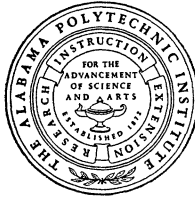


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Production Practices  
of  
Commercial Egg Producers  
in *Alabama*



AGRICULTURAL EXPERIMENT STATION  
*of the* ALABAMA POLYTECHNIC INSTITUTE

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# PRODUCTION PRACTICES *of* COMMERCIAL EGG PRODUCERS *in Alabama\**

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COMMERCIAL EGG PRODUCERS select practices to follow (1) because others use them, (2) because of desirable physical results, or (3) because they are believed to be the most profitable to use.

In time producers usually will arrive at approximately the same practices and receive somewhat comparable financial returns by using any of these methods. Although the third method is preferred, it is not always reliable because of the difficulty in determining relationships of particular practices to net returns. If only physical relationships are used as guides in selecting practices, many economic factors may be easily overlooked or improperly valued.

Most producers will eventually adopt improved practices or go out of the poultry business because the practices they follow are not profitable. Obviously, it is essential for producers to know which practices are profitable before they lose equity in their businesses. Likewise, it is important that producers keep abreast of rapidly changing economic conditions and changes in technology; otherwise, the practices they follow may become obsolete. Recent rapid progress of research on production techniques and the adoption of these improvements by the poultry industry, in general, make it imperative that individual producers be constantly alert to new developments that will decrease costs and help their competitive positions.

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\*\* Resigned.

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The purposes of this study were (1) to ascertain and describe the various practices in use by commercial egg producers in Alabama, (2) to facilitate comparison of these with currently recommended practices,<sup>1</sup> (3) to show relationships between the use of selected practices and financial success of the enterprise, and, finally, (4) to suggest modifications of recommendations where data from this study indicate they should be modified.

Data on the physical and financial operations of 130 commercial egg producers in the State were collected for the period September 1, 1951 through August 31, 1952. Each of these producers had 400 or more layers on January 1, 1952, although some dropped below that number during the year.

Data were summarized to show the major production practices being followed by producers. In some cases, the interrelationship between certain practices has been indicated; in other cases, relationships between the use of selected practices and financial success of the enterprise have been shown.<sup>2</sup>

## GENERAL CHARACTERISTICS OF FARMS

The average size of the farms studied was 86 acres of land and 784 layers. The egg enterprise was the most important source of gross receipts on 64 per cent of the farms and second in importance on 23 per cent. On 13 per cent of the farms, two or more other enterprises returned more gross receipts than did the egg enterprise.

More than 95 per cent of the operators owned part or all of the farms they operated. The average age of the operators was 46 years. They had produced eggs commercially an average of 12 years; the range in experience was from 1 to 40 years.

Eighty-one of the farms produced only market eggs; each of the other 49 produced some hatching eggs. Eleven of the market egg farms and 17 hatching egg farms produced eggs for 11 months or less of the period studied. These are referred to as part-time producers, although their egg production was on a

<sup>1</sup> For currently recommended practices see: "Handbook of Alabama Agriculture" (fifth edition). A.P.I. Extension Service. Auburn, Alabama. 1951.

<sup>2</sup> For a more complete description of these farms, their selection, and how the data have been previously summarized, see A.P.I. Agricultural Experiment Station bulletins 290 and 291. Bulletin 290 deals with certain efficiencies of production, and Bulletin 291 reports relationships between the use of selected marketing practices and farm success.

commercial scale during the time they were selling. The period of no production was due to outbreak of disease on some farms and to normal flock replacement practices on some, while others either began or stopped producing eggs sometime during the sample year.

Of the market-egg producing farms, 27 per cent sold most of their eggs direct to consumers, 33 per cent sold to retailers, and 40 per cent to wholesalers. Almost half of the market egg producers had more than one outlet for eggs, while the hatching egg producer usually had two outlets, including the hatchery.

Forty-one per cent of the market egg producers sold most of their eggs at their farms; others delivered eggs up to 100 miles from the farm, with an average of 30 miles. About two-thirds of the market egg producers graded eggs for size.

### REPLACEMENT PRACTICES

Most of the poultrymen raised their own replacements. When all flocks are considered, some chicks were started every month of the year. Most baby chicks were obtained in January, February, and March. A majority of the poultrymen purchased sexed chicks. Commercial producers started chicks about 2 months earlier than did the average producer in Alabama, Figure 1.

About three-fourths of the operators raised only one group of replacements per year; the other one-fourth raised two or more groups. Most of the pullets were raised on the range; however, about 15 per cent of the operators did not use range for pullets. Some birds were placed on range as early as 2 weeks of age; others were 12 weeks old or older before they were put on range.

Most baby chicks were started early enough for pullets to be placed in laying houses during the months of June, July, and August. Fifty-five per cent of the new layers were added in these months, Figure 2. Over half of the replacements in market egg flocks began laying in June or July.

Of all baby chicks started during the year of this study, both straight-run and sexed, 69 per cent were placed in laying houses. This high percentage was possible because 70 per cent of all baby chicks started were sexed chicks. Mortality to laying age accounted for a loss of 6 per cent of all chicks started. The remaining 25 per cent was sold as broilers or used for home consumption.

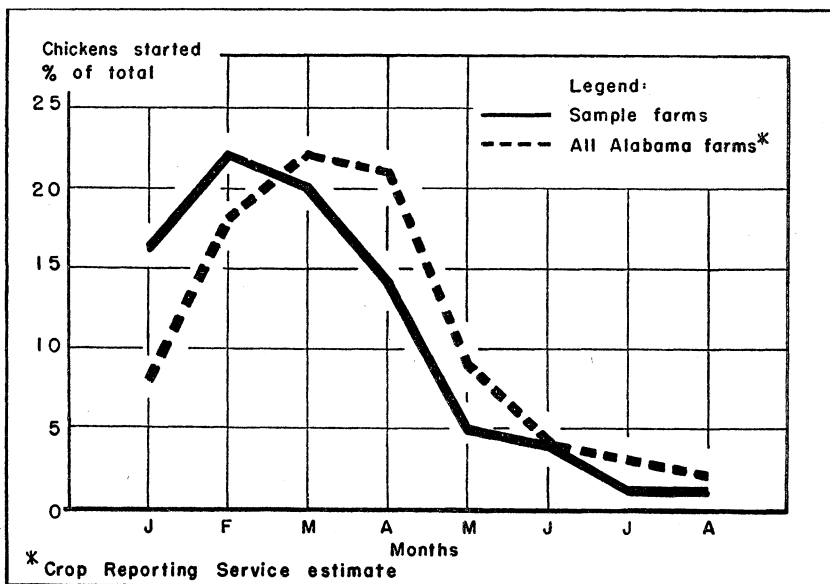


FIGURE 1. Comparison of chicks started for laying flock replacements on sample farms with those on all Alabama farms, January to September, 1952.

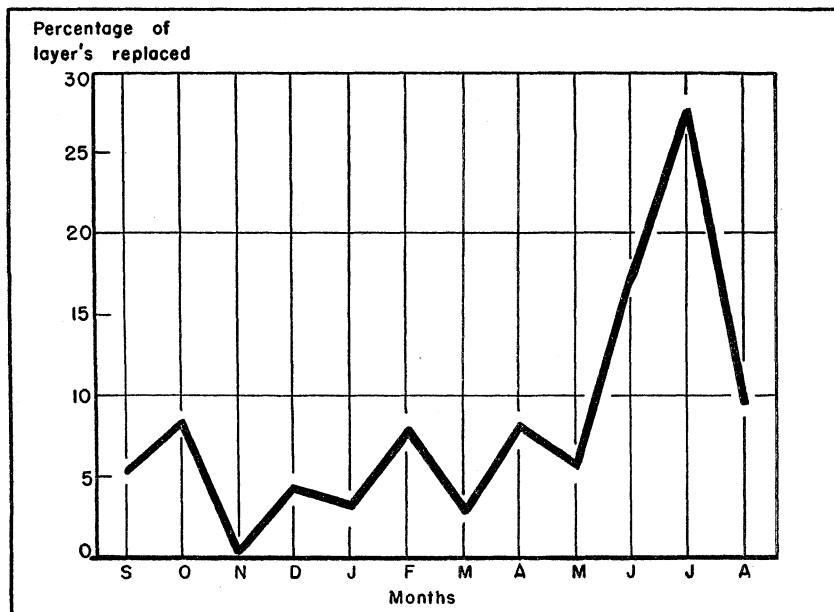


FIGURE 2. Percentage of layers added by months, 130 Alabama commercial egg producing farms, September 1951-August 1952.

LENGTH OF TIME LAYERS WERE KEPT

Poultrymen are always faced with the question: How long should layers be kept? The answer will vary from year to year, depending on egg prices, rate of lay, and such cost factors as feed and labor. Also involved is the problem of available housing for old hens. Some poultrymen follow a practice of keeping hens beyond the first laying year provided they produce enough eggs to cover feed costs and leave some return to apply against other costs.

Of the farms included in this study, 46 per cent kept layers beyond the first year, and 15 per cent kept them 2 years or longer. A higher percentage of market egg than of hatching egg producers kept layers over a year. Brooder houses and other unused spaces were sometimes utilized to hold over old hens for short periods of time. The percentage of operators that kept layers various lengths of time were as follows:

LENGTH OF TIME LAYERS WERE KEPT	MARKET EGG FLOCKS <i>Per cent</i>	HATCHING EGG FLOCKS <i>Per cent</i>
Under 1 year	11	51
1 year	30	27
Over 1 but under 2 years	38	10
2 years and over	16	12
Not ascertained	5	0
TOTAL	100	100

As the length of time that layers were kept beyond a year increased, profits and labor income decreased on market egg producing farms. There was little difference in returns per dozen eggs, but costs of production increased with age of layers, Table 1. The relative costs of replacements, returns from eggs, and rate of lay are the primary factors that determine the length of time to keep hens. Most of the depreciation, as measured by sale value, is expected to take place during the first 6 months of the hen's laying period; therefore, the average depreciation per bird in a given time is expected to be less for the flocks in which layers are kept for the longest period of time. Flock depreciation

and interest on investment per layer per year, by length of time kept, was:

LENGTH OF TIME LAYERS WERE KEPT	FLOCK DEPRECIATION AND INTEREST
Under 1 year	\$1.63
1 year	1.16
Over 1 but under 2 years	1.11
2 years and over	1.03

Because of a higher rate of lay of younger hens, flock depreciation and interest costs were less than 2 cents greater per dozen eggs with flocks kept less than a year than with older flocks.

Five of the six efficiency factors (rate of lay, labor per dozen eggs, feed per dozen eggs, mortality, and receipts per dollar of expenses) tended to favor producers that kept layers shorter periods of time, Table 1.

A classification on the same basis of hatching egg producers indicated that those who kept hens 1 year made more profit than did those who kept layers either longer or shorter periods. The reason for this difference in profit was not ascertained. Most hatching egg producers had meat-type layers that tended to go out of production earlier than Leghorns and other egg-producing breeds kept by most market egg producers. Only 11 per cent of the market egg producers kept hens less than 1 year, whereas 51 per cent of the hatching egg producers followed this practice.

TABLE 1. COSTS AND RETURNS, AND SPECIFIED EFFICIENCY FACTORS BY LENGTH OF TIME LAYERS WERE KEPT, 77 COMMERCIAL MARKET EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Number of years layers were kept			
		Under 1	1	Over 1 but under 2	2 and over
Farms	<i>Number</i>	9	24	31	13
COSTS AND RETURNS					
Receipts per dozen eggs	<i>Cents</i>	53.7	53.3	53.9	51.5
Costs per dozen eggs	<i>Cents</i>	45.7	46.7	53.3	56.1
Profit per dozen eggs	<i>Cents</i>	8.0	6.6	.6	-4.6
Labor income per hour	<i>Cents</i>	176	120	62	32
EFFICIENCY FACTORS					
Size of flock	<i>Hens</i>	672	781	832	578
Rate of lay	<i>Eggs</i>	224	202	193	173
Labor per dozen eggs	<i>Minutes</i>	4.9	7.3	7.6	8.6
Feed per dozen eggs	<i>Pounds</i>	5.3	5.7	6.6	7.2
Mortality	<i>Per cent</i>	17	14	19	20
Receipts per dollar of expenses	<i>Dollars</i>	1.18	1.14	1.01	.92



FREQUENCY OF CULLING LAYERS

If the genetics of the bird or the production practices followed, or both, do not result in a satisfactory rate of lay from each hen, the producer may reduce many variable costs by eliminating non-layers from his flock. Culling is not always accurate, since it is difficult to determine precisely the rate of lay by examination of the hen only. Also, culling may cause excitement of the entire flock so that production from the hens not culled may actually be reduced.

Ninety-four per cent of the market egg producers and 78 per cent of the hatching egg producers did their own culling. Others had assistance from feed dealers and hatcheries.

There was wide variation in the culling practices followed by producers. Frequency of culling was as follows:

FREQUENCY OF CULLING	OPERATORS <i>Per cent</i>
Continuous	24
1 to 3 weeks	14
Monthly	23
2 months or more	28
Did not cull	11
TOTAL	100

Flocks that were culled monthly or more often yielded 3 cents more profit per dozen eggs and 27 cents more labor income per hour than did those that were culled less frequently, Table 2.

TABLE 2. COSTS AND RETURNS, AND SPECIFIED EFFICIENCY FACTORS BY FREQUENCY OF CULLING, 130 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Frequency of culling	
		Monthly or more often	Less often than monthly
Farms	<i>Number</i>	80	50
COSTS AND RETURNS			
Receipts per dozen eggs	<i>Cents</i>	61.1	62.5
Costs per dozen eggs	<i>Cents</i>	52.8	56.9
Profit per dozen eggs	<i>Cents</i>	8.3	5.6
Labor income per hour	<i>Cents</i>	136	109
EFFICIENCY FACTORS			
Size of flock	<i>Hens</i>	805	751
Rate of lay	<i>Eggs</i>	192	177
Labor per dozen eggs	<i>Minutes</i>	6.8	7.6
Feed per dozen eggs	<i>Pounds</i>	6.9	7.0
Mortality	<i>Per cent</i>	18	18
Receipts per dollar of expenses	<i>Dollars</i>	1.16	1.10

The flocks that were culled most frequently had 13 cents less depreciation and interest per hen. This indicates that flock costs may be reduced by proper culling.

A higher rate of lay was obtained by producers who culled most often. There was little difference in amount of labor per hen, but, because of higher rates of lay, flocks that were culled most often required less labor per dozen eggs. There was no difference in mortality or feed efficiency, but receipts per dollar of expenses were 6 cents greater on farms that culled most often, Table 2.

## FEEDING PRACTICES

Four feeding methods generally recognized in Alabama are (1) grain and supplement fed free choice, (2) laying mash with limited grain, (3) all mash, and (4) mash with limited grain and pellets.

### SOURCE OF GRAIN

Some feed dealers recommend that producers buy all grain needed. They reason that the use of home-grown grain or a combination of home-grown and purchased grain would lead to changes in kind of grain or quality of grain, or both. These changes, they suggest, are not in the best interest of high production and profitable operation.

Only six flock owners, all market egg producers, fed all mash rations. Of the remaining 124 producers studied, 55 purchased grain and 69 fed home-produced grain. Producers who purchased grain had an average of 1,008 layers; those who grew their own grain kept an average of only 578 layers.

When all 124 flocks that were fed grain are considered and not adjusted for size, the producers who fed commercial grain were more successful than were those who fed home-grown grain. The producers who fed purchased grain received 2.5 cents more profit per dozen eggs and 29 cents more labor income per hour.

The producers who bought grain had 74 per cent larger flocks than those of producers who fed home-grown grain. Because of efficiencies due to size, the larger farms that fed purchased grain

should have been more profitable than the smaller farms that fed home-grown grain.<sup>3</sup>

Producers who fed home-grown grain used more labor per dozen eggs produced than did those who bought grain, but this difference may possibly be explained by the difference in average size of flocks. Rates of lay and mortality were approximately the same for the two groups.

To eliminate the influence of flock size from the study as much as possible and to observe a more direct relationship of source of grain to success, 68 of the 124 farms feeding grain were paired on the basis of size. Thirty-four pairs were selected and the characteristics are compared in Table 3.

TABLE 3. COSTS AND RETURNS, AND SPECIFIED EFFICIENCY FACTORS BY SOURCE OF GRAIN, 68 COMMERCIAL EGG PRODUCING FARMS THAT WERE PAIRED AS APPROXIMATELY EQUAL IN NUMBER OF LAYERS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Source of grain	
		Bought	Produced
Farms	<i>Number</i>	34	34
COSTS AND RETURNS			
Receipts per dozen eggs	<i>Cents</i>	62.8	61.4
Costs per dozen eggs	<i>Cents</i>	57.1	52.6
Profit per dozen eggs	<i>Cents</i>	5.7	8.8
Labor income per hour	<i>Cents</i>	105	132
EFFICIENCY FACTORS			
Size of flock	<i>Hens</i>	663	663
Rate of lay	<i>Eggs</i>	175	194
Labor per dozen eggs	<i>Minutes</i>	8.3	7.7
Feed per dozen eggs	<i>Pounds</i>	7.3	7.0
Mortality	<i>Per cent</i>	20	16
Receipts per dollar of expenses	<i>Dollars</i>	1.10	1.17

Receipts per dozen eggs were only 1.4 cents lower on the farms that produced their own grain; however, total costs of production were 4.5 cents lower than on the paired farms that purchased grain. Profit was 3 cents per dozen eggs higher and labor income was 27 cents per hour higher on the paired farms that produced their own grain than on those that purchased grain.

The producers who fed home-grown grain rated better on all efficiency factors than did those who bought grain. Feed costs

<sup>3</sup> See A.P.I. Agricultural Experiment Station bulletins 290 and 291 for data and discussions on the relation of size of flock to profits on these farms.

were almost 3 cents per dozen eggs less on the farms that produced their own grain.

Although the paired producers who bought grain had less successful poultry enterprises, this does not mean that there are never conditions under which it would pay to feed purchased grain to layers. The producers who fed home-grown grain were, in effect, selling their grain through their poultry enterprises. It is likely that on many farms the poultry enterprise is the most profitable outlet for home-grown grains. With the average feed conversion obtained in these flocks, each 15 cents per hundred-weight saving in feed meant more than 1 cent per dozen reduction in cost of production and an increase of more than 1 cent in profit. Producers who are limited in land and labor resources may find it more profitable to expand their size of flock rather than produce grain.

#### POUNDS OF FEED PER HEN

When a variable cost such as feed is combined with a group of other costs (hen and the equipment, housing, and labor to care for her), net returns may be expected to increase until the most desirable amount of variable costs are used. If more feed is used beyond this point, net returns may be expected to decrease as the additional feed is used. Also, a loss may be expected if the feed is handled so that wastage occurs. A major problem is to determine the amount that is most desirable to feed.

Market egg producers who fed 100 to 119 pounds of feed per hen per year had higher profits per dozen eggs and more labor income per hour than did producers who fed either more or less feed, Table 4.

Feed costs per hen and per dozen eggs are given in Table 5. Flocks fed 100 to 119 pounds of feed per hen produced eggs at lower cost per dozen than flocks fed less feed per layer. Higher rates of feeding resulted in considerably higher feed costs per dozen eggs produced.

Flocks receiving intermediate amounts of feed per hen were, in general, more efficient than were those receiving either more or less feed per hen, as measured by each of the efficiency factors except feed efficiency, Table 4. Feed efficiency varied inversely with the amount of feed per hen. Receipts per dollar of expenses were highest from those flocks receiving 100 to 119 pounds of feed and lowest from those receiving 140 pounds and more.

TABLE 4. COSTS AND RETURNS, SPECIFIED EFFICIENCY FACTORS, AND ESTIMATED FEED REQUIREMENTS BY FEED USED PER HEN, 81 MARKET EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Pounds of feed per hen			
		Under 100	100-119	120-139	140 and over
Farms	<i>Number</i>	39	20	10	12
Average feed used	<i>Pounds</i>	79	110	129	155
Estimated feed requirement	<i>Pounds<sup>1</sup></i>	91	96	96	91
COSTS AND RETURNS					
Receipts per dozen eggs	<i>Cents</i>	53.6	53.0	52.7	55.8
Costs per dozen eggs	<i>Cents</i>	49.8	45.3	51.2	69.8
Profit per dozen eggs	<i>Cents</i>	3.8	7.7	1.5	-14.0
Labor income per hour	<i>Cents</i>	92	135	74	-53
EFFICIENCY FACTORS					
Size of flock	<i>Hens</i>	764	742	893	646
Rate of lay	<i>Eggs</i>	173	231	212	182
Labor per dozen eggs	<i>Minutes</i>	8.2	6.6	5.8	7.6
Feed per dozen eggs	<i>Pounds</i>	5.5	5.7	7.3	10.2
Mortality	<i>Per cent</i>	17	14	16	35
Receipts per dollar of expenses	<i>Dollars</i>	1.08	1.17	1.03	.80

<sup>1</sup> Based on Jull, Morley A. "Successful Poultry Management." McGraw-Hill Book Co., Inc. New York. 1951. p. 260.

TABLE 5. FEED COSTS PER HEN AND PER DOZEN EGGS BY POUNDS OF FEED PER HEN, 81 COMMERCIAL MARKET EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Pounds of feed per hen	Feed cost per hen	
	<i>Dollars</i>	<i>Cents</i>
Under 100	4.09	28.3
100 - 119	5.06	26.4
120 - 139	6.11	34.6
140 and over	7.41	48.9

A large part of the inefficiency in returns from the highest feed-using groups probably was due to wastage. It is doubtful that a hen can eat more than 120 pounds of feed per year. A hen laying at the rates indicated should have consumed about 95 pounds.<sup>4</sup> A hen should be provided sufficient feed; however, efforts should be made to prevent waste.

#### BREEDER MASH COMPARED WITH LAYING MASH

Some hatcherymen recommend or require their producers to feed breeder mash, usually a specified brand. Producers who fed breeder mash had greater financial rewards than did those

<sup>4</sup> Assuming a 5-pound bird. See Jull, Morley A. "Successful Poultry Management." McGraw-Hill Book Co., Inc. New York. 1951. p. 260.

who fed laying mash, Table 6. Despite the higher price of breeder mash, feed costs per dozen eggs and total costs per dozen eggs were lower on the farms that used it. Producers who fed breeder mash received an average of almost 6 cents per dozen more for their eggs because they were able to sell a higher percentage of their production as hatching eggs. Profit was 7 cents more per dozen eggs and labor income was 70 cents more per hour on farms that fed breeder mash.

Producers who fed breeder mash had better efficiency ratings on all factors studied despite the fact that their flocks were only 62 per cent as large as those on the farms that fed laying mash, Table 6. The producers who used breeder mash sold 80 per cent of their eggs as hatching eggs, whereas those using laying mash sold only 69 per cent as hatching eggs.

The nutrients usually added to breeder mash but not included in a good laying mash are generally expected to make a difference in hatchability only. The difference in rate of lay was largely responsible for better efficiency ratings. It is likely that the producers who used breeder mash had closer supervision from the hatcheries because of the higher percentage of eggs sold to them. The producers who used breeder mash had a higher production practices rating (see page 25). It is possible that some of the success of producers using breeder mash was due to factors other than selection of feed.

TABLE 6. COSTS AND RETURNS, AND SPECIFIED EFFICIENCY FACTORS BY KIND OF MASH FED, 41 COMMERCIAL HATCHING EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Kind of mash fed	
		Laying	Breeder
Farms	<i>Number</i>	12	29
COSTS AND RETURNS			
Returns per dozen eggs	<i>Cents</i>	74.0	79.9
Costs per dozen eggs	<i>Cents</i>	62.2	61.0
Profit per dozen eggs	<i>Cents</i>	11.8	18.9
Labor income per hour	<i>Cents</i>	160	230
EFFICIENCY FACTORS			
Size of flock	<i>Hens</i>	1,041	644
Rate of lay	<i>Eggs</i>	155	182
Labor per dozen eggs	<i>Minutes</i>	7.3	6.9
Feed per dozen eggs	<i>Pounds</i>	8.3	8.1
Mortality	<i>Per cent</i>	20	17
Receipts per dollar of expenses	<i>Dollars</i>	1.19	1.31

## HOUSING PRACTICES

Eighty-seven per cent of the market egg flocks and 90 per cent of the hatching egg flocks studied, other than cage-house flocks, were in houses with built-in roosts of some type. Only a small percentage of the operators used dropping boards or pits. Where either was used, it usually was enclosed with wire. Most operators supplied the equivalent of one nest for every four or five layers. Sectional nests were used in most houses, and most farms used shavings as nesting material, Table 7.

TABLE 7. PERCENTAGE OF FARMS USING VARIOUS KINDS OF NESTS AND NESTING MATERIALS BY TYPE OF FLOCK, 130 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Market egg flocks	Hatching egg flocks	All flocks
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Used sectional nests	64	62	63
Used community nests	36	38	37
Nests were darkened	29	40	33
Kind of nesting material:			
Shavings	57	70	62
Straw and hay	9	12	10
Sawdust	9	6	7
Pine needles	4	6	5
Wire bottom	6	2	4
Other	6	0	4
Not ascertained	9	4	8

## CONFINEMENT AND RANGE

Although small farm and home flocks may forage for a large part of their feed, it is usually recommended that commercial flocks be confined. When 400 or more layers are allowed range at one location, the contamination and the small amount of forage usually available per bird often make this an unwise practice.

Green feeds may be desirable for small flocks of chickens on range. Large flocks tend to destroy grazing crops near the house and often they will not cross bare lots to get more grazing; therefore, if large flocks are to get green feed, the recommendation is to cut and feed it inside the house.

Most producers in this study confined layers to the house at all times; others confined them only part of the time. Market egg producers tended to keep flocks confined more than did hatching egg producers, Table 8.

TABLE 8. CONFINEMENT PRACTICE FOLLOWED, 130 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Percentage of operators following each practice		
	Market egg flocks	Hatching egg flocks	All flocks
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Flock was confined:			
At all times	67	55	62
Night and morning	6	6	6
Night only	16	14	16
Night and wet days	4	0	2
Combination of above	7	25	14
TOTAL	100	100	100

Of the layers that were allowed freedom from the laying house, some ranged on green feed, and some were confined to a lot or yard. The types of runs provided for layers allowed outside the laying house were:

KIND OF FLOCK	PERCENTAGE OF FLOCKS USING:	
	<i>Dry lot</i>	<i>Pasture</i>
Market egg	44	56
Hatching egg	35	65
All flocks	40	60

Operators using a dry or bare lot for a runway varied in their practice of rotating the lot. Only about half of the market egg producers attempted to rotate their lots, but practically all hatching egg producers attempted to follow a practice of rotation.

Flocks that were confined at all times were 42 per cent larger than those that had vegetative range and were 89 per cent larger than those that had bare lots for range. Since the difference in size was so great and the size of flock could possibly conceal the true relationship of confinement practice to success of the enterprise, it was desirable to make an observation with the size of flock eliminated. Twenty flocks were selected from each of the three groups. For each flock selected, there was a flock of comparable size in each of the other groups, Table 9.

This comparison indicates that, if flocks are to be allowed to range, they should be provided with vegetation. Flocks of the same size on vegetative range were considerably more profitable than were those that ranged on bare lots. Costs of production, including expense of producing the vegetation, were 12 cents per dozen eggs less than those of farms using bare lots. Profit was 19 cents per dozen greater and labor income was \$1.28 more on farms with vegetative range.



TABLE 9. COSTS AND RETURNS, AND SPECIFIED EFFICIENCY FACTORS BY CONFINEMENT PRACTICE AND KIND OF RANGE, 60 COMMERCIAL EGG PRODUCING FARMS PAIRED BY SIZE, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Confined flocks	Flocks with vegetative range	Flocks with bare lot
Farms	<i>Number</i>	20	20	20
COSTS AND RETURNS				
Receipts per dozen eggs	<i>Cents</i>	59.4	67.7	61.0
Costs per dozen eggs	<i>Cents</i>	48.9	55.7	67.7
Profit per dozen eggs	<i>Cents</i>	10.5	12.0	-6.7
Labor income per hour	<i>Cents</i>	149	154	26
EFFICIENCY FACTORS				
Size of flock	<i>Hens</i>	495	508	483
Rate of lay	<i>Eggs</i>	206	182	152
Feed per dozen eggs	<i>Pounds</i>	6.1	7.1	8.3
Labor per dozen eggs	<i>Minutes</i>	7.7	8.1	11.2
Mortality	<i>Per cent</i>	21	14	23
Receipts per dollar of expenses	<i>Dollars</i>	1.21	1.22	.90

The flocks on vegetative range rated better on all efficiency factors measured than did flocks on bare lots.

The flocks on vegetative range were slightly more profitable than the confined flocks, although the costs of producing a dozen eggs were 7 cents greater. Profit per dozen eggs, labor income per hour, and receipts per dozen eggs only slightly favored the flocks on vegetative range over confined flocks.

Flocks on vegetative range had lower rates of lay, used more feed per dozen eggs, used more labor per dozen eggs, but had lower mortality than confined flocks.

### ARTIFICIAL LIGHTS

The present recommendation for use of lights is to begin using supplementary light when egg production starts to decline in the fall. The amount of light (daylight plus artificial light) is increased about 15 minutes per week until all-night lights are used.

Commercial egg producers have accepted the use of artificial lights, but they differ in the details of its use. Reasons for using artificial lights are (1) to increase egg production when egg prices are high, (2) to bring slow-maturing pullets into production, (3) to bring hens back into production after a disease outbreak or molt, and (4) to get the maximum number of eggs from a flock before it is sold.

Producers who used all-night lights, regardless of whether they

used them part of the year or during the entire year, were more successful than were those who used lights only part of the night. Producers who used lights only part of the year, regardless of whether they used them all night or part of the night, were more successful than were those who used lights the entire year, Table 10. These data indicate that use of lights as recommended, starting with part-time lights in the fall and increasing to all-night lights, will be most profitable.

TABLE 10. COSTS AND RETURNS, AND EFFICIENCY FACTORS BY ARTIFICIAL LIGHTING METHOD USED, 77 COMMERCIAL MARKET EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Lighting method used			
		Part of year		All year	
		All night	Part of night	All night	Part of night
Farms	<i>Number</i>	8	27	36	6
COSTS AND RETURNS					
Receipts per dozen eggs	<i>Cents</i>	52.2	53.8	53.2	55.4
Costs per dozen eggs	<i>Cents</i>	46.5	52.7	51.0	57.1
Profit per dozen	<i>Cents</i>	5.7	1.1	2.2	-1.7
Labor income per hour	<i>Cents</i>	113	76	79	46
EFFICIENCY FACTORS					
Size of flock	<i>Hens</i>	602	756	837	612
Rate of lay	<i>Eggs</i>	214	195	195	153
Labor per dozen eggs	<i>Minutes</i>	6.6	6.7	7.6	9.2
Feed per dozen eggs	<i>Pounds</i>	6.2	6.8	6.2	6.8
Mortality	<i>Per cent</i>	19	19	19	12
Receipts per dollar of expenses	<i>Dollars</i>	1.12	1.02	1.04	.97

Flocks that had all-night lights had a better rate of lay, used less labor per dozen eggs, had better feed conversion, and yielded higher receipts per dollar of expenses than did those that had lights only part of the night. Flocks that had lights only part of the year had a higher rate of lay, used less labor per dozen eggs produced, and had higher receipts per dollar of expenses than did those having lights all year, regardless of whether lights were used all night or part of the night.

#### LITTER

Ninety-eight per cent of the poultrymen who kept layers on the floor used litter in the laying house. All hatching egg operators and 96 per cent of the market egg group not using cage houses used litter. The depth of the litter varied from 2 to more

than 12 inches. The most common depth was from 4 to 6 inches. The kinds of litter used are given in Table 11.

TABLE 11. PERCENTAGE OF OPERATORS USING DIFFERENT KINDS OF LITTER, 130 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Market egg flocks	Hatching egg flocks	All flocks
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Kind of litter:			
Shavings	69	83	74
Sawdust	15	4	11
Shavings and sawdust	10	4	7
Ground corn cobs	1	2	2
Other	1	0	1
Not ascertained	4	7	5
TOTAL	100	100	100

Some operators added litter on a regular schedule, such as monthly; others added litter only as they thought it was needed, while some did not add litter. Some operators reported changing litter every 4 or 5 months, several reported changing it every 2 years, and one operator reported using the same litter for a period of 42 months. The more common practice with laying flocks was to change the litter once a year. This was usually done after the old hens were removed and before the new flock was put in the laying house.

### LABOR PRACTICES

Feed bins were built into or placed in 78 per cent of the houses used for market egg flocks and 91 per cent of those used for hatching egg flocks. Only 10 per cent of the houses had concrete drains under water fountains. Twenty-eight per cent of the houses were constructed with nests near the door. Half of the houses were built with doors large enough for a wagon, truck, or tractor to enter the building for hauling out litter. Only 48 per cent of the operators kept a catching hook and coop in the building ready for use when needed. Some 48 per cent of the operators used a broody coop. A higher percentage of hatching egg producers used a broody coop than did market egg producers. Other practices followed by producers that affected the amount of labor needed to care for their laying flocks are given in Table 12.

TABLE 12. PERCENTAGE OF FARM OPERATORS USING VARIOUS LABOR-SAVING PRACTICES, 130 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Market	Hatching	All
	egg farms	egg farms	farms
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Water supply used was:			
Automatic	63	79	68
Running	29	15	24
Carried	8	6	8
Operators using:			
Automatic feeders	0	6	2
Feed carriers	5	0	3
Hand feeders	95	94	95
Operators removing litter with:			
Truck	20	37	26
Wagon	18	17	18
Tractor	19	12	16
Wheelbarrow	7	8	8
Thrown out windows	9	4	7
Manure spreader	5	6	5
Other	2	2	2
Not ascertained	20	14	18
Operators using a mechanical egg grader	9	4	7
Operators performing a stated number of jobs per trip to laying house:			
1 job per trip	6	6	6
2 jobs per trip	12	20	15
3 or more jobs per trip	82	74	79

### LABOR USED

The average commercial poultryman in this study used 1.8 hours of labor to handle one layer throughout the year. This labor was usually supplied by the operator himself, the housewife, and children. In some cases, hired labor was used. The average cost of labor per hour of work reported for all workers was estimated at 64 cents. Of all labor used with the commercial poultry flocks, 63 per cent was spent in doing daily chores, such as feeding, watering, and gathering eggs. Twenty-two per cent was used for such jobs as sorting, grading, cleaning, and packing eggs. An average of 10 per cent was used for marketing and 5 per cent was used for other jobs, such as culling, blood testing, and cleaning houses, Table 13.

The amount of labor used per hen depended on efficiency of the laborer, size of the flock, number of jobs done, how well jobs

TABLE 13. AMOUNT OF LABOR USED TO PERFORM VARIOUS JOBS, 130 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Job	Market egg farms			Hatching egg farms			All farms		
	Per layer	Per dozen eggs	Per-centage of total	Per layer	Per dozen eggs	Per-centage of total	Per layer	Per dozen eggs	Per-centage of total
	Hrs.	Min.	Pct.	Hrs.	Min.	Pct.	Hrs.	Min.	Pct.
Daily chores	1.2	4.3	59	1.1	4.6	69	1.1	4.5	63
Handling eggs	.4	1.7	23	.3	1.5	22	.4	1.6	22
Marketing eggs	.3	1.0	13	.1	.3	4	.2	.7	10
Other jobs	.1	.3	5	.1	.4	5	.1	.3	5
TOTAL	2.0	7.3	100	1.6	6.8	100	1.8	7.1	100

were done, and use of labor-saving methods and equipment. The amount of labor used varied with the size of flock as follows:

SIZE OF FLOCK, HENS	HOURS OF LABOR USED PER HEN
1,246	Under 1.6
660	1.6 - 2.5
499	2.6 - 3.5
495	3.6 and over

The farms that used the least labor per hen had flocks that were more than two and one-half times as large as those that used the most labor per hen.

In order to eliminate the influence of economy of size, the flocks were divided into three groups based on the amount of labor per hen. A sub-sample was drawn by selecting flocks of approximately the same size from each group. The flocks that used less than 2 hours of labor per hen received a higher labor income per hour than either those that used 2.0 to 2.9 hours or those that used 3.0 hours or more. The flocks that used 2.0 to 2.9 hours of labor per hen made the highest profit per dozen eggs, Table 14.

The flocks that used the least labor per hen had the lowest rate of lay and the least efficient feed conversion, Table 14. Labor per dozen eggs was lowest in the flocks that used the least labor per hen. Receipts per dollar of expenses varied with the hours of labor required per hen.

TABLE 14. COSTS AND RETURNS BY HOURS OF LABOR PER HEN, MATCHED BY SIZE OF FLOCK, 51 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Hours of labor per hen		
		Under 2.0	2.0-2.9	3.0 and over
Farms	<i>Number</i>	17	17	17
Average labor per hen	<i>Hours</i>	1.4	2.5	3.8
COSTS AND RETURNS				
Receipts per dozen eggs	<i>Cents</i>	57.9	58.3	61.9
Costs per dozen eggs	<i>Cents</i>	53.5	53.2	62.5
Profit per dozen eggs	<i>Cents</i>	4.4	5.1	-6
Labor income per hour	<i>Cents</i>	105	92	61
EFFICIENCY FACTORS				
Size of flock	<i>Hens</i>	485	488	486
Rate of lay	<i>Eggs</i>	175	201	201
Labor per dozen eggs	<i>Minutes</i>	5.8	9.1	13.4
Feed per dozen eggs	<i>Pounds</i>	7.2	6.7	6.8
Mortality	<i>Per cent</i>	18	13	21
Receipts per dollar of expenses	<i>Dollars</i>	1.08	1.10	.99

### FREQUENCY OF GATHERING EGGS

The usual recommendation is to gather eggs at least twice daily. If eggs are cooled properly, some quality loss should be prevented by gathering frequently as there is little opportunity for eggs to cool in nests. Some additional labor may be required, especially with smaller flocks.

Six market egg producers gathered eggs only once each day, 39 gathered eggs twice daily, and 36 gathered eggs three or more times each day during the summer. A few producers gathered eggs less often during cooler months. Producers who gathered eggs only once each day had 18 per cent more hens than did those who gathered eggs three times daily.

Only 0.3 minute more labor per dozen eggs was required for daily chores and handling of eggs on market egg producing farms that gathered eggs three or more times per day than on farms that gathered eggs once or twice per day. There was less than 1 cent more labor cost per dozen eggs on the farms where eggs were gathered most often.

### TYPE OF WATERERS

Automatic waterers are recommended to reduce the amount of labor required to care for large flocks.

The majority of these farms had automatic waterers; others had

water piped into houses, but manually regulated. Only a few poultrymen carried water to laying houses.

The labor required in the market egg flocks of farms with automatic waterers was 17 minutes less per hen per year than on farms without automatic waterers. There was a saving of 290 hours or \$130 per year for 1,000-bird flocks. Practically all of this saving was in daily chores. Eggs were produced for 3 cents less per dozen on farms with automatic waterers, with 2 cents being saved on labor cost alone.

### SANITATION AND DISEASE CONTROL PRACTICES

Poultrymen reported a large number of different types of diseases as having affected their laying flocks during the year of this study. Only 5 per cent of the poultrymen reported using services of a diagnostic laboratory during the year. The percentage of operators reporting various types of diseases on their farms is shown in Table 15.

Thirty-seven per cent of the market egg producers reported vaccinating for the prevention of Newcastle, and 84 per cent of the hatching egg group reported the use of vaccination for prevention of this disease. Some 95 per cent of the producers reported vaccinating for prevention of fowl pox.

Ninety per cent of all operators included in the study wormed their layers. This practice was followed by 85 per cent of the market egg producers and 98 per cent of the hatching egg producers. Treatment varied from once a month to once a year. Many variations were followed in the kind of treatment given.

TABLE 15. PERCENTAGE OF OPERATORS REPORTING SPECIFIED DISEASES, 130 COMMERCIAL EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Kind of disease	Market egg flocks	Hatching egg flocks	All farms
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Range paralysis (Leucosis)	18	31	23
Bronchitis	6	10	8
Blue comb	6	4	5
Colds	4	8	5
Newcastle	6	0	4
Fowl pox	4	2	3
Typhoid	1	0	1
Other	4	4	4

Some operators used a medicated feed; some added such items as nicotine, tobacco, and various brands of worm medicine to the feed; and others gave individual pills to the layers.

Sixty per cent of all poultrymen included in the study treated houses for mites. This practice was followed by 51 per cent of the market egg producers and 76 per cent of the hatching egg producers. Products used to treat for mites included sulphur, kerosene, Black Leaf 40, burned motor oil, creosote, DDT, 20 per cent toxaphene, and many brands of commercial products. Forty-six per cent of the operators reported treating birds for lice. Some of the same products were reported being used for lice as were used for mites.

### MORTALITY

Eighteen per cent of the average number of layers on hand died during the year. The number of flocks with different mortality rates were as follows:

PERCENTAGE OF MORTALITY	NUMBER OF FLOCKS
Under 10.0	28
10.0 - 19.9	58
20.0 - 29.9	27
30.0 or over	17

The flocks with less than 10 per cent mortality had 21 cents more profit per dozen eggs and \$1.96 more labor income per hour than did flocks with 30 per cent or more mortality.<sup>5</sup>

### DISPOSAL OF DEAD BIRDS

Dead birds may be a source of infection for transmitting communicable diseases to healthy birds. They should be disposed of so the organisms that might have caused their death will not be transmitted to healthy birds.

Most operators reported that they followed a practice of throwing dead birds in such places as creeks, woods, gullies, or back

<sup>5</sup> For a more detailed discussion of the relationship of mortality of layers to financial success of operators, see A.P.I. Agricultural Experiment Station Bulletin 290.



fields. The percentage of operators that usually followed different practices is given below:

PRACTICE USUALLY FOLLOWED	OPERATORS <i>Per cent</i>
Threw away	37
Buried	22
Burned	20
Fed to hogs	12
Disposal pit	9
TOTAL	100

There was little difference in mortality regardless of the disposal method used. How closely a method was followed was as important as the method used. The advantages of some disposal methods may not be obvious from a study of this kind because producers who select recommended methods may do so because mortality is already high.

### COMBINED EFFECTS OF PRACTICES

To determine the effect of using several practices that the data indicated to be profitable, flocks were given a rating according to the number of profitable practices used and the degree to which such practices were followed.<sup>6</sup> The range in possible ratings was 0 to 100, and the range in ratings made by actual farms was 13 to 96.

<sup>6</sup> Points were assigned as follows and the sum of all points for a given farm was called its "Production Practices Rating."

Years layers were kept:	Feeding method:
1 and under ..... 13	All mash ..... 13
Over 1 but under 2 ..... 4	Mash and home-grown grain ..... 16
2 and over ..... -5	Mash and purchased grain ..... 6
Frequency of culling:	Pounds of feed per hen:
Monthly or oftener ..... 14	Under 100 ..... 12
Less often than monthly ..... 12	100 - 119 ..... 15
Did not cull ..... 3	120 - 139 ..... 9
	140 and over ..... 3
Confinement and range practices:	Hours of labor per hen:
Confined at all times ..... 19	Under 2.0 ..... 9
Green pasture ..... 21	2.0 - 2.9 ..... 10
Bare lot ..... -8	3.0 and over ..... 1
Use of artificial lights:	
All night part of year ..... 11	
All night all year ..... 6	
Part of night part of year ..... 4	
Part of night all year ..... 0	

The financial success of producers was related directly to how well they followed these practices. Eighteen market egg producers who had ratings of 84 points or more made 10.5 cents profit per dozen eggs produced, whereas those with ratings of less than 63 lacked 12.9 cents of recovering their total costs, Table 16.

The classification of hatching egg farms gave similar results, Table 17. Producers with a rating of under 70 made only 3.5 cents

TABLE 16. COSTS AND RETURNS, AND SPECIFIED EFFICIENCY FACTORS BY PRODUCTION PRACTICES RATING, 81 COMMERCIAL MARKET EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Production practices rating				
		Under 63	63-69	70-76	77-83	84 and over
Average rating	<i>Points</i>	49	66	73	81	88
Farms	<i>Number</i>	13	14	19	17	18
COSTS AND RETURNS						
Receipts per dozen eggs	<i>Cents</i>	48.9	54.4	55.0	52.4	53.8
Costs per dozen eggs	<i>Cents</i>	61.8	58.9	51.6	48.2	43.3
Profit per dozen eggs	<i>Cents</i>	-12.9	-4.5	3.4	4.2	10.5
Labor income per hour	<i>Cents</i>	-11	24	82	99	168
EFFICIENCY FACTORS						
Size of flock	<i>Hens</i>	331	1,006	807	837	743
Rate of lay	<i>Eggs</i>	187	181	195	193	211
Labor per dozen eggs	<i>Minutes</i>	10.3	6.8	8.5	6.7	6.3
Feed per dozen eggs	<i>Pounds</i>	8.2	8.0	6.1	6.1	5.0
Mortality	<i>Per cent</i>	26	24	19	12	16
Receipts per dollar of expenses	<i>Dollars</i>	.79	.92	1.07	1.09	1.24

TABLE 17. COSTS AND RETURNS, AND SPECIFIED EFFICIENCY FACTORS BY PRODUCTION PRACTICES RATING, 49 COMMERCIAL HATCHING EGG PRODUCING FARMS, ALABAMA, SEPTEMBER 1951-AUGUST 1952

Item	Unit	Production practices rating			
		Under 70	70 - 76	77 - 83	84 and over
Average rating	<i>Points</i>	49	73	81	88
Farms	<i>Number</i>	11	13	13	12
COSTS AND RETURNS					
Receipts per dozen eggs	<i>Cents</i>	67.2	73.0	80.2	76.3
Costs per dozen eggs	<i>Cents</i>	63.7	59.6	60.8	54.0
Profit per dozen eggs	<i>Cents</i>	3.5	13.4	19.4	22.3
Labor income per hour	<i>Cents</i>	84	174	304	271
EFFICIENCY FACTORS					
Size of flock	<i>Hens</i>	712	839	1,015	721
Rate of lay	<i>Eggs</i>	164	178	173	184
Labor per dozen eggs	<i>Minutes</i>	9.1	7.5	4.9	6.6
Feed per dozen eggs	<i>Pounds</i>	7.6	7.8	8.2	7.3
Mortality	<i>Per cent</i>	22	15	16	16
Receipts per dollar of expenses	<i>Dollars</i>	1.06	1.22	1.32	1.41

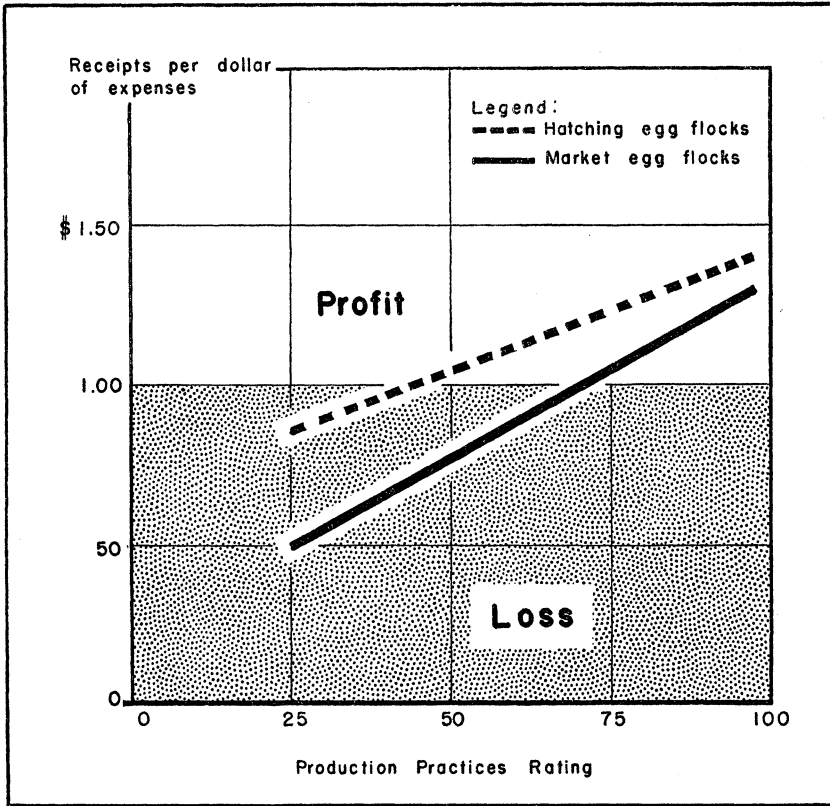


FIGURE 3. Relation of production practices to profits, 49 commercial hatching egg producers and 81 commercial market egg producers, Alabama, September 1951-August 1952.

per dozen profit, while producers with a rating of 84 or more made 22.3 cents per dozen profit.

A hatching egg producer would need a production practice rating of 45 and a market egg producer would need a rating of about 70 in order for them to recover their expenses, Figure 3. A higher rating would probably result in a higher profit provided other factors were satisfactory.<sup>7</sup>

<sup>7</sup> Regression equations for lines in Figure 3 are:

HATCHING EGG FLOCKS

Receipts per dollar of expenses =  $.62 + .008$  (production practices rating).  
 $r^2 = .16$ ,  $P < .01$ , and  $s = .28$ ;

MARKET EGG FLOCKS

Receipts per dollar of expenses =  $.21 + .011$  (production practices rating).  
 $r^2 = .34$ ,  $P < .001$ , and  $s = .22$ .

The straight line relationship suggests that all of the practices were important. It also suggests that following one or more of these practices does not change the importance of following the others.

## SUMMARY AND CONCLUSIONS

A study was made of the physical and financial operations of 130 commercial egg producing farms in Alabama for the period September 1, 1951 to August 31, 1952. Eighty-one of these farms produced only market eggs, and 49 produced some hatching eggs. Twenty-eight produced eggs for 11 months or less, and 102 produced some eggs in each of the 12 months.

Forty-six per cent of the farmers kept layers in their flocks for more than 12 months, and 15 per cent kept them 2 years or longer. The cost of producing a dozen eggs increased, and profit decreased as the length of time layers were kept increased. If the cost of producing replacements increases in relation to the price of eggs and cull hens, the advantage of young layers will be expected to decrease.

The median frequency of culling layers was monthly, but more operators reported that they culled "continuously" than any other frequency. The flocks that were culled monthly or more often were more profitable than those that were culled less frequently. Flock depreciation and interest costs were 13 cents less per hen in the flocks that were culled most frequently.

Only 5 per cent of the producers fed an all mash ration; 53 per cent fed grain produced mainly on their farms; and 42 per cent purchased more than half of their grain. The flocks receiving commercial grain were 74 per cent larger than those fed home-grown grain. Flocks of the same size that were fed home-grown grain were more profitable than those fed commercial grain. A poultry flock is apparently a good sales outlet for home-grown grain.

Forty-eight per cent of the market egg producers fed less than 100 pounds of feed per hen, whereas 15 per cent fed 140 pounds or more per hen per year. The larger amount of feed fed by some producers indicated that much of it was wasted. The flocks that were fed 100 to 119 pounds of feed per hen per year were more profitable than those fed more or less. Laying hens should be provided sufficient feed, but precautions should be taken to prevent wastage.

Hatching egg flocks that were fed breeder mash were more profitable than were those that were fed layer mash, despite the fact that the flocks receiving breeder mash were only 62 per cent

as large as those fed laying mash and that breeder mash was more expensive.

Sixty-two per cent of the flocks was confined at all times, 15 per cent was ranged on bare lots, and 23 per cent was on vegetative range. The flocks that were on vegetative range were one-third larger than those on bare lots; flocks that were confined at all times were almost twice as large as the flocks on bare lots. When flocks of approximately the same size were compared, the flocks on bare lots were least profitable. There was little observable difference between the profitableness of flocks on vegetative range and confined flocks. If flocks of about 500 layers or less are to be allowed range, they should be provided with pasturage. Larger flocks probably will be more profitable if they are confined at all times.

Lights were used in various ways by producers. Data available from the market egg farms indicated that it was more profitable to use lights all night than part of the night, regardless of whether lights were used part of the year or the entire year. Producers who used lights only part of the year had more profitable flocks than did those who used them all year.

The average producer used 1.8 hours of labor per year to care for each layer, with 1.1 hours being used for daily chores. The average cost of labor was 64 cents per hour. Size of flock was a major factor that determined the amount of labor used per hen. Flocks of approximately the same size for which the least labor per layer was used had lower rates of lay and poorer feed conversion. Flocks in which intermediate amounts of labor were used per hen (2.0 to 2.9 hours) were the most profitable.

The use of many production practices are correlated with the size of flock and other major factors. The practices selected may have been either the cause or effect of size of flock and profitableness associated with size of flock.

Producers who had high production practices ratings were more profitable operators than were those with lower ratings. This indicates that the larger the number of recommended practices a producer follows and the closer he follows these practices, the better are his chances of making a profit.