COLORADO STATE UNIVERSITY
EXTENSION

Practical Feeding Methods for Small Poultry Flocks

Fact Sheet No. 2.503 Livestock Series/Health

Howard Enos* (12/19)

It is important to maintain health and productivity of poultry through proper nutrition. Birds need a series of nutrients which are found in the various feed ingredients. These nutrients include macronutrients (proteins, carbohydrates and fats), micronutrients (minerals and vitamins) and water. Water is not usually considered as a nutrient, but its importance must always be emphasized. There are several systems of feeding: free-choice or "cafeteria style" feeding of mash and grain, controlled feeding of mash and grain, feeding all mash, or other combinations of a complete feed.

Each system should accommodate the specific needs of your flock, and be designed for flexibility, low maintenance, and reliability to keep installation and operating costs low. The choice of one of these feeding systems will depend mainly upon the size of the flock and the labor and equipment available. Success with any system depends on the feed supply, equipment, management and individual practices. The likelihood of disease and/or nutritional problems will be minimized if good sanitation, adequate housing, equipment and daily care are emphasized.

Regardless of the quality of chicks purchased, good results cannot be expected unless chicks are fed a nutritious diet. Free choice allows birds to balance or regulate their intake of grain and mash. The free-choice system can work well with small flocks but leaves too much guesswork for a commercial flock. There are, however, general recommendations for feeding replacement chicks, layers, broilers and turkeys.

Controlled mash and grain feeding is used successfully in small flocks. More care and attention must be given to the flock fed this way than the flock fed with all-mash. Controlled mash and grain feeding involves the use of a concentrate (20 to 23 percent protein), and limited amounts of whole grains and calcium supplement. The amount of grain fed should be calculated to make the total feed intake contain about 16 percent protein. Slight adjustments can be made seasonally to provide more energy in cold weather (more grain) and to provide less energy in hot weather (less grain). Grains may be placed in hoppers or scattered in the litter.

Quick Facts

- Providing a balanced nutritious diet and plenty of water is critical to keeping a healthy flock.
- Using a pre-mixed feed may be the easiest system for small flock owners.
- Your bird's nutritional needs will vary with age and whether you are raising them for egg or meat production.

*Howard Enos, CSU Extension Associate Professor, Poultry Science:
Revised 2019, Robin Young, Archuleta County Director; Travis Hoesli, Grand County Director; Todd Hagenbuch, Routt County Director; Sharon Bokan, Small Acreage Coordinator Boulder County Extension

The all-mash system is by far the most common. This is especially true for commercial size flocks. The proper nutritional balance is taken care of by man rather than letting the hen balance her own ration. In larger flocks this ensures against the possibility that the hen will not do a good job of balancing her own ration. All-mash feeding involves the use of a single mash which contains all components of a balanced ration. Egg quality factors, such as shell thickness and yolk color, are more uniform and more easily controlled with this system. An all-mash ration can be easily dispensed in hanging or automatic feeders. Less skill on the part of the flock owner is required with the all-mash system. A calcium supplement such as crushed oyster shell or limestone granules can be made available free-choice, if desired. Also, a portion (1 / 2 or 2/ 3) of the calcium supplement in the ration may be larger particle size limestone or oyster shell. Calcium supplements that are larger take longer to move through the digestive system and therefore more calcium is absorbed. Small particle size supplements move quickly through the digestive system and less calcium is released into the bloodstream.

A complete ration purchased from a local feed supplier will be the most easily managed, and the likelihood of disease risk and/or nutritional problems will be minimized if good sanitation, adequate housing, equipment and daily care are emphasized. The actual feed requirement for any group or flock will vary depending upon many factors. However, the figures listed below can be followed as the best estimate of feed utilizations. Weights are based on 10 birds with weights for 100 birds in parenthesis.

When using a commercial feed, the manufacturer's feeding recommendations should be followed explicitly. Avoid mixing recommendations of several different companies because each manufacturer designs their product for a specific feeding program.

Feed form – either mash, crumbles or pellets – are other considerations and each has its specific advantage and disadvantage and varies for optimum utility among the various ages and poultry species. In short, there is not one best answer to a correct choice: however, mash is generally the most economical feed store purchase.

No one feeding system is the best – the choice is an individual one. Generally, commercial producers follow the all-mash system, while families with backyard poultry enterprises and hobby poultry producers generally follow either the free choice or controlled mach and grain feeding system.

Table 1: Feed utilization for poultry

	Age (wks.)	Type feed	Percent protein	Pounds/10 birds* (kilograms)
CHICKENS				
Broiler – Fryers	0-4	Starter	22-24	20.0 (9.1 kg) (200.0#, 90.7 kg)
	4-8	Finisher	20-22	60.0 (27.3 kg) (600.0#, 272.2 kg)
Roasters	0-4	Starter	22	20.0 (9.1 kg) (200.0#, 90.7 kg)
	4-12	Grower	17	120.0 (54.5 kg) (1200.0#, 544.3 kg)
	12-16	Finisher	14	100.0 (45.5 kg) (1000.0#, 453.6 kg)
Replacement pullets	0-8	Starter	20	40.0 (18.2 kg) (400.0#, 181.4 kg)
	8-12	Grower	18	40.0 (18.2 kg) (400.0#, 181.4 kg)
	12-21	Developer	14-16**	100.0 (45.5 kg) (1000.0#, 453.6 kg)
Layers	21+	Layer	17	2.5 (1.1 kg) (25.0#, 11.3 kg)
TURKEYS				
Small	0-7	Starter	28	60.0 (27.3 kg) (600.0#, 272.2 kg)
	7-18	Grower	20	300.0 (136.4 kg) (3000.0#, 1360.8 kg)
Large	0-8	Starter	28	100.0 (45.5 kg) (1000.0#, 453.6 kg)
	8-18	Grower	20	300.0 (136.4 kg) (3000.0#, 1360.8 kg)
	18-24	Finisher	14	280.0 (127.3 kg) (2800.0#, 1270.1)

**Total pounds (kilogram) of feed consumed by 10 (100) birds for the period indicated, except for layers (as noted).*

***Detailed study must be given to each individual poultry rearing situation and facility as time of year, indicating the trend in day length and availability of systems for artificial light control need to be considered as they all have an influence on optimum development of replacement of birds.*

Table 2: Approximate feed requirements for maintenance and egg production.*

Type Of Bird	Body Weight (pounds)	Maintenance Feed Total (pounds)	200 Eggs/Year Feed Total (pound)	200 Eggs/Year Feed Pounds/ dozen	250 Eggs/Year Feed Total pounds	250 Eggs/Year Feed Pounds/ dozen
Dwarf	3.0	45.7	63.4	3.80	67.9	3.26
	3.5	51.1	66.9	4.13	73.3	3.51
Commercial	4.0	56.3	74.1	4.44	78.5	3.76
Leghorns	4.5	61.4	79.2	4.74	83.6	4.01
Dual	5.0	66.3	84.1	5.04	88.3	4.25
Purpose	5.5	71.1	88.8	5.31	93.3	4.48
Heaviest	6.0	75.7	93.5	5.60	97.9	4.70
	6.5	80.3	96.1	5.87	102.5	4.94

**Values are guides for small non-commercial flock situations (modified by author from Merck 1967).*

Table 3: Approximate growth rate and feed consumption of broiler chickens.*

Age (weeks)	Average Weight per bird (pounds)	Pounds of feed per 10 (100) birds		Total Pounds (accumulative)
		Per day	Per week	
1	0.20	0.35 (3.5)	2.45 (24.5)	2.5 (24.5)
2	0.45	0.6 (6.0)	4.2 (42.0)	6.7 (67.0)
3	0.75	0.75 (7.5)	5.3 (53.0)	12 (120.0)
4	1.10	0.95 (9.5)	6.7 (67.0)	18.7 (187.0)
5	1.55	1.4 (13.5)	9.5 (95.0)	28.2 (282.0)
6	2.10	1.75 (17.5)	12.3 (123.0)	40.5 (405.0)
7	2.65	1.9 (19.0)	13.3 (133.0)	53.6 (536.0)
8	3.20	2.1 (21.0)	14.7 (147.0)	68.5 (685.0)
9	3.75	2.2 (22.0)	15.4 (154.0)	83.7 (837.0)
10	4.30	2.4 (24.0)	16.8 (168.0)	100.7 (1,005.0)

**Values are guides for smaller non-commercial flock situations (Adopted by author from Merck 1967). To convert to metrics use the following equivalent – 1 pound = 453.6 grams.*

Table 4: Daily water requirements*

	Chickens (per 10 (100) birds)		Turkeys (per 10 (100) birds)
Age (weeks)	**Gallons**	**Age (weeks)**	**Gallons**
1	0.45 (4.5)	1	1.2 (12.0)
2	1.1 (11.0)	2	1.9 (19.0)
3	1.5 (15.0)	3	2.5 (25.0)
4	2.0 (20)	4	3.7 (37.0)
5	2.4 (24.0)	5	4.8 (48.0)
6	2.7 (27.0)	6	6.0 (60.0)
7	3.2 (32.0)	7	7.2 (72.0)
8	4.1 (41.0)	8	8.4 (84.0)
9	4.2 (42.0)	9	8.8 (88.0)
10	4.9 (49.0)	10	10.2 (102.0)
11	5.2 (52.0)	11	11.5 (115.0)
12	5.5 (55.0)	12	12.2 (122.0)
Nonlaying hens	5.0 (50.0)	13	14.2 (142.0)
Laying hens (moderate temp.)	5.0 – 7.5 (50.0-75.0)	15-19	16.7 (167.0)
Laying hens (90°F)	9.0 (90.0)		

These values are approximate and vary according to weather.
**Adopted from Merck (1967). To convert to metrics use the following equivalent – 1 gallon = 3.78 liters.*

Table 5: Turkey performance. (Feed required, and time required to obtain certain average live weights in large white and broad-breasted bronze turkeys.)

Average Live Weight (pounds)	Average live weight (kilograms)	Quantity of feed required per bird				Weeks of age to obtain certain live weights	
		per female (pounds)	per female (kilograms)	per male (pounds)	per male (kilograms)	Female	Male
0.6	0.25	0.66	0.3	0.7	0.3	2.0	1.8
1.1	0.5	1.65	0.75	1.7	0.75	3.5	3.3
2.2	1.0	3.85	1.75	3.5	1.6	5.6	5.2
3.3	1.5	6.60	3.0	5.7	2.6	7.0	6.9
4.4	2.0	9.35	4.25	8.6	3.9	8.3	7.6
5.5	2.5	12.32	5.6	11.2	5.1	9.7	8.7
6.6	3.0	15.84	7.2	14.0	6.34	11.0	9.6
8.8	4.0	23.32	10.6	20.0	9.1	13.5	11.2
11.0	5.0	33.0	15.0	27.2	12.34	16.3	13.1
13.2	6.0	45.0	20.45	34.8	15.8	19.2	14.9
15.0	6.8	50.0	22.73	38.6	17.5	20.0	16.0
15.4	7.0	58.63	26.65	42.4	19.3	23.1	16.8
17.6	8.0	-	-	50.9	23.2	-	18.6
19.8	9.0	-	-	59.8	27.2	-	20.5
22.0	10.0	-	-	69.9	31.8	-	22.3
24.2	11.0	-	-	76.9	35.0	-	24.0