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## Feed Restriction Studies With Layers

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Feed Restriction Studies With Layers

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Limiting feed intake frequently is used to reduce the feed cost of producing eggs. Reducing the nutrient intake can be accomplished by limiting the daily feeding period, available feed or by including fiber to reduce the density of the diet. In a previous experiment in which feeders were covered at 3:00 p.m. and uncovered the following morning at 8:00 a.m., feed restriction adversely affected rate of egg production, feed conversion, egg size and the feed cost of producing eggs. The effects were more severe on the low energy-low protein diets.

This year the test was repeated with the same four diet densities, but the feeding period restriction was less severe. The feeders for one-half of the hens were covered at 8:00 a.m. and uncovered at 4:00 p.m. The four diets were formulated with two levels of protein, 13.9 and 16%, and two levels of energy, 2500 and 2900 Cal M.E. per kg. The pullets were housed in cages at 22 weeks of age with 12 hens and 8 replicates per treatment.

Results of the test are shown in table 1. Hen-day egg production increased with each increase of dietary protein and energy, but, overall, feed restriction reduced egg production 3.9 points or 6%. Feed restriction reduced the daily feed intake 4.3 gm or 4%. Feed restriction increased egg size slightly (0.3 gm) but had no effect on internal quality as measured by Haugh units. Restriction reduced performance most on the low protein diets.

With only one exception, feed conversion improved as the levels of protein and energy increased. However, the full-fed hens had slightly better feed conversion. Feed cost increased 0.6 cents per dozen with feed restriction, and on the average the feed cost for the high density diets averaged lower than the feed costs for low density feeds. The low density diets based on oats frequently cost more than the corn diets, due to the relatively high price of oats.

Mortality was high for this 14-month test, about twice that normally expected. The major causes of mortality were leukosis (big liver) and cannibalism. The full-fed hens had higher death losses than those that were restricted.

The final body weight of hens fed the low density diets was approximately 100 gm less than those fed the high density diets, but feed restriction only reduced overall body weight by 70 grams.

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Table 1. Effect of Full Feed vs. Restricted Feeding on Laying Hen Performance

Crude protein, %	13.9		16.0		Avg.
	2500	2900	2500	2900	
Energy, ME/kg					
HDEP, %					
Full feed	62.4	66.1	66.1	69.7	66.1
Restricted	58.8	59.5	63.9	66.7	62.2
Avg.	60.6	62.8	65.0	68.2	
Feed/day, gm					
Full feed	108.3	113.3	106.6	108.5	109.2
Restricted	102.8	104.9	105.2	106.6	104.9
Avg.	105.6	109.1	105.9	107.6	
Egg weight, gm					
Full feed	62.8	63.6	61.7	62.3	62.6
Restricted	63.3	63.1	62.6	62.7	62.9
Avg.	63.1	63.4	62.2	62.5	
Haugh units					
Full feed	80.7	80.8	79.6	80.2	80.3
Restricted	80.7	80.5	80.3	79.2	80.2
Avg.	80.7	80.7	80.0	79.7	
Kg feed/doz.					
Full feed	2.193	2.197	1.971	1.878	2.060
Restricted	2.202	2.328	2.020	1.967	2.129
Avg.	2.198	2.263	1.996	1.923	
Feed cost/doz., ¢					
Full feed	20.1	19.5	20.5	19.2	19.8
Restricted	20.1	21.7	19.9	19.9	20.4
Avg.	20.1	20.6	20.2	19.6	
Feed cost/ton, \$					
Ingredient cost	90	93	97	100	
Mortality, %					
Full feed	16.7	20.0	13.4	19.5	17.4
Restricted	10.6	17.8	8.9	20.0	14.3
Avg.	13.7	18.9	11.2	19.8	
Final body wt., kg					
Full feed	1.80	1.81	1.89	1.93	1.86
Restricted	1.73	1.73	1.82	1.88	1.79
Avg.	1.77	1.77	1.86	1.91	