



Poultry Patter



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TAILORING RATIONS TO LAYERS' NEEDS

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"Phase feeding" and "climate feeding" are terms for practices in poultry feeding that can cut your feed costs and increase your egg production. Does this sound good? Maybe these practices are for you.

These terms indicate a change in feeding programs to meet corresponding changes in the nutrient requirements of the laying hen. Phase feeding refers to an adjustment to meet differences in the hen's requirements because of a shift from a high to a lower rate of egg production. Climate feeding indicates an adjustment in the feed because of changes in the hen's requirements (primarily for energy) because of temperature effects.

Adjusted Formulations Are Not New

Most people who used a mash and grain feeding program also employed some adjustment in nutrient intake. For example, by adjusting either source (corn vs. oats) or the amount of grain in proportion to the mash, a poultryman could regulate the quantity of energy the hens were given in relationship to the remaining nutrients. However, with today's extensive use of complete feeds this method of nutrient adjustment has been virtually eliminated.

Chickens generally eat to meet their energy needs and then consume no more. Thus, if they satisfy their energy requirement before they consume enough of the remaining nutrients, deficiencies will occur which will result in decreased egg production and/or smaller eggs. The most likely deficiency to occur is that of protein. Therefore, feed formulators are very careful to maintain a balance in the ration of protein with energy. This relationship is expressed as the calorie/protein ratio of the feed.

One calorie/protein ratio for hen rations does not, however, hold for all conditions. For example, protein needs of hens may be higher at peak production than at lower production levels; energy needs are higher in the cooler months than in the warmer ones. It is because of these shifts that adjusted formulas, phase feeding, and climate feeding have become of interest.

While theoretically all nutrient requirements would change during the laying year, practical considerations dictate that only a few nutrients need be considered in ration alterations. Protein, as a major portion of the ration and one of the more expensive ingredients, rates consideration. Energy content of the ration as a controlling factor of nutrient intake cannot be ignored. Calcium needs are increased by both the aging of the animal and higher environmental temperatures, and must also be considered.

There are compensating factors which suggest that nutrient requirements of hens do not change for at least the major portion of the laying year. Hens in early production have a greater nutrient need for body growth but a lower need for body maintenance because they have a small body size. Hens in late production while needing more nutrients for their larger eggs, produce fewer of them, so that their requirements do not drastically change during the laying year.

These equalizing effects suggest that phase-feeding, except perhaps at the very start and termination of the egg production year, may not be a valid practice. There is limited research evidence on whether protein requirements of hens are lower as production decreases. What is available is contradictory. Some researchers found it possible to lower protein levels during the course of the laying year. Others found higher requirements as birds become older and suggested that this is because the older birds have poorer utilization of nutrients.

Climate Feeding

While conclusive results on the use of phase feeding have not been shown, there is no question on practicality of adjusting rations for temperature effects. Savings in feed costs and the prevention of nutrient deficiencies by appropriate adjustment in feed formulas are the advantages.

As pointed out previously, changes in the environmental temperature primarily affect the energy requirements of the hen. The hen needs higher levels of energy to maintain her body temperature in cold temperatures than in a warm environment. Since energy needs regulate her feed intake, a hen on a standard ration has a tendency to overconsume protein and other nutrients in winter and underconsume in summer. For example, one study conducted in Arizona indicated that hens ate on the average 20 percent more in the coolest quarter of the year and 20 percent less in the warmest quarter of the year. In Minnesota

variations of 15 to 20 percent in feed intake from the warmest to the coolest months could be expected.

How To Correct For Temperature Effects

Some feed companies now have feeding programs that adjust formulas to seasonal changes in temperature. Such feed formulas are less expensive to make when lower protein levels are used, and hopefully some of this reduced cost of production would be passed on to the purchaser.

A second approach is to use a concentrate and grain program in which various mixtures are used, the exact proportions depending upon the feed consumption of the hens at any particular time. These proportions should be such that the hens consume approximately 17 to 17.5 grams of protein per day. An example of the proportions of a concentrate and grain mixture needed for various feed intakes is presented in the table below.

Accurate feed consumption records are essential to the success of such programs. Feed waste must be kept minimal! It is also necessary to know the protein content of the grain and use it in calculating the mixing proportions.

While the program above has emphasized energy and protein, alteration of the ration's calcium content because of temperature effects should not be ignored. When the environment temperature goes up, hens eat less total feed and thus consume less calcium. There is also a decline in shell quality because of some physiological effect of temperature on the mechanism of shell formation. Therefore it is quite important to increase calcium content of laying rations during periods of high temperature. The calcium content should also be increased as the hens become older since shell quality declines then too.

Frequently it is asked if changing rations during the laying year will cause hens to drop out of production. The answer is no--not if the ration is nutritionally balanced and the same physical condition of the feed is maintained; for example, don't switch from pellets to mash.

What does this program mean in dollars and cents? It means that winter rations might be \$3 or \$4 cheaper per ton because of savings in cost of protein. It means that summer rations will not be deficient in calcium and protein. This program is worth looking into to see if the advantages can be yours.

Effect of temperature on feed intake and an illustration of adjusted formulation

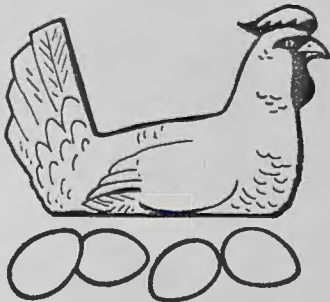
Temperature range	Feed intake lb./day/100 hens	Percent protein required*	Ration composition (lb./ton)**			
			Super-concentrate	Soybean meal	Corn	Calcium carbonate***
Hotter	20	18.8	200	512	1,124	164
	21	18.0	200	461	1,191	148
	22	17.3	200	418	1,248	134
Normal	23	16.6	200	373	1,306	121
	24	16.0	200	338	1,352	110
	25	15.4	200	300	1,397	103
	26	14.9	200	274	1,438	97
Colder	27	14.5	200	248	1,460	92
	28	14.2	200	231	1,482	87

*Calculated to give 17 to 17.5 grams of protein/hen/day with some compensation made for energy-protein shifts.

**Based on: The layer superconcentrate containing 27.8 percent protein described in "Chicken Rations," University of Minnesota, Special Report 20; soybean meal containing 44 percent protein, corn containing 8.5 percent protein, and a calcium carbonate containing 38 percent calcium.

***When hens exceed 10 months of production and shell problems occur, add 10 and 15 pounds additional calcium carbonate per ton for the "cold" and "warm" rations respectively. 1,200--11-66

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