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Production and marketing practices of cage and floor egg producers in Mississippi

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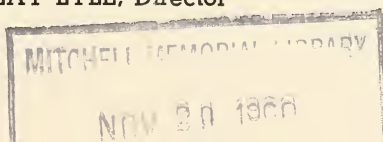
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Production and Marketing
Practices of Cage and Floor
Egg Producers in Mississippi

MISSISSIPPI STATE COLLEGE
AGRICULTURAL EXPERIMENT STATION

CLAY LYLE, Director

STATE COLLEGE



MISSISSIPPI

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Summary and Conclusions

A study was made of 77 commercial table egg flocks (45 cage and 32 floor) for the purpose of comparing production and marketing practices of the two systems. Data for the period July 1, 1955, to June 30, 1956, were collected during the summer of 1956.

There has been an increase in the number and average size of commercial flocks (both cage and floor) in recent years. Cage flocks account for about 31 percent of the hens in commercial flocks.

A larger percentage of floor producers than cage producers reported that the egg enterprise or other farm enterprises was their main source of income. About one-fourth and one-half of the cage and floor producers, respectively, reported that the egg enterprise accounted for over 50 percent of their income.

In general, cage flocks were found on more highly specialized farms than were floor flocks. Cotton was grown by a larger proportion of cage than floor producers, but the average acreage was smaller for cage producers. Nearly one-half of the floor producers, in contrast to less than one-fifth of the cage producers, grew grain. A greater percentage of floor producers than cage producers kept beef and dairy animals, but generally kept fewer animals per farm.

The basic structure of cage-layer houses was similar to that of houses used for floor flocks. However, houses for floor flocks were generally wider than houses for cage flocks. Failure of most producers to fully utilize housing space resulted in a greater-than-recommended floor space per layer.

Cages were equipped to provide adequate water and feeder space per bird. A majority of the floor producers used

hand feeders and waterers; 47 percent used automatic waterers. In all cases, feeder and waterer space per hen exceeded general recommendations.

All cage producers and nearly three-fourths of the floor producers reported use of artificial lights. Cage producers burned an average of 1.3 watts per hen per hour as compared to .6 watts per hen for floor producers.

A larger percentage of cage producers than of floor producers fed commercially mixed feed exclusively. A majority of the floor producers used a mash-grain feeding program, and bought feed of 20 percent or higher protein content. Almost all producers provided shell or limestone and over half provided grit for layers.

Colds or bronchitis, lucosis and fowl pox were the diseases reported as causing the most trouble in laying flocks. Colds or bronchitis and lucosis were more prevalent in cage flocks, and fowl pox was more prevalent in floor flocks. Nearly all producers vaccinated for fowl pox, and while most cage producers also inoculated against Newcastle disease, less than one-half of the floor producers did so.

Artificial methods of cooling laying houses were not used to a great extent by any producers.

Producers with cage flocks generally followed the practice of culling and replacing their laying flocks at regular intervals during the year. On the other hand, most producers with floor flocks culled and replaced a large part of their flocks only one time each year, usually in the late summer or early fall.

The annual average rate of lay for cage and floor flocks was 58 and 54 percent,

respectively. Higher production in cage flocks was accounted for primarily by large flocks, since there was little difference in the rates of lay of cage and floor hens in small and medium flocks. The rate of lay was significantly higher and seasonality of production significantly less for cage flocks than for floor flocks.

The majority of floor producers gathered eggs much more often than did cage producers. Large producers gathered eggs more frequently than did small producers. Floor producers reported a higher proportion of dirty and cracked eggs than did cage producers. Little difference existed in the proportions of the two groups using different cleaning practices. Fifty-eight percent of the producers cleaned only dirty eggs, while 40 percent cleaned all eggs. One producer did not clean any eggs. The most common method of cleaning eggs was the use of a damp cloth or sponge.

Nearly three-fourths of the cage producers and over four-fifths of the floor producers sized eggs. In most instances, producers who did not size eggs were

those with smaller flocks. Eggs were candled by over one-half of the cage producers but by less than one-third of the floor producers.

Nearly all producers delivered eggs to the buyer; however, cage producers generally delivered more frequently than did floor producers.

More producers sold eggs to retail grocery stores than to any other outlet. Over three-fifths of all eggs sold were sold to grocery stores.

The price received by a majority of producers was based on local supply and demand for eggs or on some central market price quotation. Retail grocery stores paid a greater premium for cage eggs than did any other outlet. The following practices and factors may have influenced the price differential between cage and floor eggs: (1) more frequent delivery by cage producers, (2) cage flocks were larger on the average than floor flocks, (3) cage producers followed more intensive advertising programs than did floor producers, and (4) cage producers had a more uniform supply of eggs for market throughout the year.

PRODUCTION AND MARKETING PRACTICES OF CAGE AND FLOOR EGG PRODUCERS IN MISSISSIPPI

By PAUL T. BLAIR and JOHN C. SIMS

Total table egg production in Mississippi has increased and the number of laying hens has decreased since the end of World War II, Table 1. The increase in production per layer has resulted from improved breeding, feeding, and related management practices.

The number of commercial laying flocks (200 hens and over) has increased in recent years. The total number of commercial flocks increased from 956 in 1953 to 1,181 in 1956, Table 2. Of this 225 flock increase, 40 were cage flocks and 185 were floor flocks. Cage flocks accounted for about 21 percent of all commercial egg flocks, both in 1953 and 1956.

Along with this increase in number of commercial flocks, the average size of flock has increased. The average size of cage flocks increased by 107 hens from 1953 to 1956 while that of floor flocks increased by only 31 hens. Cage flocks were larger than floor flocks in both years and accounted for about 31 percent of the commercial hens. Both cage and floor flocks were generally dispersed throughout the state.

The Problem

United States Department of Agriculture estimates indicate that consumption of eggs in Mississippi exceeds production by about 26 percent.¹ Yet Mississippi commercial egg producers have found it difficult in the past to dispose of their eggs at competitive or even lower prices because of their inability to guarantee (1) an adequate supply of eggs under past flock management practices and bird numbers, (2) a dependable seasonal distribution of egg supplies throughout the year so that handlers will not have to

turn to other sources periodically, and (3) stability in the quality of their egg supplies.

Buyers serving Mississippi consumer outlets want arrangements with egg suppliers to meet their needs throughout the entire year. Consequently, seasonal surpluses of Mississippi eggs will not be taken by such buyers even at lower than prevailing prices. One of the largest buyers stated that his organization is ready to take Mississippi eggs when they can be obtained in car or truck-load lots and the supply of quality eggs can be depended on throughout the year. This is the hurdle to be cleared if the enterprise is to make a substantial contribution to the economy of the state.

Considerable economic research has been completed already at this station on sources of supplies and handling of eggs in the marketing practices between producers and retailers.² Since that work was done, there has been a sharp increase in emphasis on commercial egg production. Eggs sold increased by 23 percent from 1954 to 1955.³ Substantial progress has been made in technical "know how". Commercial flocks are apparently larger; more emphasis is being placed on volume production; more mechanical processes are in evidence. The use of cages in addition to, or as a substitute for, conventional housing and handling methods is in process. These changes have been, or are being, adopted to correct previous weaknesses in marketing. It was highly desirable that our previous research be

²Marketing Procedures and Channels for Mississippi Eggs, Mississippi Agricultural Experiment Station, Technical Bulletin No. 37, (State College, Mississippi, July, 1953).

³Basebook of Mississippi Agriculture, 1866-1953, Supplement No. 1. (Jackson, Mississippi, 1955) p. 25.

¹United States Department of Agriculture, Agricultural Marketing Service, Statistical Bulletin Number 183, June, 1956. (Washington, D.C.) p. 19.

Table 1. Number of laying hens, eggs produced per layer, and total eggs produced, Mississippi, 1945-1954.

Year	Number of laying hens (thousand)	Eggs produced per layer	Total eggs produced (million)
1945	5,932	103	611
1946	5,610	105	589
1947	5,162	111	573
1948	4,930	115	567
1949	5,177	124	642
1950	5,354	127	680
1951	4,771	131	625
1952	4,880	133	649
1953	4,915	142	698
1954	4,874	143	697

Source: **Basebook of Mississippi Agriculture, 1866-1953, Supplement No. 1.** (Jackson, Mississippi, 1955), p. 25.

Table 2. Number of commercial table egg flocks, by type of flock, Mississippi, 1953 and 1956.¹

Item	Type of flock					
	Cage		Floor		All flocks	
	1953	1956	1953	1956	1953	1956
Total number of flocks	206	246	750	935	956	1,181
Change from 1953		40		185		225
Total number of hens (1000)	169	228	380	502	549	730
Change from 1953		59		122		181
Average number of hens per flock	819	926	506	537	573	618
Change from 1953		107		31		45

Source: Compiled from survey data collected from county agents in 1953 and 1956.

¹Laying flocks of 200 hens or more are classified as commercial flocks.

supplemented by a study of these new developments.

Objectives

The specific objectives of this study were:

1. To describe the general characteristics of farms producing commercial table eggs in Mississippi and to describe poultry management practices on these farms.
2. To determine the effect of changing poultry management practices on total production, seasonality of production and quality of commercial eggs produced in Mississippi.
3. To analyze present and to indicate potential effects of the new developments on supplies and subsequent impacts on market outlets and prices.

Method and Procedure

Data on the number and size of commercial table egg flocks in Mississippi were obtained from all County Extension Agents in the state by mail questionnaires

in early 1956. Data collected included the number of cage and floor flocks in the following size groups: 200-399 hens, 400-599, 600-999, 1000-1499 and 1500, and up.

A total of 12 cage producers was selected at random from each size group listed above. An attempt was made to match each cage flock with the nearest floor flock in the same size group.

Original intentions of obtaining data from 60 cage and 60 floor producers were altered because of the time element involved and limited personnel for field work. Data were obtained from 45 cage and 32 floor producers during the summer of 1956.

This limited amount of data necessitated a re-grouping of the schedules taken into the following size groups: 200-499 hens, 500-999, and 1000-up.⁴

⁴Throughout this study these size groups are referred to as small, medium and large, respectively.

Table 5. Percentage of flocks established in specified years, by size and type of flock, 77 flocks, Mississippi.

Year in which flock was established.	Size and type of flock							
	Small		Medium		Large		All sizes	
	Cage	Floor	Cage	Floor	Cage	Floor	Cage	Floor
	(Percentage of producers reporting)							
Before 1950		36		50	7	62	2	47
1950				30	7	13	2	13
1951			15		7		7	0
1952	6	29			0	13	2	16
1953	22	7	62	10	21	12	33	9
1954	61	14	15	10	29		38	9
1955	11	14	8		29		16	6
Totals	100	100	100	100	100	100	100	100

Table 6. Average size of flock when established and in 1956 and change in flock size from establishment to 1956, by size and type of flock, 77 flocks, Mississippi.

Item	Size and type of flock							
	Small		Medium		Large		All sizes	
	Cage	Floor	Cage	Floor	Cage	Floor	Cage	Floor
Average size of flock:	(Number of hens)							
When established	432	282	710	415	1,304	584	784	399
In 1956	355	311	781	741	1,714	1,721	901	798
	(Percent)							
Size in 1956 as percent of size when established	82	110	110	178	131	294	115	200

flocks was 192 and 149 acres, respectively.

Crop and Livestock Enterprises

A larger proportion of producers with cage flocks produced cotton than did producers with floor flocks; however, the average cotton acreage per farm was smaller for cage producers, Appendix Table 1. Cage and floor producers with medium flocks reported a much smaller cotton acreage than did the small and large producers. Forty-four percent and 18 percent of the floor and cage producers, respectively, reported growing some type of grain. The average acreage grown by cage producers was 33 and by floor producers, 16.

A higher percentage of floor producers kept beef and dairy animals than did cage producers but generally kept fewer animals per farm, Appendix Table 1. One-fourth of the cage producers and one-half of the floor producers reported beef cattle. The average number kept was 41 head and 25 head, respectively, for cage and floor producers. Thirty-six and 62 percent, respectively, of cage and floor producers

kept dairy cows. The average size of herd was significantly larger on farms with cage flocks. Hogs were found more commonly on farms with floor flocks and the average number per farm was much higher than the average number on farms with cage flocks.

Year Flocks Established and the Increase or Decrease in Size

The use of cages for the production of commercial table eggs is relatively new in Mississippi. Ninety-eight percent of the cage operations studied were established after 1950, with 33 percent being established in 1953 and 38 percent in 1954, Table 5. Sixty percent of all floor flocks studied were established prior to 1951.

The average size of medium and large cage flocks and of all floor flocks has increased since the flocks were established, Table 6. The greatest increase occurred in large cage and floor flocks, 31 and 194 percent, respectively. In each size group, the average cage flocks were larger than the average floor flocks both when established and in 1955.

Production Practices

Size of Houses

The basic structure of cage-layer houses is similar to that of houses used for floor flocks. All cage and floor commercial egg farm visited used single-story houses. All houses used for floor flocks and a majority of those used for cage flocks had all dirt floors. A few cage houses had dirt floors with concrete walks. Cage houses ranged from 7 to 35 feet wide with 70 percent being between 20 and 29 feet wide, Table 7. Floor houses ranged from 10 to 50 feet wide with 52 percent being over 30 feet wide and about 22 percent less than 20 feet wide.

Cage houses less than 20 feet wide had two rows of single cages placed back to back, and houses 20-29 feet wide usually had six rows of single cages placed back to back.

Feeder, Water and Floor Space Per Bird

The Poultry Department of Mississippi State College recommends that each hen be allowed a minimum of three linear inches of feeder space, one-half linear inch of waterer space,⁵ three to four square feet of floor space⁶ and one watt of light per working period (13 to 14 hours daily).⁷

Practically all cage operations studied used "V" trough continuous waterers placed between cages so that the hens in two rows had access to the same water trough. Forty-seven percent of the producers with floor flocks reported using

⁵Equivalent to a minimum of five four-foot automatic waterers per 1,000 birds.

⁶Light breed hens require from 3 to 3 1/2 square feet per hen and heavy breed require 3 1/2 to 4 square feet.

⁷Light should be supplied by 45 or 60 watt bulbs only.

automatic pan or trough waterers. The remainder watered by hand. Both cage and floor producers in all size groups provided more than the recommended amount of watering space, Appendix Table 2.

Feed was provided for hens in cages in feed troughs attached to the outside of the cage opposite the water trough. Producers with floor flocks generally used metal or wooden trough hand feeders and provided more feed space per hen than recommended.

The average amount of floor space provided by all producers in all size groups, was generally greater than the recommended amount. In cage and floor flocks, the space allowed per hen decreased as the size of flock increased.⁸ Feeder and waterer space per hen was the same for cage flocks regardless of the size of flocks because of the way the cage is designed and equipped.

Lighting Program

All cage producers and 72 percent of floor producers reported use of artificial light. A larger proportion of floor producers with large flocks burned lights than did those with small flocks, Appendix Table 3. Cage producers burned an average of 1.3 watts per hen compared to .6 watts per hen for floor producers. Floor flock producers used less wattage per hen in large flocks than in small flocks.

Feeding Practices

A larger percentage of cage producers than of floor producers fed commercially mixed feeds exclusively. Less than 20 percent of the cage producers and almost three-fourths of the floor producers fed grain in addition to commercially mixed feed, Appendix Table 4. Over one-half

⁸Floor space per hen in cage operations is influenced by the extent of the utilization of cages to capacity.

Table 7. Percentage of producers with poultry houses of specified width by type of flock, 77 producers, Mississippi, 1956.

Item	Type of house	
	Cage	Floor
(Percent of producers)		
Width of house in feet:		
Less than 20	14	22
20-29	70	26
30 and over	16	52
Total	100	100

Table 8. Frequency of culling by commercial egg producers, by type of flock, 77 flocks, Mississippi, 1955-1956.

Item	Type of flock	
	Cage	Floor
(Percent of producers)		
Frequency of culling:		
Continuously	25	25
Every week	13	0
Every two weeks	20	3
Every month	18	0
One time per year	2	34
No regular time	22	38
Total	100	100

of the floor producers bought feed of 20 percent or higher protein content. Over 94 percent of the producers interviewed provided shell or limestone and over 50 percent provided grit for layers.

Disease Control

About one-third of the cage producers and one-fourth of the floor producers reported some disease during the previous year, Appendix Table 5. Disease was more prevalent in cage flocks than in floor flocks. Of the cage producers reporting disease problems, 64 percent indicated either colds or bronchitis as the major disease, 29 percent cited lucosis and the remainder reported a combination of diseases. Of the floor producers reporting disease, 38 percent reported colds or bronchitis as the major disease, 24 percent reported fowl pox or sore-head and 38 percent reported a combination of diseases.

All but one cage producer and 78 percent of all floor producers vaccinated for fowl pox. Vaccination was usually done at 8 to 12 weeks of age by both cage and floor producers.

Sixty-nine percent of cage producers compared to only 44 percent of floor producers vaccinated for Newcastle. Of the cage producers who vaccinated, 61 percent reported that they vaccinated two times, whereas only 36 percent of the floor producers vaccinated twice.⁹ Practically all of those who vaccinated twice, vaccinated the first time when the chicks were from 1 to 7 days old and the second time at 12 to 16 weeks.

Producers generally followed sanitary practices in disposing of dead birds. Seventy-three percent of the cage producers and 62 percent of the floor producers disposed of dead birds by either burying, burning or depositing in covered disposal pits, Appendix Table 6.

Cooling Houses by Artificial Methods

Artificial methods of cooling laying houses were not used to a great extent by either cage or floor producers. Only 4 cage producers and 2 floor producers reported artificial cooling. None of the producers with large flocks cooled the laying house by artificial methods.

⁹This does not include chicks that might have been vaccinated before the producer got them.

Culling and Replacement Practices

Frequency of culling. Seventy-six per cent of the cage producers interviewed reported that they culled either continuously or followed a regular practice of culling weekly, every two weeks or monthly, Table 8.

Only 28 percent of the floor producers used these same practices. On the other hand, 72 percent of the floor producers either culled one time each year or had no regular time of culling.

One of the main advantages ascribed to the cage operation is the ease with which nonproductive hens can be determined. Each layers' eggs are gathered separately, and it is easy to determine the rate of lay for individual hens.

Most of the cage producers reported that they culled whenever a hen fell below 50 percent production over a two-week or longer period. The length of time usually depended on the prices of eggs and cull hens and the availability of replacements. Some producers kept a hen in the cage as long as she appeared to be in good condition, even though her rate of production might be below 50 percent. Producers with floor flocks who

culled continuously or at regular intervals usually determined which birds to cull by the general appearance, pigmentation and other physical characteristics of nonlayers.

Monthly distribution of culling and replacement. Culling of cage flocks varied less from month-to-month than did culling of floor flocks. Except in July, between 7 and 11 percent of the total number of birds culled from cage flocks were culled each month, Appendix Table 7. Conversely, culling of floor flocks was highly seasonal with 45 percent of the annual cull being made in November, December and January.

Replacement of hens culled from cage flocks also varied less from month-to-month than did replacement of hens culled from floor flocks. Generally, hens culled from floor flocks were replaced once each year and those from cage flocks several times during the year, Appendix Table 8. Some replacements were added to cage flocks each month; however, 28 percent was added in August and September, 23 percent from November through January and 36 percent from March through June.

Production Relationships

Profits received from commercial egg production are influenced by many factors, one of the more important being rate of lay. Rate of lay is important both to production and marketing of eggs. A higher rate of lay tends to increase net returns to the operator and facilitate the marketing of eggs in a more efficient manner, especially if the higher rate of lay is not subject to marked seasonal variation.

Average Rate of Lay

The average rate of lay per hen, calculated on a per flock basis, is shown in Appendix Table 9. There was no significant differences in the monthly rate of production between small cage and floor flocks, nor between medium cage and

floor flocks.¹⁰ However, the rate of production was significantly higher for large cage flocks than for large floor flocks when tested at the 1 percent level.

Seasonality of Production

Seasonality of production, as well as the average annual rate of production, has an influence on the marketing of eggs. One of the primary complaints of market outlets for Mississippi eggs has to do with the large variation in seasonal supplies.

For small flocks there was no signifi-

¹⁰F = 0.362 and 0.062 for small and medium flocks, respectively. See Appendix Table 10 for Analysis of Variance results for each size group.

Cleaning practices. All producers reported having some dirty eggs. Fifty-six percent of all cage producers and 62 percent of all floor producers cleaned only the dirty eggs, whereas 42 and 38 percent of all cage and floor producers, respectively, cleaned all eggs. One of the small producers did not clean eggs.

Most producers reported that they cleaned eggs with a damp cloth or sponge. Other producers reported that they either dry cleaned eggs, washed by hand or used a mechanical washer, Table 10.

Sizing eggs. Producers who sized eggs used various means. A few reported that they merely separated the large eggs from the small by hand. Other producers either used small hand scales or automatic sizing equipment. Seventy-three

percent of the cage producers and 81 percent of the floor producers sized eggs, Appendix Table 14. The practice of sizing eggs was more commonly reported by cage and floor producers with large and medium flocks than by those with small flocks.

Candling eggs. Fifty-three percent of the cage producers and only 28 percent of the floor producers candled eggs on the farm to remove eggs containing meat or blood spots, Appendix Table 14. A larger proportion of cage producers than of floor producers in all size groups candled eggs. A greater proportion of large producers than of small and medium producers candled eggs.

Packing and storing eggs prior to marketing. Sixty-seven percent of the cage producers and 94 percent of the floor

Table 10. Proportion of producers cleaning eggs and following selected cleaning methods, by type of flock, 77 flocks, Mississippi, 1955-56.

Item	Type of flock	
	Cage	Floor
	(Percent of producers)	
Cleaning practices:		
Cleaned all eggs	42	38
Cleaned dirty eggs only	56	62
Did not clean	2
Total	100	100
Methods of cleaning:		
Damp cloth or sponge	56	44
Hand washed	11	34
Dry cleaned ¹	20	19
Mechanical washer	11	3
Did not clean	2
Total	100	100

¹Includes eggs cleaned with steel wool, sandpaper, or brush.

Table 11. Proportion of producers selling eggs with specified frequency, by size and type of flock, 77 flocks, Mississippi, 1955-1956.

Frequency	Size and type of flock							
	Small		Medium		Large		All sizes	
	Cage	Floor	Cage	Floor	Cage	Floor	Cage	Floor
	(Percent of producers)							
Once per week	17	57	8	30	14	13	34
Twice per week	22	29	23	60	7	50	18	44
Three times or more per week ¹	61	14	69	10	79	50	69	22
Total	100	100	100	100	100	100	100	100

¹Five producers with cage flocks and 2 with floor flocks made deliveries on call in addition to regular deliveries.

producers reported that they packed eggs the same day that they were gathered, Appendix Table 15. Most producers kept eggs either in unrefrigerated egg rooms, in their dwelling houses or in cellars prior to marketing. Only 13 percent of the cage producers and 6 percent of the floor producers reported having refrigeration equipment for cooling eggs. A few producers kept eggs in air-conditioned rooms.

Selling Eggs

Practically all producers reported that they had some kind of verbal selling agreement with egg buyers. One cage producer and one floor producer reported having written contracts.

Most producers followed the practice of delivering eggs. However, a few producers reported that all eggs were sold at the farm, either to individual consumers, to an egg dealer, or both.

Frequency of selling eggs. Cage producers marketed their eggs more frequently than did floor producers, Table 11. Sixty-nine percent of the cage producers marketed their eggs three or more times per week as compared to only 22 percent of the floor producers. Producers with large flocks marketed their eggs more frequently than did producers with small and medium flocks.

Market outlets. More producers sold eggs to retail grocery stores than to other

outlets, Table 12. Other outlets were institutions, egg dealers, retail routes, home sales and miscellaneous. Retail grocery stores not only were the outlet for a majority of the producers, but also handled a majority of the eggs sold.

Thirty-one percent of the cage producers and 47 percent of the floor producers sold eggs through only one outlet, Appendix Table 17. Forty percent of the cage producers and 31 percent of the floor producers utilized two market outlets. Twenty-nine percent of the cage producers and 22 percent of the floor producers sold eggs through three or more outlets. Three or more market outlets were used more frequently by large and medium flock owners than by small flock owners.

Identifying and advertising eggs. The majority of producers sold eggs in one dozen cartons and/or 30-dozen cases. Of the cage producers who sold eggs in cartons, 44 percent reported that they either used a special carton with a printed brand name or identified the carton by use of a rubber stamp, Appendix Table 18. Only 16 percent of the floor producers who sold eggs in cartons followed this practice. Other producers who sold eggs in cartons used either plain cartons or cartons which signified a brand of feed.

In addition to identifying egg cartons, 13 percent of the cage producers advertised their eggs in local newspapers. None of the floor producers interviewed ad-

Table 12. Proportion of producers selling eggs to various outlets and proportions of eggs sold to various outlets, by type of flock, 77 flocks, Mississippi, 1955-56.

Outlet	Type of flock			
	Cage		Floor	
	Producers	Eggs	Producers	Eggs
	(Percent)			
Retail grocery store	76	62	59	61
Institutions ..	33	12	18	7
Egg dealers	29	13	25	12
Retail route	11	6	28	9
Home sales	38	1	28	5
Miscellaneous ¹ ..	29	6	16	6
Total ..		100		100

Source: Appendix Table 16.

¹Miscellaneous outlets include cooperatives, bakeries, creameries and food manufacturers.

vertised their eggs by this means. The majority of the cage producers who advertised had large flocks.

Basis for pricing eggs. More cage producers participated in price formation than did floor producers. Seventy one percent of the cage producers as compared to 59 percent of the floor producers reported that the price they received for eggs was either their quoted price or a price determined by bargaining, Appendix Table 19. Twenty-nine percent of the cage producers and 41 percent

of the floor producers stated that the buyer alone determined the price received for eggs.

Prices received by a majority of the producers were usually based on local supply and demand conditions or on some central market quotations, Table 13. A few producers reported that they received one price for eggs the year-round.

Average price received for sized eggs. Monthly and annual weighted average prices for cage and floor eggs varied

Table 13. Proportion of producers specifying bases of prices received for eggs, by type of flocks, 77 flocks, Mississippi, 1955-1956.

Basis of pricing	Type of flock	
	Cage	Floor
	(Percent of producers)	
Premium over local prices	8	3
Allow retailer a certain markup	2	6
One price the year round	15	13
Local supply and demand	33	53
Jackson Central Market quotation	29	16
Market quotations in adjoining states ¹	4	6
Market quotations from other Central markets ²	9	3
Total	100	100

Source: Appendix Table 19.

¹Includes markets in New Orleans, Memphis, and Mobile.

²Includes markets in New York and Chicago.

Table 14. Average prices¹ received for sized eggs and floor eggs, by type of outlet, by month, 23 cage producers and 15 floor producers, Mississippi, July, 1955-June, 1956.

Outlet and type of eggs	Month												Year
	Ju.	A	S	O	N	D	J	F	M	A	M	J	
	(Cents per dozen)												
Grocery stores:													
Cage eggs	60	60	56	57	59	62	63	59	54	53	50	53	57
Floor eggs	48	48	49	52	55	56	54	48	44	42	42	45	48
Retail Routes:													
Cage eggs	51	51	52	53	60	59	59	58	59	56	57	57	55
Floor eggs	58	54	56	58	60	62	63	62	60	54	53	54	58
Home Sales:													
Cage eggs	53	53	57	55	58	58	58	54	54	52	51	51	54
Floor eggs	54	54	55	58	59	62	59	55	53	48	49	53	56
Institutions:													
Cage eggs	52	54	55	55	56	57	57	53	56	50	47	48	53
Floor eggs	49	48	52	52	53	51	54	51	50	48	48	48	50
Egg dealers:													
Cage eggs	44	46	48	49	53	55	50	50	46	44	42	41	47
Floor eggs	42	44	45	48	51	52	52	46	42	41	40	43	45
Miscellaneous:													
Cage eggs	40	44	41	48	43	46	43	40	35	35	34	34	39
Floor eggs	38	40	45	49	49	53	54	53	49	46	46	42	47

¹Weighted average price received for eggs was computed as follows: Total receipts from eggs sold to various outlets ÷ total number of dozen sold to various outlets = average price.

considerably between various outlets, Table 14. The difference between the price of cage eggs and the price of floor eggs sold to grocery stores is especially significant; taking into account that over 60 percent of cage and floor eggs were sold through this type of outlet. The average price received by cage producers selling to grocery stores was 9 cents per dozen higher than that received by floor producers. The following practices and factors may have influenced the price differential between cage and floor eggs: (1) more frequent delivery by cage producers, (2) cage flocks were larger on the average than floor flocks, (3) cage producers followed more intensive adver-

tising programs than did floor producers, and (4) cage producers had a more uniform supply of eggs for market throughout the year.

Although cage producers received an annual average price of 57 cents per dozen for eggs sold to grocery stores compared with 48 cents received by floor producers, it should be kept in mind that this is a gross rather than net price differential. Since cage producers delivered more frequently and generally had more advertising expense, the difference in net price per dozen received by cage and floor producers may have been considerably less than the gross price differential.

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Appendix Tables

Appendix Table 1. General characteristics of commercial poultry farms by size and type of flock, 77 producers, Mississippi, 1955-1956.

Item	Size and type of flock							
	Small		Medium		Large		All sizes	
	Cage	Floor	Cage	Floor	Cage	Floor	Cage	Floor
Average size of farms (acres)	200	247	236	74	141	70	192	149
	(Percent)							
Percent of farms reporting:								
Cotton	56	43	38	20	29	25	42	31
Grain	11	64	23	30	21	25	18	44
Beef cows	39	64	23	30	14	50	27	50
Dairy cows	39	57	31	60	36	75	36	62
Hogs	22	64	31	10	14	62	22	47
Sheep	6	-----	-----	-----	-----	12	2	3
	(Number)							
Average per farm:								
Cotton (acres)	10	10	4	3	15	37	10	14
Grain (acres)	4	9	8	28	77	29	33	16
Beef cows (head) ..	29	31	79	13	24	20	41	25
Dairy cows (head) ..	23	12	32	8	54	5	35	9
Hogs (head)	12	35	3	65	9	5	8	27
Sheep (head)	6	-----	-----	-----	-----	60	6	60

Appendix Table 2. Average floor space, feeder space and water space per hen provided by commercial egg producers, by size and type of flock, 77 flocks, Mississippi, 1955-1956.

Space per hen	Size and type of flock							
	Small		Medium		Large		All sizes	
	Cage	Floor	Cage	Floor	Cage	Floor	Cage	Floor
Floor (sq. feet)	5.2	5.7	4.9	4.3	3.9	4.0	4.3	4.4
Feeder (inches)	10.0 ¹	5.5	10.0	4.1	10.0	4.1	10.0	4.2
Water (inches)	3.0 ²	2.3	3.0	1.6	3.0	1.9	3.0	2.0

¹Cages are normally 8 or 10 inches wide and provide 8 or 10 inches of feeder space. All except two producers reporting had 10 inch cages.

²Cages are designed with an opening to provide about three inches of water space per bird.

Appendix Table 7. Distribution of annual cull, commercial egg flocks, by months,¹ by size and type of flock, 76 flocks, Mississippi, July, 1955-June, 1956.

Size and type of flock	Month												Total	
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June		
	(Percent of annual cull)													
Small: ²														
Cage	4.6	5.9	16.6	9.8	11.3	6.2	9.8	11.2	9.6	4.4	6.2	4.4	4.4	100.0
Floor	2.8	5.7	18.1	4.7	9.4	11.9	7.1	21.2	4.5	5.1	4.5	5.1	5.0	100.0
Medium: ³														
Cage	2.4	5.3	12.8	8.9	10.3	10.4	7.1	6.6	11.2	7.9	11.0	6.1	6.1	100.0
Floor	2.8	5.9	16.6	14.3	10.0	14.1	5.8	5.2	13.0	5.9	3.4	3.4	3.0	100.0
Large: ⁴														
Cage	4.3	11.9	8.1	7.4	8.7	9.3	8.1	7.9	9.7	8.5	8.3	7.8	7.8	100.0
Floor	4.4	7.8	4.3	2.5	15.7	22.8	25.5	2.8	3.2	2.2	5.9	2.9	2.9	100.0
All sizes: ⁵														
Cage	3.8	8.8	11.1	8.3	9.7	9.0	8.2	8.2	10.1	7.5	8.7	6.6	6.6	100.0
Floor	3.6	6.8	11.0	6.6	12.7	17.9	15.6	7.2	6.6	3.9	4.8	3.3	3.3	100.0

¹Includes layers that died.²Based on 18 cage schedules for each month except as follows: 12 in July, 17 in Aug., and 16 in June. Based on 14 floor schedules for each month except as follows: 8 in July, 13 in Aug., and 13 in June.³Based on 13 cage schedules for each month except as follows: 9 in July, and 11 in June. Based on 10 floor schedules for each month except as follows: 7 in July, 9 in May, and 8 in June.⁴Based on 13 cage schedules for each month except as follows: 9 in July, 12 in Aug., and 9 in June. Based on 8 floor schedules for each month except as follows: 6 in June.⁵Based on 44 cage schedules for each month except as follows: 30 in July, 42 in Aug., and 36 in June. Based on 32 floor schedules for each month except as follows: 23 in July, 31 in Aug., and 27 in June.

Appendix Table 8. Distribution of annual replacements, by size and type of flock, 76 commercial egg flocks, Mississippi, July, 1955-June, 1956.

Size and type of flock	Month												Total
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
	(Percent of annual replacement)												
Small: ¹													
Cage	9.0	13.0	15.6	9.9	5.4	7.1	5.4	4.4	13.0	4.8	5.3	7.1	100.0
Floor	---	11.3	37.1	---	---	1.1	4.1	---	21.7	1.9	5.9	16.9	100.0
Medium: ²													
Cage	7.1	9.6	16.2	1.6	7.7	2.8	13.8	---	11.6	5.2	12.8	11.6	100.0
Floor	12.4	29.4	29.8	7.1	---	4.4	---	---	5.9	11.0	---	---	100.0
Large: ³													
Cage	.3	15.0	14.9	6.0	6.8	13.6	3.4	5.2	7.7	15.7	3.7	7.7	100.0
Floor	35.7	3.9	15.7	4.1	---	1.0	---	---	20.5	---	18.4	.7	100.0
All sizes: ⁴													
Cage	4.2	12.9	15.4	5.4	6.8	9.0	7.0	3.5	10.0	10.2	6.8	8.8	100.0
Floor	24.5	12.1	22.5	4.4	---	2.0	.5	---	16.5	3.4	11.5	2.6	100.0

¹Based on 18 cage schedules for each month except as follows: 12 in July, 17 in Aug., and 16 in June. Based on 14 floor schedules for each month except as follows: 8 in July, 13 in Aug., and 13 in June.

²Based on 13 cage schedules for each month except as follows: 9 in July, and 11 in June. Based on 10 floor schedules for each month except as follows: 7 in July, 9 in May, and 8 in June.

³Based on 13 cage schedules for each month except as follows: 9 in July, 12 in Aug., and 9 in June. Based on 8 floor schedules for each month except as follows: 6 in June.

⁴Based on 44 cage schedules for each month except as follows: 30 in July, 42 in Aug., and 36 in June. Based on 32 floor schedules for each month except as follows: 23 in July, 31 in Aug., 31 in May and 27 in June.

Appendix Table 9. Average monthly rate of lay per hen calculated on a flock basis adjusted to 30-day months, by size and type of flock, Mississippi, July, 1955-June, 1956.

Month	Size and type of flock							
	Small		Medium		Large		All sizes	
	Floor	Cage	Floor	Cage	Floor	Cage	Floor	Cage
	(Dozen)							
July	1.157	1.500	1.507	1.303	1.141	1.382	1.346	1.463
August	1.184	1.379	1.369	1.390	1.181	1.423	1.304	1.442
September	1.440	1.435	1.347	1.311	1.310	1.519	1.369	1.431
October	1.306	1.436	1.480	1.315	1.092	1.571	1.374	1.497
November	1.421	1.347	1.400	1.375	1.288	1.534	1.380	1.412
December	1.426	1.327	1.330	1.417	1.170	1.467	1.368	1.438
January	1.571	1.424	1.409	1.413	1.176	1.477	1.454	1.485
February	1.751	1.560	1.523	1.492	1.527	1.560	1.546	1.492
March	1.841	1.540	1.598	1.611	1.386	1.464	1.682	1.585
April	1.603	1.583	1.389	1.645	1.303	1.323	1.440	1.517
May	1.589	1.449	1.302	1.500	1.374	1.379	1.462	1.487
June	1.404	1.342	1.555	1.309	1.291	1.454	1.442	1.368
No. flocks	(7)	(13)	(9)	(7)	(5)	(9)	(21)	(29)

Appendix Table 10. Analysis of variance of differences in weighted average production per flock, by type and size of flock adjusted to 30-day months, Mississippi, July, 1955-June, 1956.¹

Source of variation	Degrees of freedom	Sum of squares	Mean squares
Small Flocks:			
Total ..	23	.563831	
Between types ..	1	.005735	.005735
Between months ..	11	.383627	
Residual ..	11	.174470	.015860
	F = .005735/.015860 = .362		
Medium Flocks:			
Total ..	23	.251875	
Between types ..	1	.000683	.000683
Between months ..	11	.028988	
Residual ..	11	.129288	.011029
	F = .000683/.011029 = .062		
Large Flocks:			
Total ..	23	.456326	
Between types ..	1	.223108	.223108
Between months ..	11	.124696	
Residual ..	11	.108522	.009865
	F = .223108/.009865 = 22.616117 ²		

¹The "F" tests in this table are only approximate tests since the number of hens in each flock were not the same for each month nor for each type of flock.

²Statistically significant at the 1 percent probability level.

Appendix Table 11. Proportion of dirty and cracked eggs by season, by type of flock, 77 commercial egg flocks, Mississippi, 1955-1956.

Type of flock	Number reporting	Time of year				
		Spring	Summer	Fall	Winter	Year
(Percent dirty)						
Cage	45	6.9	7.0	7.1	7.2	7.08
Floor	32	16.5	17.0	15.4	15.4	16.18
(Percent cracked)						
Cage	45	3.1	3.1	3.0	3.0	3.03
Floor	32	3.6	3.7	3.5	3.4	3.58

Appendix Table 18. Proportion of producers advertising eggs and identifying egg cartons, by type and size of flock, 77 flocks, Mississippi, 1955-1956.

Item	Size and type of flock							
	Small		Medium		Large		All sizes	
	Cage	Floor	Cage	Floor	Cage	Floor	Cage	Floor
(Percent of producers)								
Advertised eggs:								
Did			8		36		13	
Did not	100	100	92	100	64	100	87	100
Total	100	100	100	100	100	100	100	100
Identified egg cartons:								
Did	23	14	54	20	64	12	44	16
Did not	77	86	46	80	36	88	56	84
Total	100	100	100	100	100	100	100	100

Appendix Table 19. Proportion of producers specifying methods of determining prices and bases of prices received for eggs, by size and type of flock, 77 flocks, Mississippi, 1955-1956.

Item	Size and type of flock							
	Small		Medium		Large		All sizes	
	Cage	Floor	Cage	Floor	Cage	Floor	Cage	Floor
(Percent of producers)								
Method of determining prices:								
Buyer	45	43	38	40	38	38	29	41
Producer	33	36	54	40	57	50	47	40
Buyer and producer.....	22	21	8	20	43	12	24	19
Total	100	100	100	100	100	100	100	100
Bases of pricing:								
Premium over local market ..	5		15	10			8	3
Allow retailer certain markup	5	7				12	2	6
One price year round.....	28	22	8	10	7		15	13
Local supply and demand ..	39	57	23	60	36	38	33	53
Jackson Central Market quotation	17	7	46	10	29	38	29	16
Market quotations in adjoining states ¹	6		8	10		12	4	6
Other central markets ²		7			28		9	3
Total	100	100	100	100	100	100	100	100

¹Includes markets in New Orleans, Memphis, and Mobile.

²Includes markets in New York and Chicago.