

South Dakota State University
**Open PRAIRIE: Open Public Research Access Institutional
Repository and Information Exchange**

South Dakota Poultry Field Day Proceedings and
Research Reports, 1975

Animal Science Reports

1975

Feed Restriction with High and Low Energy and Protein Layer Diets

E. Guenther
South Dakota State University

C. W. Carlson

Follow this and additional works at: http://openprairie.sdstate.edu/sd_poultry_1975

Recommended Citation

Guenther, E. and Carlson, C. W., "Feed Restriction with High and Low Energy and Protein Layer Diets" (1975). *South Dakota Poultry Field Day Proceedings and Research Reports, 1975*. Paper 9.
http://openprairie.sdstate.edu/sd_poultry_1975/9

This Report is brought to you for free and open access by the Animal Science Reports at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in South Dakota Poultry Field Day Proceedings and Research Reports, 1975 by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.

South Dakota State University
Brookings, South Dakota

Department of Animal Science
Poultry-Meats Section

A.S. Series 75-34

Feed Restriction with High and Low Energy
and Protein Layer Diets

E. Guenther and C. W. Carlson¹

Current reports in the literature indicate that the feed cost of producing eggs can be reduced by limiting feed intake. This is true when laying diets of high nutrient density are used and the feed restriction is applied after the flock peaks in production. Previous tests at this station have shown that, under some feed cost situations, lower density diets also can reduce the feed cost of eggs. This experiment tested the effects of restricting both low and high density diets on hen performance.

The pullets were placed in laying cages at 22 weeks. The laying diets were formulated to contain 13.9 and 16.0% crude protein. Each level of protein also was formulated to provide 2500 and 2900 Cal ME/kg of feed. Feed restriction was applied to one-half of the hens when they reached 50% production by covering the feeders. The feeders were covered each afternoon at 3:00 p.m. and uncovered the following morning at 8:00 a.m. The test lasted 15 months.

The main results of the test are shown in table 1. Egg production increased with each increase in protein level and also with each increase in energy level. Lower feed consumption was associated with the lower levels of dietary protein, which also was associated with the lowest rate of egg production. The poorest feed conversion was noted with the low protein-low energy diet. The least feed conversion was obtained with the 2900 Cal diets and either level of protein. There were no great differences in egg size due to protein-energy levels. The lowest mortality was associated with the low energy diets and increased mortality was associated with the higher level of energy.

Continuous feed restriction adversely affected rate of egg production, feed conversion and egg size. Restriction reduced feed intake an average of 6.6 gm or 6.1%. The effect of restriction on rate of production was most severe for the low protein-low energy diet and least severe on the high protein-high energy diet. Lower mortality was associated with feed restriction in three of four instances.

¹Assistant Professor and Professor and Leader, Poultry Research and Extension.

Table 1. Effects of Protein-Energy Levels and Feed Restriction on Hen Performance

Crude protein, % Energy, ME/kg	13.9		16.0		Avg.
	2500	2900	2500	2900	
HDEP, %					
Full feed	62.7	64.2	62.1	65.6	63.7
Restricted	<u>50.1</u>	<u>60.8</u>	<u>57.9</u>	<u>62.4</u>	57.8
Avg.	56.4	62.5	60.0	64.0	
Feed/day, gm					
Full feed	111.5	105.2	109.6	108.5	108.7
Restricted	<u>98.3</u>	<u>102.2</u>	<u>104.2</u>	<u>103.7</u>	102.1
Avg.	104.9	103.7	106.9	106.1	
Egg weight, gm					
Full feed	64.2	63.0	63.6	64.4	63.8
Restricted	<u>63.0</u>	<u>62.2</u>	<u>63.2</u>	<u>63.4</u>	62.9
Avg.	63.6	62.6	63.4	63.9	
Kg feed/doz.					
Full feed	2.1	2.2	2.2	1.9	2.1
Restricted	<u>2.5</u>	<u>2.4</u>	<u>2.2</u>	<u>2.1</u>	2.2
Avg.	2.3	2.0	2.2	2.0	
Mortality, %					
Full feed	8.3	13.5	8.0	16.4	11.6
Restricted	<u>6.3</u>	<u>14.9</u>	<u>5.0</u>	<u>11.4</u>	10.5
Avg.	7.3	14.2	6.5	13.9	