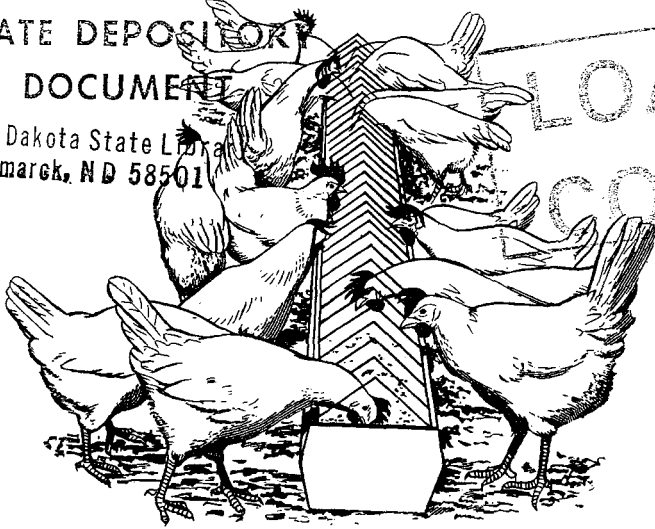




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# FEEDING CHICKENS



JERRY L. SELL  
Animal Science  
Experiment Station

IRVING J. MORK  
Extension Poultryman

ROBERT L. JOHNSON  
Animal Science  
Experiment Station

Feeds comprise 55 to 65 percent of total costs of poultry meat and egg production. Consequently, feeding programs are of utmost importance in economical poultry management. A feeding program must be designed to provide chickens with nutrients in amounts and proportions necessary to satisfy their needs and, at the same time, remain within the economic limits necessary for profit potential to be high.

The manager of a poultry operation generally has considerable flexibility in the choice of ingredients to use in formulating nutritionally adequate, low-cost rations. For most managers, the principle choices involve the selection of a grain or combination of grains which can be used in conjunction with concentrated sources of protein, minerals and vitamins. Grains comprise 50 to 80 percent of chicken rations, so selection of those to be fed is critical to economical production. From a nutritional standpoint, there is no reason that a particular common grain or mixture of grains must or must not be used.

The accompanying ration formulas are intended to serve as workable examples of rations for starting chicks, growing chickens and laying hens. The primary differences among rations in each category are in the grains and/or the proportions of grains used. These rations will support satisfactory rates and efficiencies of poultry production when formulated and used as indicated.

NOTE: Where heavy oats are indicated in a formula, this means oats weighing at least 38 pounds per bushel. Similarly, barley fed to chickens should weigh at least 46 pounds per bushel.

Fats are useful ingredients for poultry rations, particularly when used in combination with low energy grains such as oats and barley. Stabilized animal tallow or yellow grease increases the energy concentration of rations and, when used at about 2 percent of the ration, decreases dustiness and increases the appeal of rations for poultry. Fats are often used in rations for broiler-fryers in order to attain desirable energy levels (examples shown in Table 5), and may be used in a similar fashion in rations for other chickens.

In preparing the grain portions of rations to be used in all-mash feeds, a word of caution is in order. If wheat is to be used, it should not be finely ground. The physical characteristics of wheat make it relatively unpalatable in a finely ground state. Grind wheat to a medium consistency. Chickens also find coarsely ground corn more acceptable than corn of fine texture. Oats, barley and millet are best utilized when ground to a fine consistency.

The information listed in the following tables shows the levels of protein sources, vitamins and minerals needed to yield nutritionally adequate rations. Most poultry producers will find it advisable, however, to make no attempt to mix their own vitamin and mineral premixes. Highly accurate weighing and mixing equipment is needed to accomplish this task satisfactorily. Ready made vitamin-mix premixes, as well as concentrates which contain adequate vitamins and minerals, are available commercially. When these materials are purchased, be sure to use them as directed. Short-cutting nutrient supplies to chickens invariably increases the cost per unit of production.

Antibiotics and some other growth or production stimulants often are included in vitamin premixes or in the commercial concentrates. The proper use of these substances has been stipulated by federal agencies and the regulations must be adhered to.

The amounts of feed required for growth or egg production by poultry of various types varies somewhat with feeding programs and other management practices. However, when rations such as those in the accompanying tables are fed, average feed consumptions will be approximately:

TABLE 1.

	Amount of Feed Required
White Leghorn Females (hatch to 20 wks of age)	1800 lbs per 100 pullets
White Leghorn Hens (during egg production)	24 lbs per 100 hens per day
Broiler Strain Females (hatch to 8 wks)	800 lbs per 100 pullets
Broiler Strain Males (hatch to 8 wks)	700 lbs per 100 cockerels
Broiler Strain Roasters (hatch to 14 wks)	2500 lbs per 100 chickens

TABLE 2. ALL-MASH RATIIONS FOR REPLACEMENT STOCK.

Ingredients	Starter for White Leghorns (0 to 8 wks of age)			Grower for pullets (8 to 20 wks of age)		
	1	2	3	1	2	3
	(pounds per Ton)					
Wheat	1049	-----	-----	534	534	-----
Corn	-----	849	949	-----	-----	374
Oats, heavy	400	500	-----	1100	-----	600
Barley <sup>a/</sup>	-----	-----	400	-----	1100	600
Soybean meal (48% protein)	400	500	500	250	250	310
Meat and Bone meal (50% protein)	50	50	50	-----	-----	-----
Dehydrated Alfalfa Meal (17% protein)	40	40	40	30	30	30
Ground Limestone or Marine shell	10	10	10	20	20	20
Dicalcium Phosphate or equivalent	34	34	34	50	50	50
Iodized salt <sup>b/</sup>	6	6	6	6	6	6
Vitamin premix	10	10	10	10	10	10
Methionine	1	1	1	-----	-----	-----
Calculated protein, %	20.2	20.2	20.3	15.8	16.4	16.3

<sup>a/</sup> Millet may be substituted for barley on a pound for pound basis.

<sup>b/</sup> Iodized salt should contain approximately 0.7% manganese, 0.5% iron and 0.25% zinc.

TABLE 3. VITAMIN PREMIXES

		Amount in 10 pounds of Premix		
		Starter	Grower	Layer
Vitamin A,	I.U.	3 million	3 million	4 million
Vitamin D <sub>3</sub> ,	I.C.U.	600,000	600,000	1 million
Vitamin E,	I.U.	4,000	4,000	4,000
Vitamin B <sub>12</sub> ,	mg.	10	6	6
Riboflavin,	g.	12	8	8
Niacin,	g.	30	24	24
Pantothenic acid,	g.	20	20	20
Choline,	g.	400	200	400
Menadione,	g.	1	1	1
Antioxidants, etc. <sup>a/</sup>		(as directed by manufacturer)		

<sup>a/</sup> Antibiotics, coccidiostats may also be included where appropriate and should be used according to manufacturers directions.

TABLE 4. ALL-MASH RATIIONS FOR BROILER-FRYER CHICKS.

Ingredient	Broiler-Fryer Chicks						Roasters (Broiler Strain)	
	0 - 4 wks			5 - 8 wks			9 - 14 wks	
	1	2	3	1	2	3	1	2
	(pounds per Ton)							
Wheat	1307	-----	-----	1497	-----	-----	-----	1700
Corn	-----	1167	807	-----	1337	1017	1578	-----
Barley	-----	-----	360	-----	-----	300	-----	-----
Soybean meal (48% protein)	540	680	640	380	540	520	300	138
Meat and Bone meal (50% protein)	50	50	50	40	40	40	40	40
Dehydrated Alfalfa (17% protein)	40	40	40	20	20	20	20	20
Ground Limestone or Marine shell	10	10	10	10	10	10	10	10
Dicalcium Phosphate or equivalent	36	36	36	36	36	36	36	36
Iodized salt <sup>a/</sup>	6	6	6	6	6	6	6	6
Vitamin premix, starter	10	10	10	10	10	10	10	10
Stabilized Animal Fat	-----	-----	40	-----	-----	40	-----	40
Methionine	1	1	1	1	1	1	-----	-----
Calculated protein, %	23.09	23.19	22.77	20.07	20.17	20.06	15.47	15.53

<sup>a/</sup> Iodized salt should contain approximately 0.7% manganese, 0.5% iron and 0.25% zinc.

TABLE 5. ALL-MASH RATIIONS FOR LAYING HENS.

Ingredient					Free Choice <sup>c/</sup>
	1	2	3	4	5
	(pounds per Ton)				
Wheat	1583	-----	-----	-----	-----
Corn	-----	1383	939	959	359
Oats, heavy	-----	-----	500	-----	400
Barley <sup>a/</sup>	-----	-----	-----	500	-----
Soybean meal (48% protein)	160	360	304	284	780
Meat and Bone meal (50% protein)	40	40	40	40	120
Dehydrated Alfalfa Meal (17% protein)	40	40	40	40	80
Ground Limestone or Marine shell	120	120	120	120	120
Dicalcium Phosphate or equivalent	40	40	40	40	90
Iodized Salt <sup>b/</sup>	6	6	6	6	18
Vitamin premix	10	10	10	10	30
Methionine	1	1	1	1	3
Calculated protein, %	15.48	16.20	15.61	15.48	26.22

<sup>a/</sup> Millet may be substituted for barley on a pound for pound basis.

<sup>b/</sup> Iodized salt should contain approximately 0.7% manganese, 0.5% iron and 0.25% zinc.

<sup>c/</sup> This supplement should be offered free-choice with a grain or grain mixture. Oyster shell or large particle crushed limestone and granite grit should be available at all times.

**Calcium Supplement**

The all mash rations shown in this circular contain recommendations for calcium. If you feed whole grains, a source of calcium to satisfy the dietary needs of growing stock and layers is necessary. Oyster shell or limestone can be fed free choice in small feeders or hoppers. Chickens do not like oyster shell or limestone that is contaminated

TABLE 6. SOME COMPONENTS OF POULTRY DIETS

NUTRIENT	VALUE*	SOURCES
Carbohydrates and fats	Energy, convert to body and egg fat	Cereals, by-products, animal and vegetable fats and oils
Proteins—Essential amino acid <sup>†</sup>	Muscle, egg yolk and white, blood constituents, etc.	Soybean meal, meat scraps, fish meal
Water	55-70% of egg and body weight	Fresh water
Minerals <sup>‡</sup>		
Calcium	Skeleton, egg shells, body fluids (rickets)	Oyster shell, limestones
Phosphorus	Skeleton, body fluids (rickets)	Various phosphates (rock or dicalcium)
Manganese	Normal bone formation (perosis)	Manganese sulfate
Iodine	Normal thyroid function (goiter)	Iodized salt
Sodium	Ionic balance of body fluids	Iodized salt
Chlorine	Ionic balance of body fluids	Iodized salt
Zinc	Normal bone formation (enlarged hocks)	Zinc chloride (or sulphate)
Vitamins <sup>‡</sup>	All necessary for rapid growth	
A	Normal surface tissues, general condition	Alfalfa, yellow corn, synthetics
D	Normal bone formation (rickets, thin shells)	Synthetics
E	Anti-oxidant, nervous tissue (crazy chick)	Whole cereals, green feeds, synthetics
K	Normal blood clotting (hemorrhage)	Green feeds, synthetics
Riboflavin	Good hatchability (curled toes)	Milk or fermentation by-products, synthetics
Cobalamine (B <sub>12</sub> )	Good hatchability (death at 19-20 days)	Animal proteins and fermentation by-products
Niacin	General condition (broken feathers-perosis)	Wheat by-products, synthetics
Pantothenic acid	General condition (dermatitis)	Cereal grains, synthetics
Choline	General condition (perosis-fatty liver)	Soybean meal, synthetics

with litter, dust or droppings, so the foreign materials should be screened out often. Keep a good supply of calcium before the birds at all times.

**Grit**

Grit is often referred to as the chickens "teeth." Grit aids the gizzard in grinding feed by providing hard, smooth surfaces between which particles of feed may be crushed. Grit is a hard, insoluble rock, usually granite. If grit is unavailable, gravel can be substituted. Grit is not soluble in the digestive acid. Grit is not a substitute for oyster shell or ground limestone. Oyster shell and limestone are acid soluble and a source of calcium.

Grits are available in small (chick), medium (growing), and large (hen) sizes. Small chicks will not eat large grit. If large chickens (hens) eat small or medium size grits, they pass through the digestive tract rapidly.

Chickens being fed whole grains need grit more than those being fed an all mash ration. However, those being fed all mash can make good use of grit.

Feed grit to chicks 1-10 weeks by sprinkling chick-size grit on feed twice a week. To feed grit to growing chickens and layers, put it in grit hoppers.

## Feeding and Watering Needs

Feeding space and watering space guidelines suggested for growing replacement pullets, light breeds of laying hens and/or broiler (fryer-roaster) type meat chickens are shown in the following tables. It is also extremely important to provide a sufficient volume of fresh, clean water on a daily basis for the number of birds being raised. A practice of daily cleaning the water containers should also be adopted.

**TABLE 7. LINEAR<sup>1/</sup> INCHES OF FEEDER SPACE PER 100 CHICKS.**

Age in Weeks	Replacement Pullets	Broilers
0 - 2	100	100
3 - 6	200	300
7 - 12	250	350
13 - 20	300	400

<sup>1/</sup> Example, a four foot feeder open on both sides has a total of 96 linear inches of feeder space.

**TABLE 8. LINEAR INCHES OF WATERER SPACE PER 100 CHICKS.<sup>1/</sup>**

Age in Weeks	Replacement Pullets	Broilers
0 - 2	25	25
3 - 6	50	50
7 - 12	50	75
13 - 20	100	100

<sup>1/</sup> It is important to understand that space alone is not the only requirement but to insure sufficient quantities of water are available is equally as important.

**TABLE 9. LINEAR INCHES OF FEEDING AND WATERING SPACE PER 100 LAYING CHICKENS.**

	Feeding Space	Watering Space
Light Breeds (Leghorn Type)	300	50
General Purpose Breeds (Heavy Type)	400	100

**TABLE 10. APPROXIMATE WATER CONSUMPTION PER 100 LIGHT BREED TYPE CHICKENS.<sup>1/</sup>**

Age in Weeks	Water Consumed per day in gals.
0 - 1	½ - 1
2	¾ - 1
3	1 - 1½
4	1½ - 2
5 - 6	2½ - 3
7 - 8	3 - 3½
9 - 10	3½ - 4
11 - 12	4 - 4½
13 - 20	4 - 5
Mature Laying Hens <sup>2/</sup>	5 - 8

<sup>1/</sup> During periods of high temperatures additional water may be required.

<sup>2/</sup> Amount required dependent upon level of egg production.

**TABLE 11. APPROXIMATE WATER CONSUMPTION PER 100 BROILER TYPE CHICKENS.**

Age in Weeks	Water Consumed per day in gals. <sup>1/</sup>
1	1
2	1 - 2
3	2
4	2 - 3
5	3
6	4 - 5
7	5 - 6
8	6
9	6 - 7
10 - 20	6 - 7

<sup>1/</sup> Assume a moderate or room temperature of 70-72°F. During periods of warm to hot temperature additional water must be made available.

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