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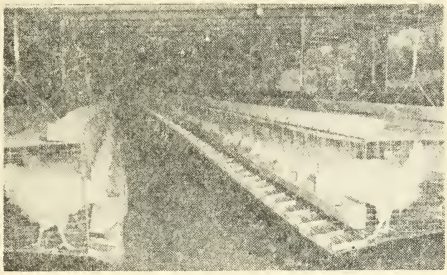

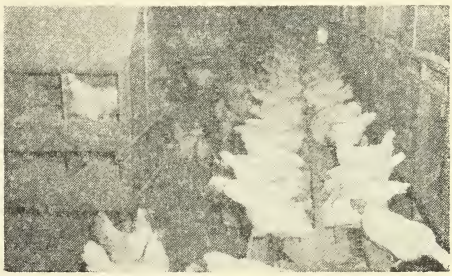

CAGE

versus

FLOOR OPERATION

For the Production of Commercial Eggs

MISSISSIPPI STATE COLLEGE
AGRICULTURAL EXPERIMENT STATION
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Summary

1. Initial cost for entering each type of operation will vary; however the average initial cost per bird will be about 75 cents more per bird in cages than in the floor unit.

2. In order to keep the cage unit to full capacity, replacements must be started every other month or at regular intervals.

3. The cage unit will result in more uniform egg production throughout the year. This uniformity is highly desirable for the over-all industry.

4. Eight-inch cages will give equal results to ten-inch cages for the Leghorn type bird. This reduction in cage size will result in an increase of 252 more cages in a 1000-capacity house.

5. The over-all mortality was less in cages than on the floor.

6. It took slightly less pounds of feed to produce a dozen eggs in cages than on the floor.

7. Labor income for the first year's operation was in favor of cages.

CAGE VERSUS FLOOR OPERATION FOR THE PRODUCTION OF COMMERCIAL EGGS

By JAMES E. HILL, ROBERT C. ALBRITTON and LESTER J. DREESEN

Commercial egg production has made rapid strides in Mississippi during the past few years. With this growth in production a great number of problems have arisen that could have a definite effect on the continuing growth of the industry and the method of production to be followed in producing these commercial eggs.

Approximately ten years ago the individual laying cage was adapted for the environmental conditions existing in the southern states. At the onset of the growth and popularity of this type of production it became evident that a great number of problems would be involved with the cage operation and with its advantages there would be some decided disadvantages when compared to the conventional floor unit.

House Types

Two houses were constructed at the Northeast Branch Experiment Station to be used in this study. In addition to the work carried on at the Northeast Station, trials involving cage size were conducted at the Poultry Department Farm at State College. The data for the cage size trials are given in Table 2.

The cage house is 24x80 feet in size, 504 capacity, and is constructed from creosote posts. There are three back-to-back rows of 10 x 18 x 18-inch cages extending the full length of the house. The house is covered with aluminum roofing. All other factors in the construction and design of this house are comparable to commercial type cage houses.

The floor unit is constructed from creosote poles and is 24 x 65 feet. This house is also capable of housing approximately 500 laying hens. This unit makes use of planer mill shavings as litter material and is equipped with nests, feeders, roosts and automatic waterers.

It should be noted that one of the undesirable factors in using cages for the production of commercial eggs is the higher initial cost. This cost will vary greatly with each individual producer but the average initial investment will run about 75 cents per bird more in cages than the floor operation. The over-all design and ventilation principles for each unit can be seen in figure 1.

Management Practices

In August of 1955, 504 laying hens were placed in each of the houses. An all-mash system of feeding was used for both units. This mash was formulated from a laying mash concentrate and consisted of 17 percent protein. The same management practices were followed in both houses in that the hens were fed fresh laying mash two times each day. Fresh mash was given to the hens in the morning and late in the afternoon.

In addition to putting out fresh feed twice daily, the feed was stirred each time the operator went into either house. This stirring process was not done an exact number of times each day but on an average of 3 to 4 times daily. It was interesting to note that the hens would go to the feed hopper each time the feed was stirred regardless of the number of stirrings daily. A good example of the increased feed consumption can be seen in figures 2 and 3.

There is definitely a limit to the number of times an operator can stir the feed each day but from the results of these trials, the feed should be stirred every time the operator enters the house as it will pay off in increased feed consumption.

All other management practices were as nearly identical as possible to the recommended commercial operations for these types of units. Eggs were gathered a minimum of three times daily and tak-

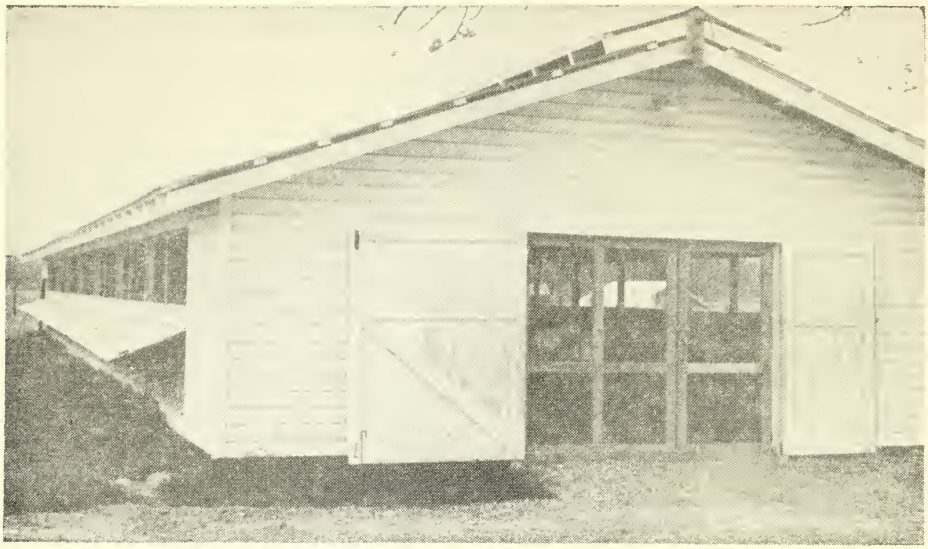

Figure 1. A creosote post type cage house with plenty of ventilation.

en directly to the cooler. No effort was made to determine the comparison of quality of the eggs produced in these two units during the test. A test is now underway at the Poultry Department to determine quality as affected by various types of production.

Lights

In both types of operations, lights were used to increase feed consumption and egg production.

In the cage unit lights were placed 10 feet on center in a diamond shape and mounted over the middle of the cage. This gives a staggered effect with even distribution of light at all points in the house. Twenty-five-watt bulbs were used in this house. The design for the cage house lights can be seen in figure 2.

In the floor unit lights were installed over the feeders and roosts. One 40-watt bulb was allocated for each 200 square feet of floor space. Thirteen to fourteen hours of light were given to each group of hens. Lights were started in early October and discontinued about the middle of April.

Replacements

Possibly the greatest disadvantage and one of the hardest problems involved in the cage operation is that of replacements. It is impossible to keep the cage operation to full capacity without keeping two to three ages of birds on the farm. These varying ages of birds on the same farm results in a somewhat higher mortality rate.

The replacement program followed in these trials was to start 200 sexed pullets every third month with a slightly larger number, depending on the over-all mortality, in January or February. This program may result in a few extra pullets during some periods of the year; however if the cage units are to be kept at full capacity some extra pullets should be on hand at all times. These extra pullets will in most cases produce profitably before being placed in the cage unit and if they are not in heavy production it is doubtful if they will go into a molt at the time they are placed in the cages.

After the pullets had been in the cages for a period of 30 days, they were subject to culling. Culling was done on the basis

of birds failing to lay 15 eggs over a 30-day period. Every hen removed from the test on this culling basis was checked very closely because it was found that some birds were good potential producers even though they failed to lay at a 50 percent rate.

In the floor unit the pullets were housed in August and no replacements were made until March. At this time 75 pullets were added to the unit in order to keep the house at full capacity. It should be emphasized that adding pullets to floor type units is not at this time a recommended practice and should not be done under normal practices.

Birds in the floor unit were culled at various intervals and when found to be producing at a nonprofitable rate. At the present time this floor unit is being replaced 100 percent each August as compared to replacing the nonprofitable birds in the cage unit.

Uniformity of Production

Uniform production is highly desirable from the consumers' standpoint and as can be seen from Table 1 the cage opera-

Table 1. Uniformity of production.

Month	Cage unit		Floor unit	
	Eggs	Feed	Eggs	Feed
August	4,948	3,400	4,701	2,900
September	10,285	3,300	10,528	3,500
October	11,021	3,700	11,088	4,300
November	11,452	4,300	12,095	3,600
December	11,276	4,450	11,197	3,750
January	11,349	4,600	10,968	4,400
February	10,175	4,100	10,075	3,500
March	10,780	3,600	9,655	3,700
April	10,675	4,000	8,919	3,700
May	10,560	3,500	7,776	3,200
June	10,269	3,500	6,318	3,200
July	4,807	1,700	3,091	1,100
TOTAL	117,597	44,150	106,411	40,850

Table 2. Cage size. Summary of performance from January 1, 1956, to December 31, 1956.

Group number	Cage size	Total no. eggs produced	Percent egg production (hen housed)	Number birds died	Number birds culled
1	8 inch	5,856	53	2	28
2	10 inch	4,764	54	2	23
3.	8 inch	5,869	54	4	29
4	10 inch	4,569	52	3	24
5	8 inch	5,238	48	4	34
6	10 inch	4,061	46	2	30
7	8 inch	5,600	51	9	30
8	10 inch	4,624	53	7	22
9	8 inch	5,779	53	2	32
10	10 inch	4,563	52	4	27
11	8 inch	5,668	52	9	28
12	10 inch	4,679	53	6	21
Average for all trials					
	8 inch	5,668	52	16.6[1]	100[2]
	10 inch	4,543	52	16.6[1]	100[2]
Average for three-year period:					
	8 inch	5,467	52	18.2[1]	92[2]
	10 inch	4,387	52	16.2[1]	93[2]

[1]Percent mortality.
[2]Percent birds replaced.

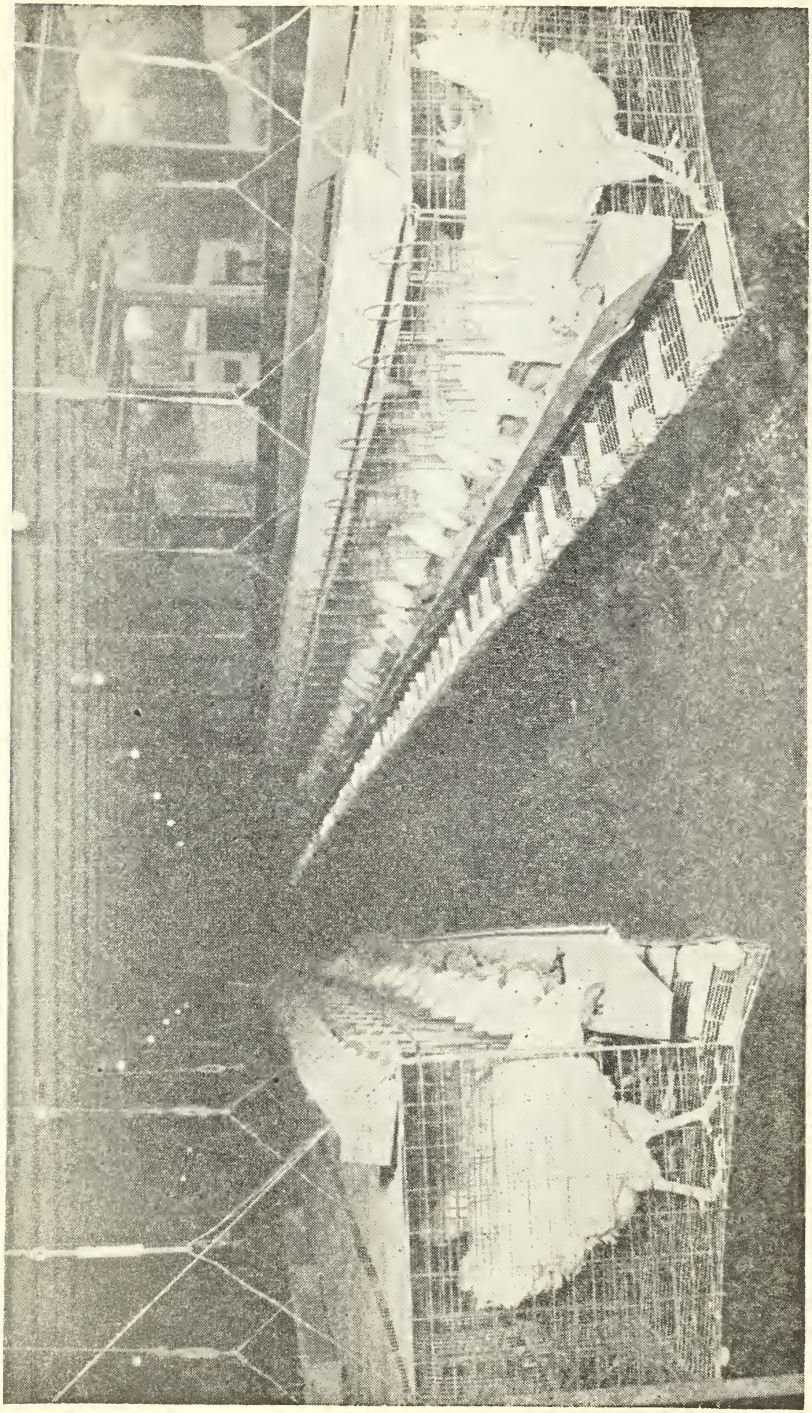

Figure 2. Lights must be properly spaced in a cage unit for best efficiency.

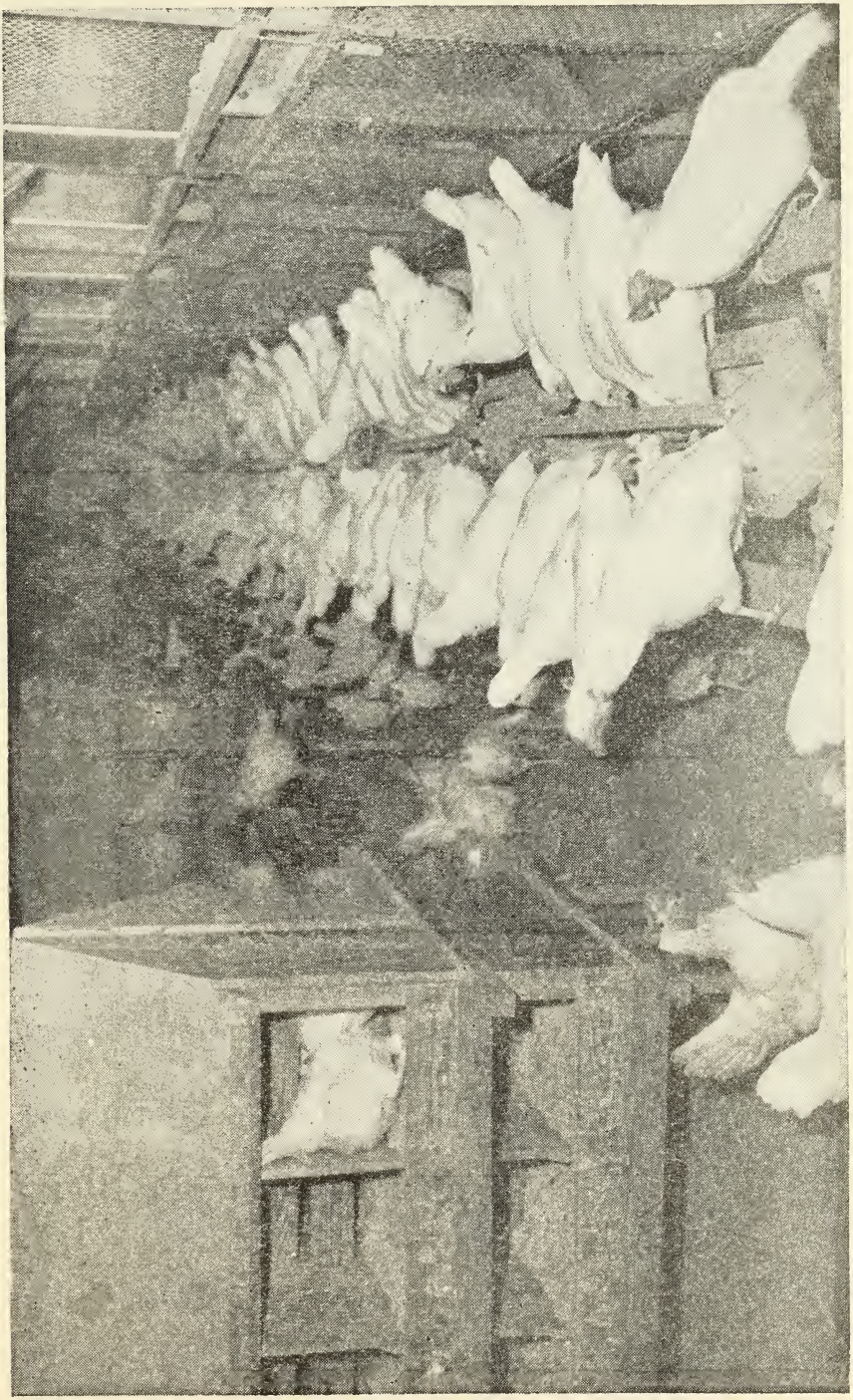

Figure 3. Stirring feed helps to increase feed consumption. Note well ventilated nests.

tion is very desirable from this point of view. From the standpoint of prices received, the drop in yearly production in the floor unit is during the months of March through June when prices will be the lowest; therefore this lack of uniformity may not necessarily show up in overall income.

It is also interesting to note that there is a direct correlation between egg production and feed consumption. In checking Table 1, for example, it took 3,200 pounds of feed to produce 7,776 eggs during the month of May and 3,500 pounds of feed to produce 10,075 eggs during the month of February.

These trials again demonstrated that the most efficient producers were those birds laying at the highest rate.

Cage Size

A producer can purchase cages of most any size that he desires; however, it is easily seen that the smaller the cage the more birds per house, thereby resulting in reduced housing cost. All of the cages in the comparison trials at the Northeast Station were 10 x 18 x 18 inches in size.

To supplement these data an additional project was initiated at the Poultry Farm in 1953 to determine the effect of cage size on egg production. Although the eight inch cage gave comparable results to the ten-inch cage, it is not recommended for heavy type birds.

Averages for the three years can be seen in Table 2. This table also gives the complete results for the last year's operation.

Labor Income

Labor income for a one-year period is given in Table 3. It should be noted that the labor income covers a one year period and the initial cost would offset the advantages for the first year's operation.

Table 3. Comparison of production cost.

	Cage unit	Floor unit
Total replacements	422	504
Number birds died	23	42
Pounds of feed per dozen eggs	4.50	4.60
Cost of replacement[1]	$ 582.36	$ 695.52
Feed cost[2]	1832.22	1695.27
Net income above feed and replacement cost	2093.06	1688.03

[1]Calculated on basis of $1.38 per bird.

[2]Average feed cost $4.15 per 100 birds.