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COMPARATIVE PERFORMANCE of the AUBURN STRAIN of WHITE LEGHORN

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One of the greatest needs of southern poultrymen is better bred stock. Improvement in management would accomplish much toward increasing the profits of average flocks. However, beyond a certain point, further progress is impossible without improvement in the breeding quality of flocks. It is recognized that chicks inherit certain capacities or qualities that are important from the standpoint of cash return to the poultryman. Many of these qualities are often overlooked by poultry breeders in their effort to develop strains that will lay large numbers of eggs.

AUBURN STRAIN STARTED in 1935

The Alabama Agricultural Experiment Station since 1935 has had underway a project designed to develop a strain of Single Comb White Leghorns that would be capable of resisting diseases. Though egg production was an important consideration, more attention was given to livability during the first laying year, especially to prevention of losses caused by fowl paralysis.

1946 PERFORMANCE TEST

Performance tests were started in the spring of 1946 to compare the Auburn Strain with other strains of White Leghorns being produced in the State. The results reported here are for one year only. However, the study is being continued, and subsequent reports will be made.

Five well known breeders were selected, and orders were placed with each for 200 day-old chicks. When these chicks arrived, February 1946, they were banded for identification and were placed in brooders with chicks of the Auburn Strain. All chicks were brooded for 3 weeks in batteries. The pullet chicks were then moved to brooder rooms having floor brooders, and were confined to the house until 10 to 12 weeks old.

The pullets were placed on range where they had access to shelters until they were 155 days old. They were then moved to laying houses and confined for one year. No cull birds were removed at any time throughout the entire period. All birds as chicks and later as hens received identical treatment, since they were run together and fed the same balanced ration.

The pullets were trapnested. The number of eggs laid by each hen was recorded for one year after 155 days old. All eggs laid during the first week in December were weighed individually, and the average for each strain was determined from these weights. Body weight of each hen was recorded during February, when the birds were approximately one year old. All pullets were tested for pullorum disease on October 5, 1946 by the plate blood test.

RESULTS of PERFORMANCE TESTS

Growth mortality. Total mortality during the growing period varied from a low of 12.5 per cent to a high of 38 (Table 1). Although chicks of strains B, C, and D died at a somewhat similar rate, losses in the B strain occurred mainly during the first month, while chicks of C and D strains died mostly during the second month. Diseases causing most deaths during the growing period were pullorum, coccidiosis, and fowl paralysis.

Table 1. Mortality During Growing Period

Strain	Day-old chicks started	Percentage of mortality, 1-155 days old
	Number	*Per cent*
A	200	12.5
B	200	32.5
C	200	36.5
D	200	38.0
E	200	27.0
Total, A - E	1,000	*Average, A - E* 29.3
Auburn	2,966	13.3

Average age at time of first egg. The age of a pullet when she lays her first egg is an important factor affecting profits from the flock. It is generally believed that Leghorns should be ready to lay when 5 months old. Any strain that has been well fed and managed and is not laying by the time it is 6 months old is unsatisfactory from this standpoint. The Auburn Strain is considered slightly slow However, it was considerably superior to the other strains in this respect (Table 2). The average Auburn bird had laid at least a dozen eggs before the average bird of the other strains had begun to lay. Since all other costs for feed, housing, and labor were the same, this extra dozen eggs could be considered a distinct advantage.

Table 2. Average Age of Pullets At Time of First Egg

Strain	Pullets 155 days of age	Age at time of first egg
	Number	*Days*
A	73	183
B	62	204
C	63	208
D	49	215
E	62	218
Total, A - E	308	*Average, A - E* 205.6
Auburn	1,441	178

Reactors to pullorum disease. Pullorum disease, if present in the breeding hen, is transferable through the egg to the chick. Therefore, it is desirable to keep the breeding flock free of this disease by blood testing and removing reactors. All of these strains were relatively free of this disease except Strain B, Table 3. This strain also had a rather high mortality among the chicks during the first month, the period when losses from pullorum are expected.

Table 3. Reactors To Pullorum Disease By The Whole Blood Plate Method

Strain	Reactors, October 5, 1946
	Per cent
A	0.0
B	4.8
C	0.0
D	0.0
E	1.6
Average, A - E	1.3
Auburn	0.1

Egg weight. Standard large eggs should average 24 ounces per dozen. Only hens of the B strain laid eggs of this size, even though the eggs were weighed in December after the pullets had been laying for several months and while the weather was cool (Table 4). The Auburn Strain was a little better than the average for size of eggs, but slightly under the 24-ounce standard.

Table 4. Average December Egg Weight

Strain	Average weight per dozen
	Ounces
A	23.1
B	24.3
C	22.8
D	23.1
E	22.7
Average, A - E	23.2
Auburn	23.6

Body weight. Results of previous research work show that Leghorns of medium size were superior in all-round desirability to either large or small birds. Leghorn pullets weighing between 4-¼ and 4-½ pounds were considered of medium size. Those weighing over 4-¾ pounds laid large but fewer eggs, and were slow maturing. Pullets that weighed less than 4 pounds laid the most eggs, but the eggs were usually small.

In this study, the body weight of strain E was considered too light and egg size was not good (Table 5). Strain D was also slightly under weight. All other strains tested were satisfactory as to body size. Strain B bordered on the upper weight limits, laid large eggs, and was quite slow in maturing. The Auburn Strain was also close to the upper limits in body weight, yet it matured quite early.

Table 5. Average Body Weight of Pullets

Strain	Pullets weighed		Weight per pullet	
	Number		*Pounds*	
A	46		4.22	
B	35		4.51	
C	23		4.25	
D	23		4.03	
E	8		3.74	
	Total, A - E	135	*Average, A - E*	4.15
Auburn	941			4.46

Adult mortality. Adult mortality is a very serious problem on all large poultry farms. Whenever large numbers of chickens are kept on a small area for several years, the place becomes rather heavily contaminated with parasites and disease organisms.

The birds in this test, although raised and maintained in sanitary quarters, were exposed to contaminated conditions comparable to commercial poultry farms. It is obvious that the Strains C, D, and E have not been bred to resist many common poultry diseases. These strains might live very well if raised in new buildings or on an area not previously used for large numbers of chickens. However, they would not be profitable on most commercial poultry farms. Strains A and B demonstrated considerable resistance, but not nearly as great as that displayed by the Auburn Strain (Table 6).

Table 6. Pullet Mortality From 155 to 520 Days

Strain	Pullets 155 days old		Mortality	
	Number		*Per cent*	
A	73		39.7	
B	62		37.1	
C	63		71.4	
D	49		46.9	
E	62		82.3	
	Total, A - E	308	*Average, A - E*	55.9
Auburn	1,441			22.1

Production per pullet. The Auburn Strain laid 34 eggs per pullet more than the average of other five strains tested. This increased production, due to breeding was obtained at practically no additional cost and is sufficient to represent a good yearly profit per hen during years when the average Leghorn strain is just paying for its keep. Strain A also had a very high production per hen. Strains B and C were average, while D and E were considered rather lacking in the factors for high egg production. Mortality in Strain E was so high that livability appears to be a greater factor than egg

Table 7. Average Number of Eggs Laid Per Pullet From 155 to 520 Days of Age

Strain	Average egg production Per pullet	
		Number
A		207.8
B		171.8
C		177.2
D		166.9
E		164.3
	Average, A - E	177.6
Auburn		211.8

production. Too few of Strain E hens finished the test to accurately determine their rate of production. (Table 7).

SUMMARY

Performance tests were started in the spring of 1946 to compare strains of White Leghorns bought from five prominent Alabama breeders with the Auburn Strain developed by the Alabama Agricultural Experiment Station.

In the first test, 520-day period, the Auburn Strain --

(1) Produced eggs earlier than any of the five strains.
(2) Was practically free of pullorum disease as were three of the five tested strains.
(3) Produced eggs that were closer to the 24-ounce weight standard than four of the five strains.
(4) Ranked second from the standpoint of low growing mortality, and ranked first by a considerable margin in low adult mortality.
(5) Produced more eggs per hen than any of the other five strains.

Summarized in Table 8 are comparisons of the Auburn strain with the five tested strains. In this instance, performance of 100 Auburn female chicks is compared with that of 100 average female chicks of the five tested strains during a 155-day growing period and one year of laying.

In this first test, each of the 100 female chicks of the Auburn strain was over twice as valuable in total income as the average chick of the other tested strains.

Table 8. Comparison Between Auburn Strain And Average Alabama Leghorns Over a 520-Day Period

Item	Auburn Strain	Average of five strains
Number female baby chicks	100	100
Number pullets at 155 days	87	71
Number pullets remaining after pullorum reactors have been removed	87	70
Number pullets alive at 520 days (1 laying year)	68	31
Dozen eggs laid by pullets finishing the laying year	1,200	459
Dozen eggs laid by pullets before death	120	170
Total dozen eggs produced	1,320	629
Value of eggs at 40¢* per dozen	$ 528.00	$251.60
Pounds of meat for sale at end of laying year	303	129
Value of poultry meat at 25¢* per pound	75.75	32.25
TOTAL VALUE OF PRODUCTS from FLOCKS	$ 603.75	$283.85

* Assumed price.