farm and home

POULTRY HUSBANDRY NO. 6

FACT SHEET

Feeding for EGG PRODUCTION

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Feeding Programs

Many possible feeding programs can be used to provide the nutritional requirements of laying chickens in an efficient manner. However, most of these are based on three basic feeding programs routinely referred to as (1) all-mash, (2) mash and limited grain, and (3) cafeteria or free-choice feeding of mash and grain. Since the objective of any of these feeding programs is to provide adequate amounts of all known required nutrients at all times, it is obvious that essentially similar success could be obtained with any of the three methods. The basic differences are in the management and mechanics of actually supplying the hen with the feed in the various forms.

The term "mash" is intended to include all ingredients ground and mixed together. Grain refers to "whole grains" such as corn and oats. The mash (or concentrate) may be used in the pellet or crumble form if desirable. The abundance and relative economy of corn and oats in Minnesota leave little reason for grains other than these to be considered. The following are suggested feeding programs to assure maximum egg production when high-quality concentrates and grains are utilized.

Recommendation for Mixing or Separate Grain Feeding

Protein level of concentrate	All-mash mixing program (lbs.)		Ratio for separate grain feeding	
	Protein conc.	Grain*	Conc.	Grain*
percent	pounds	per ton	lbs.	lbs.
15	2,000	none	100	none
20	1,000	1,000	100	100
25	667	1,333	100	200
30	500	1,500	100	300
35	400	1,600	100	400
40	335	1,665	100	500

*Assumes a grain combination equal to 10 percent protein. A combination of 60 percent corn and 40 percent oats approximates this protein level.

The preceding table shows only a few of the many possibilities of combinations with grains to achieve the desired plane of nutrition. The protein level of the mash or concentrate is the common guide for development of feeding programs. However, it must be realized that protein represents only one of the classes of nutrients required for optimum production.

The other classes of nutrients which are important in formulation include vitamins, minerals, carbohydrates, and fats. Carbohydrates and fats are classed together in providing energy needs as we do not have any specific fat requirements in a practical feeding program. It should also be understood that grain is used chiefly to supply the energy portion of the ration and mash is relied upon to provide proteins, vitamins, and minerals in a concentrated form. Supplements with antibiotics, arsenicals, or other feed additives to improve production or combat disease are also incorporated into the mash portion of the feeding program.

Nutrients

Suggested nutrient levels for the total ration (including both mash and grain if they are fed separately) are as follows:

Protein	15-16 percent
Fiber, maximum	4 percent
Calcium	2.2-2.5 percent
Phosphorus	.6 percent
Salt (added)	.25-5 percent
Productive energy or Metabolizable energy	900-1,000 calories 1,300-1,400 calories

In addition to these specific classes of nutrients, it is essential to provide adequate levels of vitamins and minerals. Since these are not commonly listed on statements regarding the particular feed, they will not be included in this fact sheet. Levels of these additional nutrients are usually determined by the manufacturer or the basic formula

itself, and reliance must be placed upon the source of the mixed feed for adequate levels.

Oyster shells and limstone are common sources of supplemental calcium for laying hens, although adequate calcium is frequently included in the all-mash system. It is common practice, however, to include oyster shell or limestone in separate feeders whenever the mash formula does not contain enough calcium to eliminate the need for a supplemental source.

The feeding of grit to laying hens is optional. Some producers feel that supplemental grit feeding in separate feeders is an important part of their total management and feeding program; others have eliminated the additional cost and labor requirements of providing grit. Relatively little difference in production or return would be expected regardless of the final decision.

Grains

Corn and oats are the two grains most commonly used in Minnesota to supply the major energy needs of laying hens. Corn should make up the major portion of the grain, since the energy content of corn is approximately 1,145 calories per pound while a comparable figure for oats is only 760. It is recognized that heavy oats weighing 40 or more pounds per bushel may be somewhat near corn in total energy value, and selection of the grains to balance out the feeding program may be adjusted accordingly.

Supplementary Programs

Miscellaneous programs, such as noon luncheon pellets, wet mash feeding, baled alfalfa feeding, and other similar programs, are not required for optimum egg production with birds that are in a healthy condition. Such additional feeding programs are sometimes used in conjunction with abnormal flock conditions, but these should be considered as therapeutic or other unusual measures rather than as a part of the routine feeding program.

Ration Additives

Antioxidants, such as Santoquin or BHT (butylated hydroxy toluene), are frequently included in formulas to prevent development of rancidity in alfalfa, added fats, or for other beneficial reasons.

Adding an antibiotic (penicillin, chlortetracycline, oxytetracycline, bacitracin) and other additives including arsenicals is an optional part of the laying program.

Weak-shelled or soft-shelled eggs are not usually improved by any known additives to a balanced ration. Hot summer weather is a known cause of inferior eggshell quality. Dietary alterations have not been consistently effective in overcoming this problem.

Salt added above the usual amount will not prevent or control cannibalism. Pickouts, blow-outs, cannibalism, or prolapse are rarely related to dietary deficiencies in modern production. Check your management conditions, especially crowding, for major causes.

Feed Required

Total feed requirement per layer will vary principally with three different factors: efficiency of the feeding program; body weight of the laying hen; and rate of production. The table below gives typical examples of the effect of body weight and rate of production upon yearly feed consumption.

Hen Weight, Yearly Production, and Feed Required per Hen

Avg. wt.	100 eggs	200 eggs	250 eggs
pounds	pounds	pounds	pounds
3.0	61	75	82
3.5	67	81	88
4.0	71	85	92
4.5	75	89	96
5.0	80	94	101

Environmental conditions, especially temperature variation, will also affect feed requirements. Unfortunately, the ideal conditions related to economics are not known.

Feeding Recommendations

1. Choose the best feeding program to fit your conditions consistent with minimum cost.
2. Avoid filling feeders too full--never fill more than half.
3. Provide adequate feeder space--a minimum of 400 inches of feeder trough on one side for each 100 hens.

Water

Water is a vital requirement and an abundant supply of adequate water must be available to the birds at all times. Since excessive mineral and other contaminants in water can harm chickens, a safe water source should be used. A good guide is to use only water satisfactory for human consumption.

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