



August 2008

AG/Poultry/2008-02pr

# Principles of Feeding Small Flocks of Chickens at Home

*David D. Frame, DVM, Extension Poultry Specialist*

Owning a small flock of chickens is increasing in popularity, particularly in areas prohibiting the raising of larger domestic animals. Chickens not only furnish a ready source of home-grown meat and eggs, but also provide great pleasure as exhibition stock and even as pets. Additionally, helping to raise a small flock of chickens gives children an opportunity to develop a sense of responsibility and learn basic management skills. The purpose of this fact sheet is to give an overview of feeding and nutrition principles for chicken owners.

Growth ability and performance of chickens is determined by genetics. Environment dictates whether they reach their full genetic potential and proper nutrition plays a critical role. It is important to remember two things when feeding chickens:

- A chicken will only grow and perform to the extent it receives proper nutrition.
- A chicken cannot grow beyond its maximum genetic potential.

## Develop an Optimal Nutritional Program

### Don't forget the water. . . .

It must be kept in mind that the nutrient consumed in the greatest quantity by a chicken is *water*. A direct relationship exists between the amount of water a chicken drinks and the amount of feed consumed. If inadequate water is available, not only will chickens cease eating, but there will also be a negative effect on egg production and growth.

Although types and designs of drinkers vary, the fact that fresh clean water must be present at all times should never be forgotten.

A popular fountain-type drinker is shown in Figure 1. Fountain drinkers have the advantage of being affordable and can easily be moved around; however, because the reservoir holds only a finite quantity of water, it is necessary to watch carefully that they don't become empty. Water should be changed frequently in order to prevent bacterial growth, over-warming (in summer), or freezing (in winter).



**Figure 1.** Fountain-type drinker. This particular model holds 1 gallon of water. Each drinker will provide enough daily water for 12 to 15 adult chickens during cool weather and 6 to 12 during hot weather.

Always provide at least two or three additional drinkers in excess of the estimated water consumption capacity for the number of birds in the chicken house. This provides a buffer for a short term water supply in the event of spillage or leakage. Also, it offers an opportunity for the more timid birds in the flock to satisfy their water needs without having to compete with more aggressive individuals for drinker space. When planning number of drinkers to place in the chicken house, consider that in cool weather each adult chicken will consume about 0.05 to 0.08 gallon per day; in hot weather, about 0.08 to 0.16 gallon.

Other types of watering systems include continuous flow troughs and reduced water pressure bell-type drinkers suspended from the ceiling that are hooked up to a pressurized water line.

The advantages of a continuous flow water system are that it won't freeze and there is a continual supply of fresh water. Acquiring such a system may be difficult, however, and because there is a continual flow of water, the cost and waste will usually be prohibitive for small flocks. Some sort of drainage system for the unused water would also be necessary.

A properly constructed bell-type drinker system provides a continual source of water, but is usually more appropriate for larger operations (Figure 2). A dedicated water line with a pressure regulator is needed, and the initial equipment cost is much greater than the stand-alone fountain-type drinkers.



**Figure 2.** Bell-type drinker supplied by a low pressure water line.

## Quality of Feed Is Important

Feed quality will affect feed consumption. Ensure that the feed is not stale, rancid, or moldy. Immediately remove obviously moldy, rancid-smelling or any other questionable feed. Such feed will, at best, not be eaten; and at worst, cause disease or nutritional deficiencies if consumed. Always store feed away from heat, moisture, and direct sunlight. Purchase feed as fresh as possible. Vitamins will start to degrade if finished feed is stored for prolonged periods. Plan your schedule so that new feed is purchased at least every two months and check for a recent manufacturing date on the bag before buying.

No one feed ingredient contains all the nutrients required for a complete diet. Some ingredients are rich in one nutrient, but may lack in another. For example, soybean meal is rich in protein but contains relatively little energy from carbohydrates, while corn is high in carbohydrates (i.e. energy) but is a poorer source of protein. Together they complement each other in the complete feed. Each feedstuff has a place in a balanced diet.

There are five basic classes of nutrients needed. Table 1 lists the nutrients and gives examples of common feedstuffs supplying them.

**Table 1.** Classes of nutrients necessary for poultry and examples of feed ingredients in which each is found.

Nutrient	Feed ingredients
Carbohydrates (supply energy)	Corn, sorghum, wheat, other grains
Protein sources (supply amino acids)	Soybean meal, meat products, canola meal, fish meal
Fats (supply energy)	Vegetable oil, tallow, blended fat products
Minerals	Salt, limestone, calcium carbonate, calcium phosphate, oyster shell, commercial trace mineral mix
Vitamins	Commercial vitamin mixes, feedstuffs

These ingredients are mixed in different proportions and sold in the form of a mash, pellet, or crumble. Mash feed consists of all ingredients ground into particles and mixed loosely together.

Pelletized feed is mash that is held together with a binder and then heat-treated, extruded, and cut into various lengths and diameters depending on the type of feed produced. Crumbled feed consists of pelletized feed broken down into smaller pieces.

A chicken will stop eating once a certain quantity of energy has been consumed in a day. This will happen even if the bird has not ingested enough protein or vitamins. Therefore, the energy concentration needs to be in balance with the other nutrients in the diet. Commercial diet formulations take this into account. Because of the complex nature and expense involved in properly formulating and mixing poultry diets, it is highly recommended that feed be purchased from a reputable manufacturer and not attempted to be made at home. Even with increasing feedstuff prices, it is much more productive in the long run to feed your chickens high quality commercial feeds rather than skimping on cost or concocting homemade recipes.

### Practical Styles of Feeding Systems

Feeders come in a wide array of sizes and designs from egg carton lids for starting newly hatched chicks to sophisticated automatic adult feeding systems. A practical trough feeder for starting off young chicks is shown in Figure 3. Bucket feeders (Figure 4) of various sizes are popular and appropriate for both growing and adult chickens. The advantage of bucket feeders is that they can store a few days' worth of feed, thereby alleviating daily hand feeding; however, care must be taken not to let old feed accumulate in them and become stale and moldy. Clean and brush out often. Use the appropriate size of bucket feeder for the class of poultry being raised. Using too large feeders with chicks will prevent them from being able to reach the feed. Also chicks might get inside the lip of the feeder and not be able to get back out. Using feeders with too narrow of a lip for adults birds will cause excessive waste of spilled feed into the litter (see Figure 4). Feeders should be raised off the ground, and generally positioned level to the mid to upper breast region of the chickens being fed.

A good rule of thumb is to allow 1 linear inch of feeder space per chick and 2 to 3 linear inches per adult chicken.

Always keep feeders in an area – preferably inside the chicken house – where the feed is

protected from moisture, wild animals, and free-flying birds.



**Figure 3.** Small trough feeder sized for feeding young chicks.



**Figure 4.** Example of a bucket-type feeder of a suitable size for chicks and smaller adolescent-age chickens.

### It is counterproductive to “unbalance” a balanced diet by including questionable supplements.

Commercial feed purchased from a reliable dealer, has all the nutrients chickens need to grow and thrive. If you have a good diet that fulfills all of the dietary needs, do not alter it. Usually a little more of a good thing will upset a balanced diet. A balanced approach to nutrition is the key to optimal growth and performance.

Common mistakes made with supplements:

- Giving vitamins and electrolyte supplements for more than 10 days.
- Supplementing complete feeds with cracked corn, oats, or other grains.
- Regularly adding green chops, lettuce, or other low nutrient ingredients to the diet.
- Administration of inappropriate or unnecessary medication.

It's OK to let your chickens forage around for bugs and greens, but always provide them access to the appropriate type of formulated balanced feed as well. Totally "free-ranged" poultry will rarely be able to consume a proper balance and quantity of nutrients necessary for maximum capable rate of meat and egg production.

**Table 2.** General feeding schedule for various classes of chickens\*.

<b>Meat-type strains (Commercial-type broilers, roasters, "Cornish-Rock" crosses)</b>	
0-2 weeks. . . . .	22-24% protein chick starter
2-4 weeks. . . . .	20-21% protein grower
4 weeks to market . . .	18-20% protein finisher
<b>Layer strains (Commercial-type leghorns, brown egg layers)</b>	
0 to 6 weeks. . . . .	20-21% protein chick starter
6 to 10 weeks. . . . .	16-19% protein pullet grower
10 weeks to prior to Egg production. . . . .	5-17% protein pullet developer
At onset of egg production. . . . .	16-18% protein layer diet**
<b>Dual-purpose breeds (Plymouth Rock, Rhode Island Red, New Hampshire, etc.)</b>	
0 to 6 weeks. . . . .	20-21% protein chick starter
6 weeks to prior to egg production. . . . .	15-19% protein pullet grower/developer
At onset of egg production . . . . .	16-18% protein layer diet**

\*These recommendations are based on common protein levels for feeds available in most local feed stores. It is assumed that the finished feed is balanced for energy, vitamins, and minerals in relation to specific protein content.

\*\*Do not feed a layer diet to chickens not in egg production (too high in calcium).

## Feed Consumption Guidelines

There is great variation in feed consumption patterns of chickens depending on breed, feed source, and environmental conditions. The following information, however, serves as a guide in estimating feed consumption for large fowl breeds of poultry.

### Commercial egg-type

- Feed/pullet – hatch to ready-to-lay (18 to 21 weeks): 13 to 15 lbs
- Layer – daily intake/hen: 98 to 107g (22 to 24 lbs/100 hens)
- Plan on higher consumption than this for non-commercial strains and non egg-type breeds.

### Commercial meat-type

- Feed/bird – hatch to market age (about 7 weeks). . . . . 12.5 to 18 lbs
- Feed conversion (lbs feed/lb gain) 2.5 to 2.7
- Heavy standard-bred breeds will eat more feed than this guideline because of a tendency toward less efficient feed conversion.

As these basic nutritional principles are followed, your chickens will thrive and provide you with great enjoyment. For specific recommendations, contact your local county agent or Extension poultry specialist.

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions.

Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities.

This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University.