

WARTIME POULTRY FEEDS

By
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WHAT TO FEED
HOW TO FEED IT

—for More Efficient Egg Production.

See Okla. Bul. No. 244.

Feeds recommended in Bulletin No. 244 are still recommended for most efficient production, when available. If you cannot get them, this supplement will tell how to use the feeds you can get.

OKLAHOMA AGRICULTURAL EXPERIMENT STATION

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Wartime Poultry Feeds

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Cereal grains must be supplemented with proteins, vitamins, and minerals for profitable egg production. These ingredients, formerly obtained from fish meal, meat meal, alfalfa meal, milk products, and fish liver oils, are critically scarce. It appears that the situation will not improve until economic conditions again become stabilized. To maintain high quality poultry feeds with a shortage of these well-known ingredients, it will require the use of new and perhaps unfamiliar products. If the composition of these new substances is not carefully examined, their faulty use may endanger the quality of the ration or cause waste of ingredients.

Poultrymen are fortunate in that they have reliable information covering the requirements for egg production and that substitutes of known value can be used to replace the more familiar but rapidly disappearing ingredients.

Successful poultrymen have learned by experience that it is more profitable to adhere to tested standard rations than to risk the hit-and-miss methods too frequently used in the past.

FEEDS FOR EMERGENCY USE

Milk Products

Milk products cannot be equaled for protein, mineral, riboflavin, and the vitamin B complex, but the present supply has restricted their use in laying mash formulas. One should bear in mind that there is no 100% substitute for milk in a laying ration. For those who have a supply, milk products are recommended at the same pre-war optimum levels.

In Oklahoma, dried whey, dried buttermilk and liquid skim milk are still available in some places. Where they can be obtained, it is recommended that milk products be used at 3 to 5% levels in laying mashes. It is doubtful if all milk products will continue to be available for poultry feeds for the duration. There are at present other good riboflavin and B-complex feeds that can be used as substitutes for milk products.

Alfalfa products and succulent green feed when fed in sufficient amounts will furnish ample riboflavin and the B-complex vitamins. The usually recommended amounts of alfalfa

products are 6 to 10% of the mash. Those who have alfalfa growing on the farm can produce their own alfalfa meal. Five hundred pounds of well-cured green alfalfa meal will furnish a supply for 100 hens for one year and for replacement chicks to 24 weeks of age. Hay for this purpose should be cut a little earlier than for ordinary hay purposes, so as to have more tender stems and a larger percentage of leaves. It must be cured without sunburn or bleach from rain in order to maintain full vitamin efficiency. When laying hens have access to good tender green feed in the form of pasture or fresh cut and hand fed greens they need no additional vitamins.

For the small group of poultrymen who cannot furnish green feed to the hens every day there are still available special products that furnish riboflavin and the B-complex vitamins. Manufacturers are placing on the market dried distillers' by-products, dried cereal grasses, dried whey, dried yeast products, molasses-yeast residue, and marine products which can be used for this part of the ration. Such concentrates should be used at no higher levels than the manufacturer's recommendations. The usual amounts are 3 to 10 percent of the mash.

Vitamins A and D

For chicks, the requirements of vitamins A and D seem to be satisfactory if the chicks are given an ample supply of green feed, pasture, and sufficient sunshine, or are furnished fresh cut and hand fed greens and are allowed to range outdoors part of the day.

For hens in confinement one must resort to commercial supplies of vitamins A and D. Vitamin A is available in the form of carotene or vitamin carrying oils. Vitamin D is available in three forms—fish liver oils, irradiated yeast, and irradiated ergosterol. They should be purchased on a vitamin unit basis.

For hens kept in outdoor grassy runs, it is not a common practice in Oklahoma to add these products.

Minerals

No difficulty should be experienced in obtaining minerals for poultry rations since there seems to be an ample supply. With the exception of calcium and phosphorus, minerals are required in such minute amounts that there probably will be no shortage, as those required are not considered critical in the war program.

Proteins

The principal proteins used in laying mashes are of animal or vegetable origin. The reason for the popularity of the animal proteins over the vegetable proteins is that they contain more minerals, especially calcium and phosphorus, and certain essential amino acids. These differences between vegetable and animal protein supplements can be adjusted by incorporating the necessary minerals in the rations and including enough of the animal proteins to furnish the amino acids lacking in the vegetable proteins.

It is generally conceded that soybean meal, cottonseed meal, and peanut meal, when properly supplemented, excel among the vegetable proteins as sources of high quality protein.

Recent experiments have shown that properly cooked soybean oil meal is superior to uncooked meal when used to replace animal proteins such as meat scraps, fish meal and dried milk.

Experiments at the Oklahoma Agricultural Experiment Station have repeatedly shown that where not over eight pounds of cottonseed meal is used in 100 pounds of laying mash, discolored yolks will not develop. It should be emphasized that this particular kind of discolored yolk caused by larger amounts of cottonseed meal is not spoiled or bad but is sweet and clean and perfectly normal except in color.

Since 1923 the Oklahoma A. and M. College has used a laying mash containing 5 percent cottonseed meal. This is equivalent to about 2.5 percent cottonseed meal in the total hen diet. Eggs produced by this feed have developed no olive green or commonly called cottonseed meal yolks.

Green colored mung beans in recent experiments at this Station have given promise, when ground, of being good vegetable protein supplements in poultry mashes. Cooked mung beans, 15 pounds pressure for 40 minutes, have proved superior to uncooked beans.

Other vegetable protein supplements of lower value are corn gluten meal and linseed oil meal.

EMERGENCY LAYING MASH FORMULAS

When the ingredients can be obtained, the Oklahoma Agricultural Experiment Station still recommends the well tested formula C. A. 1, given on page 12 of Oklahoma Agricultural Experiment Station Bulletin No. 244.* The only ingredients in this mash difficult to obtain at present are dried buttermilk, meat scraps, and alfalfa leaf meal.

Substitution for Milk Products

When green feed and liquid milk are supplied, the alfalfa and dried buttermilk may be omitted from formula C. A. 1. If hens are fed all the liquid milk they will consume—two to three gallons per 100 hens per day—good production can be maintained with this mash without the dried buttermilk or meat scraps.

When no milk products whatever can be secured, the formula C. D. 3, Bul. 244, page 12, is recommended. This formula uses cottonseed meal and soybean meal in combination with a minimum amount of meat scraps. Experiments have proven that it will produce good results.

New Formula for Emergency

Since the publication of Bulletin 244, a new formula has been tried and found satisfactory for laying hens and growing chicks after they are eight weeks old. This formula, C. U. 7, contains the following ingredients:

Wheat bran	23 lbs.	Cottonseed meal	6 lbs.
Wheat shorts	22 lbs.	Soybean meal	6 lbs.
Yellow corn meal	15 lbs.	Dried buttermilk	3 lbs.
Pulverized barley	10 lbs.	Pulverized limestone or	
Alfalfa leaf meal	6 lbs.	oyster shells	2 lbs.
Meat and bone scraps	6 lbs.	Salt	1 lb.

This formula differs from C. A. 1 in that ingredients difficult to obtain have been reduced to a minimum.

* The Oklahoma A. and M. College does not manufacture feed for sale. Commercial poultry mashes have been sold under the name "A. and M." but these mashes are not manufactured by the Oklahoma A. and M. College. Twenty years ago the Oklahoma Agricultural Experiment Station recommended a laying mash formula based on experiments conducted under Oklahoma conditions and availability of feeds at that time. This formula was known at that time as the Oklahoma A. and M. Laying Mash. As knowledge of poultry feeding advanced and feedstuffs changed, this formula was revised from time to time. Since 1923, six formulas have been recommended in order to take into consideration the scarcity of certain products and include improved products. The last revision was formula C. A. 1, published in January, 1942. Animal protein supplements have always been the expensive ingredients in a laying mash, consequently they have always been held to a minimum consistent with good results and costs.

A satisfactory concentrate for making mash can be made by preparing the following formula:

Alfalfa leaf meal	6 lbs.	Dried buttermilk	3 lbs.
Meat and bone scraps	6 lbs.	Pulverized limestone	2 lbs.
Cottonseed meal	6 lbs.	Salt	1 lb.
Soybean meal	6 lbs.	—	—
			30 lbs.

This concentrate provides the same protein, vitamin and mineral supplements which are provided in formula C. U. 7.

Thirty pounds of this concentrate is mixed with 70 pounds of a combination of any three ground grains available on the farm. Some suggested combinations are: No. 1, wheat, oats, and corn; No. 2, wheat, oats, and barley; No. 3, kafir, wheat, and corn; No. 4, any grain sorghum, corn, and oats.

When alfalfa leaf meal cannot be obtained, good alfalfa hay can be used as a substitute, or the alfalfa can be omitted from the mash if the birds are fed succulent green feed in sufficient amounts daily. Seventy-six pounds of the ground grains would be used in this case. The slight reduction of protein resulting would be corrected by the green feed. When meat and bone scraps cannot be obtained, the soybean meal could be increased to 10 pounds and 2 pounds of bone meal added. This would not lower the protein or mineral content enough to influence the egg production under average farm conditions where the birds have outdoor runways.

If dried buttermilk is not available, 3 pounds of some of the milk substitute products may be used to substitute for it.

If yellow corn and green feed are not supplied in the daily ration and hens are not exposed to outdoor sunshine, it will be necessary to use additional vitamin A and D concentrates.