

LAYING PERFORMANCE OF PULLETS  
HOUSED ON THE FLOOR AND IN CAGES

J. J. Begin, J. E. Dalton and W. M. Insko, Jr.

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UNIVERSITY OF KENTUCKY  
AGRICULTURAL EXPERIMENT STATION  
Department of Poultry Science  
Lexington

LAYING PERFORMANCE OF PULLETS HOUSED  
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A review of the limited experimental work comparing the productive performance of caged and floor laying hens shows a lack of agreement as to results.

Froning and Funk (1958) observed that hens maintained in cages laid fewer eggs than those housed in floor pens. The cage hens produced eggs which were significantly heavier; however, their eggs contained more meat and blood spots.

Gowe (1956) reported lower egg production and slightly higher mortality for caged layers than for floor layers. No significant difference in egg weight was observed between the two housing methods.

Johnson (1963) presented data which indicates that laying hens managed on the floor laid 11 percent more eggs over a seven-year study than did cage-housed birds. Mortality was slightly higher for the caged pullets, and they laid slightly heavier eggs than did the floor-housed birds. Eggs from the caged layers contained more blood spots.

Lowry *et al.* (1956) reported on a four-year study of cages versus floor management. The floor pullets usually were found to be superior in performance for mean production of survivors, while the caged pullets showed significantly lower mortality and heavier egg weights.

Francis and Roberson (1963) compared three strains of White Leghorn pullets under floor and cage management conditions. Although the floor-housed birds laid more eggs, the difference in production rate was not found to be significant.

Parker and Rodgers (1954) found no consistent difference in egg production or mortality when comparing floor pens, individual cages and colony cages.

Experiments of the Texas Agricultural Experiment Station by Bailey *et al.* (1959), Miller and Quisenberry (1959), and Shupe and Quisenberry (1961) have shown in general that birds housed in cages usually lay at a higher rate, exhibit lower mortality, produce heavier eggs, and require less feed per pound of eggs produced than do birds housed in conventional fashion on the floor.

Hill *et al.* (1957) obtained higher egg production and lower mortality from individual cage-housed birds than from birds housed on the floor.

Reported in this publication are the results of two experiments conducted at the University of Kentucky Robinson Substation in two successive years. Since climatic and geographical conditions are undoubtedly an influence on housing methods, it was of interest to study the productive performance of pullets housed in cages and on the floor under local conditions.

## EXPERIMENTAL PROCEDURE

This two-year study was conducted to compare floor and cage management in the same house in an effort to reduce any environmental variable that may exist when making such comparisons in separate houses. The laying house was a pole-constructed building. This house was a 30- by 60-foot gable roof frame covered with an opaque plastic roof and clear plastic side panels. The side panels consisted of two layers of plastic with an air space between them which could be removed during the warm months. In half of the building were two 30- by 15-foot pens separated by a wire partition. These pens provided 2 square feet of floor space per bird. In the other half of the building 444 individual 8" x 16" cages were suspended.

In both trials 925 day-old, sexed, incross bred pullets were started in early July in floor pens in the brooder house at the Robinson Substation. The birds were fed and managed as a unit until they were 10 weeks old at which time they were weighed and vaccinated against fowl pox and Newcastle disease.

In the 1961-62 trial the pullets were randomly divided at 10 weeks into two groups. One group was grown to maturity in confinement and the other group was reared under range conditions. At housing time, the confinement and range reared birds were divided into two groups. One-half of each group was housed in floor pens and one-half in individual cages, making a total of two floor pens containing 224 pullets each and two groups of 222 pullets each in cages. Analysis of the laying performance data revealed no rearing environment X housing interaction, thus only the housing data are considered in this report.

In the 1962-63 trial, all of the pullets were reared as a group in confinement. At housing time the birds were divided randomly into two pens with 213 pullets in each and into 444 individual cages.

Artificial light was provided so as to give a 14-hour day to all groups. An all-mash laying diet was used throughout the laying period for all birds.

Production records for the 1961-62 trial began Nov. 24, 1961 when the pullets were 140 days old. The study was terminated Nov. 15, 1963, providing a total of 356 days of production. The 1962-63 trial started Jan. 4, 1963 when the birds were 185 days old. This trial was ended Dec. 31, 1963, a total experimental period of 361 days.

Daily egg production records, monthly feed records and mortality records were kept on all groups. All eggs were weighed three days each month. The data were summarized each month, and egg production was computed from the number of hen days and the number of eggs laid. These monthly summaries were analyzed by analysis of variance (Snedecor, 1956).

## RESULTS AND DISCUSSION

The summarized data of observations obtained for the floor- and cage-maintained pullets for the two years are shown in Table 1.

TABLE 1. -- Laying Performance of Pullets Housed on the Floor and in Cages

	1961-62		1962-63	
	Floor Housed	Cage Housed	Floor Housed	Cage Housed
Percent production-hen days	67.65	66.31	70.94**	65.15
Ave egg weight, gm	55.59	58.82**	60.06	61.32
Feed per dozen eggs, lb	4.49**	4.04	4.21**	3.79
Percent mortality	18.5**	3.5	20.68**	3.90

\*\* Significant,  $p < .01$

During the first year of the study the floor-managed pullets produced 1.3 percent more eggs than the caged pullets. This slight difference was not significant. The hen-day production of the floor-housed pullets was 5.9 percent higher than that of the cage-managed birds during the second trial. This difference in production rate was highly significant. In both years the difference in production became greater as the trial progressed. In the early part of the trial there was very little difference in production rate between the caged and floor birds; however, by the sixth month the difference in rate of lay in favor of the floor birds became quite obvious. Since the birds during the second trial were housed at an older age, this may account for the difference in the final results.

In both years of the comparison, the caged birds consistently produced eggs weighing more than did the floor-housed birds. In the first year, the cage-housed pullets produced eggs weighing 3.23 grams heavier than those laid by the floor-managed birds. This difference was highly significant. The second year, although the cage-housed pullets produced eggs averaging 1.3 grams more than the eggs laid by the floor birds, this difference was not significant.

The cage-housed birds were the most efficient in their utilization of feed both years of the study. The cage-managed birds required 0.45 and 0.43 pound less feed per dozen eggs produced than did the floor-housed pullets the first and second year respectively. These differences proved to be highly significant.

There was a highly significant difference in the percent mortality observed between the two housing methods each year of the study. During both years, the mortality of the floor birds was excessive when compared with that of the caged pullets.

A study of the relationship of house temperatures to productive performance failed to reveal any direct effect for the difference obtained. The data present are in agreement with the majority of such comparisons between floor and cage management; however, the underlying causes of the observed differences is not apparent.

#### SUMMARY

A two-year study of cage and floor management involving 874 pullets housed in conventional floor pens and 888 housed in individual 8" x 16" laying cages was conducted. The results indicate that cage birds lay fewer eggs than floor-housed birds; however, the cage pullets lay heavier eggs, are more efficient utilizers of feed, and have less mortality.

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