

FEEDING BABY CHICKS

H. L. KEMPSTER

Success in raising baby chicks depends largely upon feeding proper rations. Chicks must get a good start if they are to develop into vigorous growing stock and good layers. Strong, healthy chicks are necessary, but they also require sanitary quarters, freedom from dampness, and a comfortable temperature. Of equal importance, however, is a properly selected diet.

Rations for baby chicks should contain nutrients necessary to furnish both heat and energy and to manufacture tissue, bone, muscle and feathers. It is of vital importance that they also contain what are known as accessories for growth. The ration should be made up of clean, wholesome feeds properly mixed, and having a limited but adequate amount of crude fiber or roughage.

Food From Animal Origin

While grains and grain by-products form the major portion of a chick's diet, if the chick is to be successfully grown these feeds must be supplemented with feeds rich in protein, usually from an animal source. Milk in some form, such as liquid skimmilk, dried milk products or condensed buttermilk, is probably the most satisfactory type of animal food. If liquid skimmilk is to be depended upon as the sole source of protein concentrate it should be given as a drink and to insure the consumption of an adequate amount of milk no water should be given. Liquid milk, however, has one serious objection. It attracts flies which may be responsible for tapeworm infestations. For this reason many prefer the use of dried milk which is quite generally found in chick starter rations. The value of milk in chick rations is greatly enhanced by the fact that it is a rich source of vitamin G and contains many other valuable nutrients. The Missouri all-mash starter mash contains 5% dried milk.

Commercial meat scrap is also an excellent animal protein supplement. Meat scrap should contain 50 to 55% protein and not over 10% fat. Meat scrap of this quality usually contains 20 to 25% bonemeal. Meat and bonemeal contains a much higher amount of bonemeal and, if used in baby chick starter rations, may increase the mineral content of the ration to such a high level that trouble from perosis (slipped tendons) may occur. Meat scrap comprises 10% of the Missouri all-mash chick starter mash.

Fish meal is frequently used in chick rations and may be considered a substitute for the meat scrap. Recent investigations indicate that soybean oil meal may be used as a partial substitute

for meat scrap in chick rations. Soybean oil meals vary in their efficiency, depending upon the variety of soybeans and the temperature at which the oil has been extracted.

Vitamins

"Vitamins" is a term given to so-called accessories which have been found essential for growth and the maintenance of health in the chick. One of these of interest to the poultryman is vitamin A. Yellow corn and the green leafy parts of plants are excellent sources of this vitamin. Yellow corn constitutes approximately 50% of the starter mash and when used in this amount the vitamin A requirements of the ration are usually met. Dried leafy products such as alfalfa leaf meal, dehydrated alfalfa, etc., are usually found in most chick starters.

Another important vitamin is vitamin D. The chick must have this vitamin in order to utilize the minerals necessary for growth. So-called leg weakness, which used to be so common with chicks grown out of season, was due to absence of vitamin D. Either the vitamin must be fed or the chicks should be exposed to direct sunshine which is equivalent in its effect. Since sunshine through glass is ineffective it is necessary to get chicks outdoors at the earliest opportunity, or, if confined, the chicks should get vitamin D in the ration by including cod-liver oil or sardine oil. The usual recommendation is to use $\frac{1}{2}$ to 1% of an oil which has a vitamin D potency of 85 U. S. P. units per gram. Fortified oils may be used in smaller amounts depending upon the vitamin D potency of the product.

Another vitamin important in poultry rations is vitamin G. Extremely rich sources of this vitamin are pork liver and yeast. Milk and green leafy materials, dehydrated alfalfa leaf meal, and green leafy alfalfa leaf meal are important sources of vitamin G and their use in the ration insures an adequate source of vitamin G. This is another reason why the Missouri all-mash starter formula specifies 5% dried milk and 5% alfalfa leaf meal. When the range furnishes an abundance of green leafy material and weather permits the chicks to be exposed to sunshine, excellent results may be secured from rations which would be entirely inadequate for chicks grown in confinement. Even though the chicks are allowed the use of range, there are periods of the year when green leafy material is not available. At such times the use of dried leafy material is advisable. Frequently the dry leaves that shatter from legume hays can be saved and used to advantage in feeding the poultry flock.

Minerals

While the absence of certain minerals will cause certain deficiency diseases, a ration containing milk, meat scrap, and natural feedstuffs will ordinarily furnish an adequate supply of minerals with the possible exception of salt, which should comprise from $\frac{1}{2}$ to 1% of the ration. No other minerals are added to the

Missouri starter mash. The meat scrap and milk in addition to the minerals found in the other ingredients evidently furnish sufficient minerals to satisfy the chick's requirements. Where perosis (slipped tendons) occurs it may be due to the ration being too high in mineral. A deficiency of manganese may also cause the trouble. One-fourth of a pound of manganese sulfate to a ton of feed is sufficient to prevent slipped tendons.

Other Ingredients

Wheat by-products such as bran, middlings, shorts, or mill feeds should be added to the ration. A combination of ground wheat and bran may also be used. Ground oats of good quality and low in fiber may be used as a substitute for shorts in chick rations. There is evidence that the use of oats discourages cannibalism. According to work at the Missouri Agricultural Experiment Station it is unsafe to use ground barley in extensive quantities in rations for chicks under a month old. The heavy mortality of chicks fed ground barley probably was due to the presence of fine sharp pieces of hull. The use of wheat bran in addition to furnishing desirable food nutrients also adds the necessary bulk to the ration. Rations which are extremely fine are not so desirable. On the other hand the presence of too much bulk is inadvisable.

The Missouri Ration

Prior to 1930 the common practice was to feed chicks on a chick grain—chick mash combination. About this time the "all-mash" system of feeding was adopted. This greatly simplified the feeding of chicks because routine was eliminated. Growth apparently is not dependent upon the form in which the ration is fed. Certainly the all-mash system of feeding is now almost universal. It is especially important in successful chick feeding to provide adequate hopper feeding space. At least 2 inches of linear space per chick is recommended for the first week and more as the chicks increase in size. Earlier recommendations did not suggest the use of small grains as a supplement to the mash until the chicks were 8 weeks old. There is a strong tendency at present, however, to start feeding grains at a younger age, especially to pullets which are to be retained as layers. Changes in the Missouri all-mash starter have been made as experience and economical practice and experimental evidence justified. At present the formula is as follows:

MISSOURI ALL MASH FORMULA FOR CHICKS.

Yellow corn meal	-----54%-----	270 pounds
Bran	-----10%-----	50 pounds
Alfalfa leaf meal*	-----5%-----	25 pounds
Shorts	-----15%-----	75 pounds
Dried milk†	-----5%-----	25 pounds
Meat scrap	-----10%-----	50 pounds
Salt	-----1%-----	5 pounds
Cod liver oil‡	-----1%-----	5 pounds

*Not necessary when range furnishes an abundance of tender succulent green feed. Bran may then be used.

†When liquid milk is given as a drink the dried milk may be eliminated.

‡Not necessary when chicks range and are exposed to direct sunshine.

This formula has the following calculated analysis:

Protein -----	17.3%	Fiber -----	5.3%
Carbohydrates -----	55.8%	Ash -----	5.7%
Fat -----	5.1%		

As a margin of safety the *guaranteed* analysis frequently is about 1 to 2% lower than that actually found when an analysis is made. A higher protein content in the mash would result in more rapid growth when the chicks are young. This is not necessarily advisable where the pullets are to be used as layers but would be desirable for the production of broilers. Where a broiler mash is desired it is suggested that 5% soybean oil meal be added to the above formula. The regular chick starter mash is an excellent formula for fattening or finishing mash.

The cockerels, if they are to be marketed as broilers, can be fed on the starter mash until marketed but those chicks to be retained as laying pullets or breeders should be changed to a grain and mash system of feeding at least by the time the chicks are 8 weeks old.

A suggested formula for growing mash is as follows:

Yellow corn meal -----	27%	-----	100 pounds
Bran -----	27%	-----	100 pounds
Shorts -----	27%	-----	100 pounds
Meat scrap -----	10%	-----	40 pounds
Dried milk -----	5%	-----	20 pounds
Bone meal -----	4%	-----	16 pounds
Salt -----	1%	-----	4 pounds

This mash should be fed in conjunction with grains such as corn, wheat, oats, etc., which may also be hopper fed. Such a ration may be fed until the pullets are transferred to winter quarters.

Method of Feeding

The first feed may be given as soon as convenient, preferably by the time the chicks are 48 hours old rather than later. The problem of the poultryman relative to feeding is to see that feed is always before the chicks, that liberal feeding is practiced, and that the feed is clean and wholesome. The drinking utensils should be kept clean and clean fresh water should always be provided, except of course when liquid milk is fed. Good sanitation suggests the frequent changing of the location of the feed hoppers; also the use of care to discourage the chicks from picking up feed from the ground. For this purpose outdoor hoppers may be employed for both the grain and mash. It is extremely important that the growing stock be provided with an abundance of shade.

One should endeavor to develop the pullets so that a few start laying in early September. When the pullet flock on the range is producing 5 eggs per day per 100 birds they should be transferred to regular laying quarters preferably not later than October 1.

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

J. W. BURCH, Director, Agricultural Extension Service
Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914

Digitization Information Page

Local identifier C395-1939

Source information

Format	Book
Content type	Text /Text with images
Source ID	Gift copy not added to collection
Notes	

Capture information

Date captured	November 2019
Scanner manufacturer	Fujitsu
Scanner model	fi-7460
Scanning system software	ScandAll Pro v. 2.1.5 Premium
Optical resolution	600 dpi
Color settings	8 bit grayscale
File types	tiff

Derivatives - Access copy

Compression	Tiff: LZW compression
Editing software	Adobe Photoshop CC
Resolution	600 dpi
Color	grayscale
File types	pdf created from tiffs
Notes	Images cropped, straightened, and brightened Canvas size: 6 x 9