 1930, and 1955. The 1905 chick is the smallest, the 1930 chick is medium-sized, and the 1955 chick is the largest and most developed.

Feeding

Modern rations will give most efficient growth. Start the chicks on an all-mash starter containing about 20 percent protein. They will need only water in addition to this. After 5 weeks the protein intake may be reduced by 1 percent each week, for the next four weeks. The simplest way to do this is to feed cracked corn in addition to the mash. If you are mixing your own mash you might also reduce the protein by increasing amounts of ground corn or by reducing the soybean oil meal in the mash. Whole oats may be fed beginning at about eight weeks.

Growing period (10-20 weeks)

At about ten weeks change to the growing mash. This may be an all-mash grower (16 percent protein) or, if you have your own grain, a 20 percent grower fed with grain may be a little cheaper. Always keep oats consumption lower than corn intake. Good green pasture will help to save somewhat on the feed use, but is of little value after it turns brown or begins to dry out.

On range it is best to use covered feeders that will provide some protection against sun and wind. Otherwise the pullets may not eat enough to support the best growth. Have waterers placed near the feeders.

Oyster shell feeding should be started about two weeks before laying starts. (See Formula Chart #5601 for Rations).

Housing the Pullets

As soon as laying starts, the pullets should be placed in their laying quarters. This is very important if egg production is to increase at the normal rate.

All repairs and cleaning should have been taken care of before pullets are housed so that production will not be interrupted.

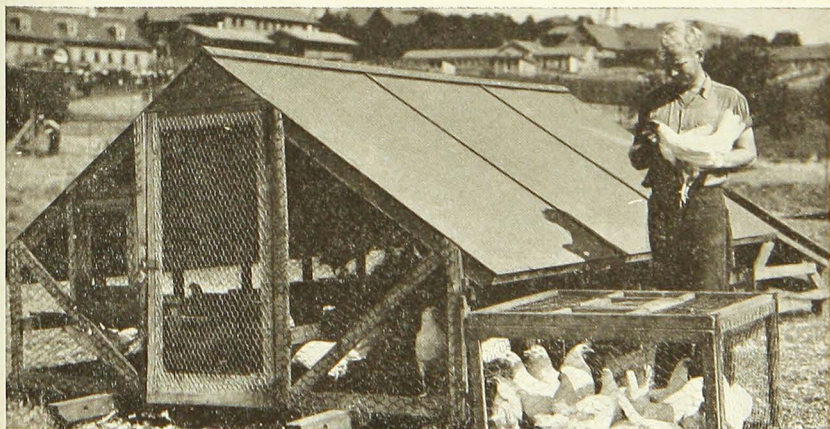
This is the time to sort pullets carefully; to cull out the runts and birds lacking in vigor. It is also the time when debeaking can be done most easily.

Run all the pullets into a catching corral or crates so that they can be handled individually.

Housing by late July or early August, as soon as pullets start to lay, has several advantages:

1. It provides time to get a good layer of litter built up before cold weather, promoting dryness.
2. The pullets learn to use the nests earlier, thus reducing the number of floor eggs.
3. They can be housed with less danger of interrupting production.
4. It avoids loss and soiling of eggs that occurs when pullets lay on range.

Housing the pullets at the proper time to get the best production creates a problem, however. Generally, hens may still be laying at a good rate and the large eggs they lay will bring a good premium for several months more. You can take advantage of this by providing temporary housing for them as long as they continue to lay. A two-brood system with two or more houses makes this simpler. However, hens may be moved in late summer, without affecting production, to temporary quarters such as brooder houses or barn lofts where they can be kept until they stop laying. This usually means, too, that they will be sold on a slightly higher market than if sold in early fall.



Protect Against Respiratory Diseases

Several respiratory diseases cause severe losses to poultry raisers, either in reduced egg production or in actual death loss, or both. Acute respiratory diseases are fowl pox, Infectious Bronchitis, Newcastle disease, and Laryngotracheitis. The more common chronic respiratory diseases are fowl cholera, chronic respiratory disease, and infectious coryza.

None of these diseases can be cured. They can be controlled only by preventive measures.

1. Buy only day-old chicks. Do not bring adult birds into the flock.
2. Do not bring re-used feed sacks or poultry crates on the farm, unless they have been properly sanitized.
3. Keep visitors out of the poultry house and poultry range.

Vaccination—

The *acute* diseases can be controlled by vaccination.

Vaccinate young stock every year for any of these three diseases that are prevalent in your area.

<i>Disease</i>	<i>Age to vaccinate</i>	<i>Method</i>
Fowl pox	2-4 months	Wing web or feather follicle
Infectious bronchitis	5-6 weeks and up to 16 weeks	Mass method—Spray or dust or in drinking water. <i>Live Virus Vaccine</i>
Newcastle disease	8-16 weeks	Mass method—Spray, dust or in drinking water or individual vaccination with killed or modified <i>Live Virus Vaccine</i>

(PRECAUTION—*Live virus vaccines may cause an outbreak of the disease in unvaccinated birds on the farm or in the area.*)

When vaccinating for more than one disease it is best to vaccinate for each separately, at 4-week intervals, the last one not later than 16 weeks of age. It may sometimes be safe to combine Bronchitis and Newcastle vaccination.

Fowl pox “takes” should appear in the form of inflammation and scabs in 5-7 days. Revaccinate if “takes” are not found.

“Takes” in the case of Newcastle and Infectious bronchitis can be determined only by laboratory tests.

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