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Suggestive Points on Feeding for Egg Production

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If satisfactory results are to be secured from feeding for egg production the hens must be properly housed, have sufficient exercise, be healthful and vigorous, and possess an inborn tendency to lay. The feeding problem then becomes one of selecting the right feeds, proportioning them correctly, and exercising judgment and common sense in carrying out the feeding operations.

Food is consumed by fowls to build up body tissues and to furnish energy. About seventy-five percent of the feed of a laying hen is required for body maintenance. In feeding for egg production it is imperative that the hen be given enough feed to supply her body needs and have a surplus of proper food elements to use in the production of eggs. It is expensive to feed sparingly, thus giving the hen no surplus above body maintenance.

No phase of poultry keeping requires better judgment or closer observation than that of feeding poultry for profit. Better results are secured when the fowls are fed according to their appetite than when they are fed according to rules. There is no best poultry feed, or ration, other than the one which supplies most economically the necessary food elements. When food value is considered, some poultry feed at $3.00 per hundred pounds may be more expensive than other feeds at $5.00 per hundred pounds.

Hens cannot do well on a whole grain ration. No grain ration supplies the various elements of food necessary in producing eggs. The continued use of a straight grain ration not only results in poor egg production but also results in digestive disorders. A ration should consist of grain and ground feeds. Poultrymen usually refer to the whole or cracked grains as "scratch food" and to the combination of ground feeds as "mash."

Hens being fed for egg production should be fed liberally on foods having the food elements found in the egg. An analysis of the egg shows that it is composed of ash 12.2 percent; water 65.7 percent; protein 11.4 percent; and fat 8.9 percent. The hen must be supplied with the necessary raw materials or she cannot manufacture the finished product. The hen cannot counterfeit her product.

NUTRITIVE ELEMENTS OF FOOD COMPOSITION

Ash produces bone and shell.

Protein produces muscle, tendons, blood, feathers, and whites of eggs.

Carbohydrates produce fat, heat, energy, and yolks of eggs.

Fats produce same as carbohydrates but are two and a quarter times as efficient.

Crude Fiber is only slightly digestible and has practically no nutritive value. It adds bulk to the ration and without it the concentrated feeds would form in a compact mass, thus preventing the digestive juices from functioning efficiently. A ration having more than five or six percent of crude fiber is not relished by poultry.

BALANCED RATION AND NUTRITIVE RATIO

A balanced ration is a ration which supplies in a palatable form the correct proportion of nutritive elements found in the egg.

Nutritive ratio is the ratio between the digestive protein and the digestive carbohydrates plus two and a quarter times the fat.

A ration which contains one pound of protein to from four to five pounds of carbohydrates plus the fat meets the requirements of laying hens. (Fowls in production require that a part of the protein in the ration come from animal sources, in addition to the vegetable protein found in the scratch and mash food.) The above ration would be termed a narrow ration and would be expressed as N. R. 1:4 or 1:5.

The nutritive ratio does not always indicate the true value of a ration and is no guarantee of high egg production. Nutritive ratio as herein figured is based upon the total amount of food elements and not upon the amounts actually digestible. Experiments have proved the superiority of the narrow ration.

AVERAGE PERCENTAGE COMPOSITION AND NUTRITIVE RATIO OF FOODS

	Fiber	Ash	Protein	Carbo-hydrates	Fat	Nutritive ratio
Corn	1.9	1.5	10.4	70.3	5.0	1:7.9
Wheat	1.8	1.8	11.9	71.9	2.1	1:6.3
Oats	9.5	3.0	11.8	59.7	5.0	1:6.1
Barley	2.7	2.4	12.4	69.8	1.8	1:6.
Kafir	1.4	1.5	9.9	74.9	3.0	1:8.3
Milo maize	2.4	2.8	8.7	66.2	2.2	1:8.2
Buckwheat	8.7	2.0	10.0	64.5	2.2	1:7.
Bran	9.0	5.8	15.4	53.9	4.0	1:4.1
Middlings	4.6	3.3	15.6	60.4	4.0	1:4.7
Mill-run	7.6	5.2	12.9	45.1	4.0	1:4.2
Gluten feed	6.4	1.3	23.2	54.7	6.3	1:2.9
Oil meal	9.5	5.8	33.2	38.4	3.0	1:1.4
Cocoanut meal	11.2	4.9	18.8	42.0	8.1	1:3.2
Meat scraps*	.....	8.0	58.0	.....	32.9	1:1.4
Fish scraps*	.....	....	34.0	.....	6.5	1:0.4

*Composition has a wide variation.

Knowing approximately the required nutritive ratio of a balanced ration for laying fowls, a study of the methods used in determining the nutritive ratio of any ration may be made by applying them to the following ration, which may or may not be desirable.

	Fiber	Protein	Carbohydrates	Fat
Scratch food				
50 pounds wheat	.9	5.95	35.95	1.05
25 pounds corn	.47	2.1	17.6	1.25
25 pounds oats	2.37	2.95	14.9	1.25
Mash food				
25 pounds bran	2.25	3.85	13.5	1.0
25 pounds *middlings*	1.5	3.9	15.1	1.0
15 pounds ground oats	1.43	1.77	10.96	.75
15 pounds corn meal	.23	1.56	10.55	.75
5 pounds oil meal	.47	1.66	1.92	.15
15 pounds meat scraps	0.	8.7	0.	1.65
	9.62	32.44	120.48	8.85

To determine the nutritive ratio of the above ration, multiply the fats by $2\frac{1}{4}$ ($8.85 \times 2\frac{1}{4} = 19.91$). Add the product to the carbohydrates ($120.48 + 19.91 = 140.39$). The nutritive ratio of this ration would be the ratio between 32.44 and 140.39. Dividing each number by 32.44 the nutritive ratio is found to be 1:4.4.

The 200-pound combination of feeds has 9.62 pounds of crude fiber or 4.8 percent. It is composed of grains each one of which the fowls like. It has one pound of protein to each four or five pounds of carbohydrates plus the fat, and should therefore be a reasonably good ration when properly fed.

MASH RATIONS USED BY OREGON EXPERIMENT STATION

Mash Number 1

500 lbs. *mill-run*
400 lbs. ground wheat
400 lbs. ground corn
200 lbs. ground oats
100 lbs. ground barley
200 lbs. meat meal
100 lbs. fish meal
50 lbs. oil meal O. P.
50 lbs. bone-meal

Mash Number 2

600 lbs. mill-run
600 lbs. ground wheat
300 lbs. ground corn
200 lbs. ground oats
300 lbs. meat scraps

Analyses of Mashes

	Fat	Ash	Protein	Fiber	Nutritive ratio
No. 1	4.8	7.4	19.7	5.4	1:3.2
No. 2	4.6	5.4	18.1	6.2	1:3.6

SCRATCH FEED

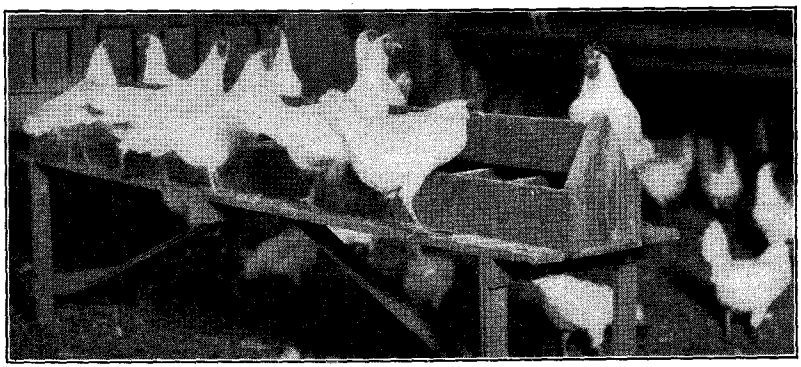
The formula for scratch grain varies with prices, availability, weather conditions, production and physical condition of the fowls. Any one of the following formulas may be used: equal parts, by weight, of wheat, corn and oats; two parts wheat and one each of corn and oats; two parts corn and one each of wheat and oats; or two parts wheat and one part of either corn or oats.

METHOD OF FEEDING LAYING HENS

The grain is usually fed in the litter morning and evening. Approximately four pounds of grain for each 100 hens is fed in the morning and all the grain the fowls will consume is fed in the evening, regardless of its weight. Under ordinary conditions the dry mash hoppers should be open at all times. Fresh water, grit, oyster shell, charcoal, and granulated bone should also be accessible at all times.

The amount of mash consumed is regulated by the amount of grain fed. Most poultrymen prefer to have the laying hens consume approximately equal parts by weight of mash and grain. This proportion will vary, however, according to the weather and the rate of production. A flock of hens laying heavily will consume more mash than the same flock not laying. In cold weather the hens should consume more grain than mash because the demands for body maintenance are greater. The hens should have, in any case, not a limited number of pounds of grain, but all they will eat before going to roost.

Milk may be substituted for a part of the meat or fish scrap in the mash, or it may be fed with mash number one or two as given herein.



Recommended type of open-trough mash hopper.*

A liberal supply of green feed should be given the fowls daily. The efficiency of any feed depends in part upon the amount of succulent feed consumed. Green feed adds bulk to the ration in the most economical form. Green feed furnishes the widest sources providing vitamines, necessary elements to nutrition.

Moist mash has more value as an emergency feed than as a regular part of the daily feeding system. It may be used advantageously in bringing a flock of pullets into an even lay in the fall. It is valuable as an emergency feed when a marked falling off in production is noted at any season of the year.

If a moist mash is fed, it is advisable to feed it on a time basis rather than on a quantity basis. After fifteen or twenty minutes the moist mash that has not been consumed should be removed. After the moist mash has served its purpose it may be gradually eliminated from the feeding system.

*Building plans given in O. A. C. Experiment Station Circular 51.