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TYPES of HOUSES for LAYING HENS

AGRICULTURAL EXPERIMENT STATION
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TYPES of HOUSES for LAYING HENS

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A GOOD poultry house is usually considered one of the fundamental factors involved in profitable poultry production. Laying houses that follow general recommendations are expensive to build, requiring an investment of approximately $2 per hen housed. Such an investment together with the current shortage of building materials is preventing many farmers from attempting to keep hens as a source of farm income.

Poultry housing experiments were conducted at the Sand Mountain Substation, Crossville, Alabama, from 1936 to 1946 to determine to what extent it is necessary to house small flocks of laying hens. Two separate tests, each of 5 years' duration, were conducted. In the first test, six methods of housing were compared; in the second test, four additional methods were introduced and two of the original housing methods were repeated. The results of both tests are given in this publication.

Procedure

Ten methods of housing hens were studied. Fifty White Leghorn pullets, of similar breeding, raised together, and selected at random, were placed in each house in September. They were managed as uniformly as possible for approximately 10 months and were then sold. New groups of pullets were started each September.

Laying mash and whole corn were available in hoppers at all times. The hens in each house had access to a sodded yard

*Resigned, August 1946.

having an area of about one-fourth of an acre. Any hens dying during September or October were replaced. It was assumed that mortality occurring so soon after the birds had been placed in the house could not have been due to the method of housing.

The records of minimum and maximum temperatures occurring while these tests were being conducted and of rainfall during the years of 1936-1946 are given in Table 1.

TABLE 1.—ANNUAL MINIMUM AND MAXIMUM TEMPERATURE, AND TOTAL RAINFALL, SAND MOUNTAIN SUBSTATION, CROSSVILLE, ALABAMA, 1936-1946

Year	Minimum temperature	Maximum temperature	Rainfall per year
	Degrees F.	*Degrees F.*	*Inches*
1936	19	100	57.08
1937	6	98	56.95
1938	13	96	53.98
1939	16	95	46.39
1940	—10	94	50.52
1941	20	94	44.28
1942	9	95	56.33
1943	10	100	40.80
1944	6	97	51.57
1945	9	95	57.34
1946	17	87	77.30
Average	10.4	95.5	53.87

It will be noted that during 1940 the temperature dropped to 10° below zero; thus, the hens were exposed to rather extreme cold weather for Alabama.

FIRST 5-YEAR TEST[1]

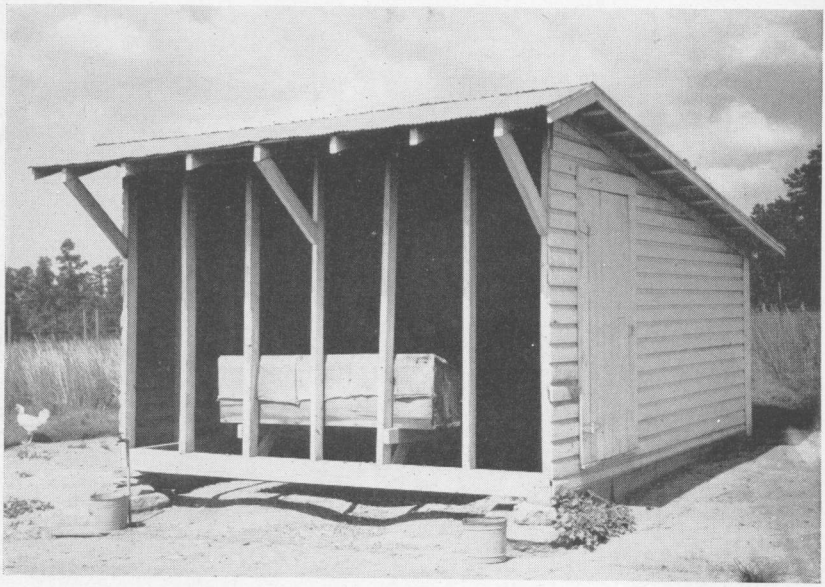
Housing Conditions

The housing methods studied from 1936 to 1941 are illustrated, pages 5, 6, and 7. Each house was 12 feet wide, 14 feet long, and 6 to 8 feet high. Equipment in each house consisted of six nests, one 4-foot mash trough, one 2-foot grain trough, two watering buckets, one oyster shell hopper, and a feed storage bin.

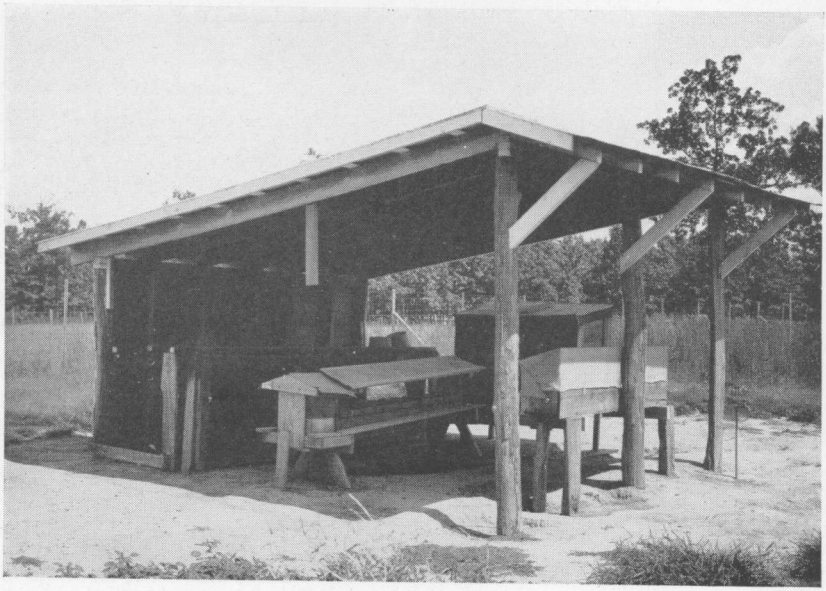
[1]Results of the first 5-year test were originally reported in Alabama Agricultural Experiment Station Circular No. 88, 1943.

House No. 1. — Solid foundation, wooden floor, and ceiled throughout; windows provide means of controlling ventilation.

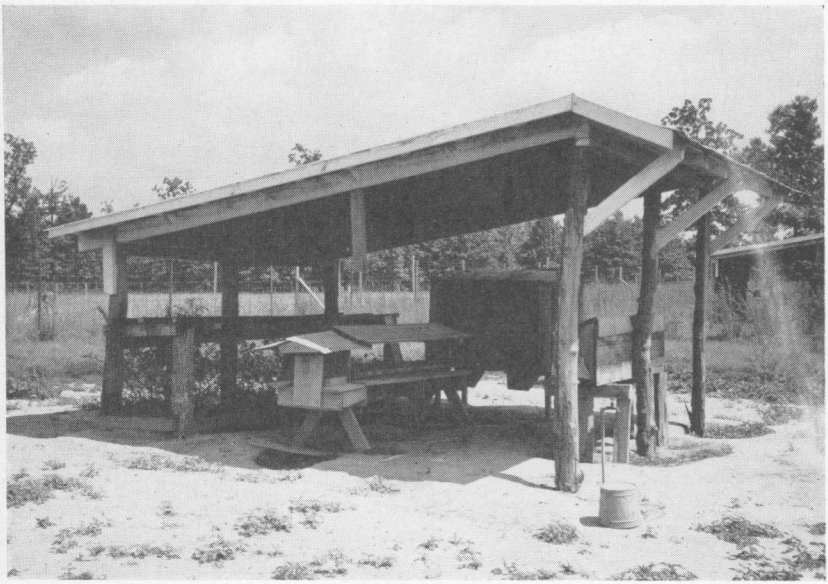
House No. 2. — Solid foundation, wooden floor, no windows, and not ceiled.



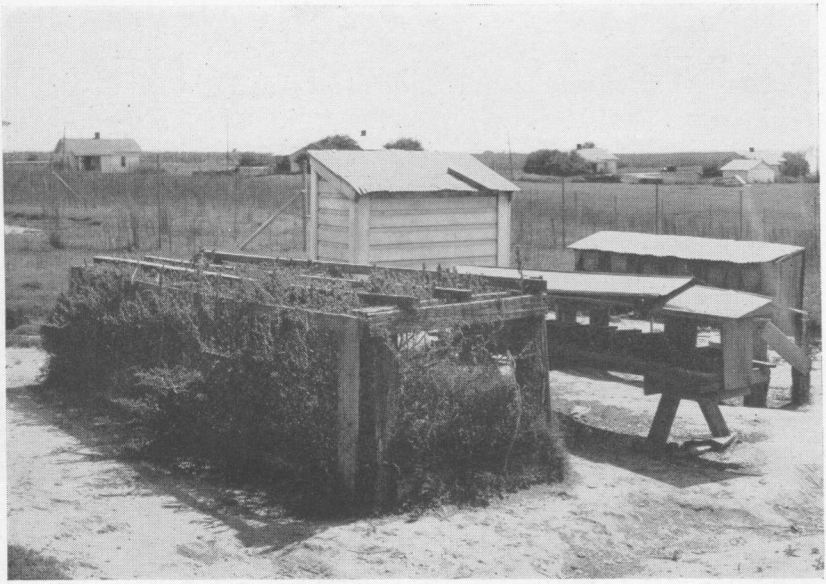
House No. 3. — Dirt floor; north, east, and west walls tight; south side entirely open.



House No. 4. — Roof and tight north wall.



House No. 5. — Roof only; all four sides open.



House No. 6. — Hens here had no protection except that provided by shade in summer. The framework shown in the foreground supports the roosting poles. Other equipment shown are feed bins, nests, and hoppers.

Results

The results from the first 5-year test are given in Table 2.

TABLE 2.—SUMMARY OF RESULTS[1] OF POULTRY HOUSING EXPERIMENT, SAND MOUNTAIN SUBSTATION, CROSSVILLE, ALABAMA, 1936-1941

Items	House No. 1	House No. 2	House No. 3	House No. 4	House No. 5	House No. 6
Initial cost of house and equipment, *dollars*	90.00	50.00	35.00	28.50	25.00	7.50
Initial cost of house and equipment per bird, *dollars*	1.80	1.00	.70	.57	.50	.15
Eggs produced per bird, *number*	176	170	170	161	152	161
Fall and winter[2] eggs produced per bird, *number*	63	60	57	51	49	54
Mash consumed per bird, *pounds*	37	37	37	37	35	35
Grain consumed per bird, *pounds*	38	38	38	43	43	45
Income per bird, *dollars*	3.41	3.26	3.24	3.04	2.96	3.11
Feed cost per bird, *dollars*	1.12	1.12	1.12	1.17	1.13	1.15
Interest, depreciation, and maintenance charges on house per bird, *dollars*	.21	.12	.08	.07	.06	.02
Income per bird over feed and annual house charges, *dollars*	2.08	2.02	2.04	1.80	1.77	1.94

[1]Egg and feed records represent averages of five 11-month periods.
[2]Average number of eggs produced from September through January, the highest average egg-price period.

Discussion of Results

The most surprising result of this test was the performance of the birds with little or no protection (No. 6). They produced 92 per cent as many eggs as the hens in the most expensive house (No. 1). However, the birds without protection consumed more grain and less mash than the hens that were better protected. During the extreme cold period in 1940, many of the hens without shelter lost the tips of their toes and points of their combs. None of these hens however, died from exposure. When the weather was extremely cold, the hens in the houses affording little or no protection would practically stop laying, but would start again as soon as the weather improved. Since egg prices in that section of Alabama are highest from August through December, extreme cold weather, which usually occurs during late December or January, did not affect materially the income from the hens without shelter of any kind.

The average income per bird for the five 11-month periods from hens that did not have any protection was $3.11, or 30 cents

less per bird than that obtained from hens in the most expensive house, Table 2. After feed costs, 6 per cent interest charges, and 6 per cent annual depreciation were deducted, there was an average income difference of only 14 cents per hen per period between unsheltered hens and those that had the benefit of the most expensive house.

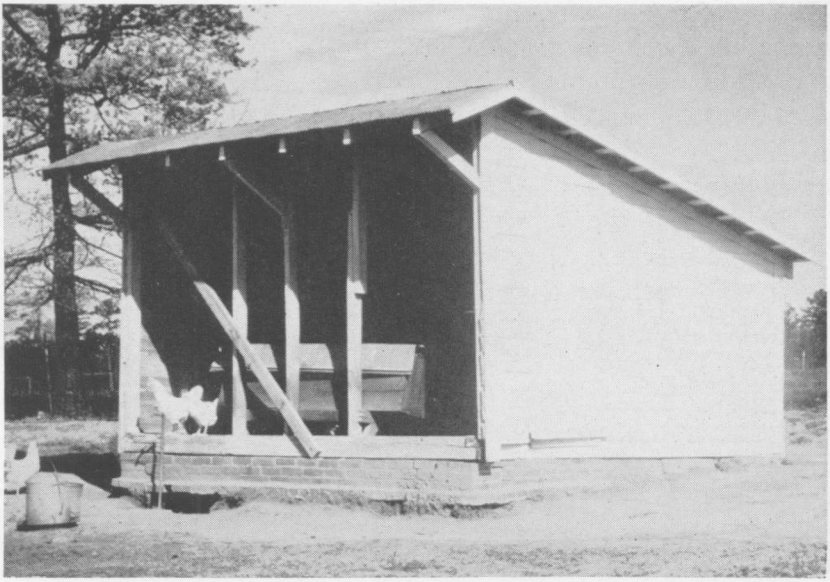
Hens kept in the simple house with dirt floor, three sides, and a roof (House No. 3) produced eggs with the lowest feed and equipment cost per dozen. These hens laid 170 eggs each as compared with 176 eggs per hen in the most expensive house, and they consumed exactly the same amount of feed. Although the gross income in the three-sided house was 17 cents less per hen for the period than the income in the most expensive house, the income above feed and housing costs was only 4 cents below that obtained in the most expensive house.

Since results of this test indicated that the simple house (No. 3) was almost equal to the most elaborate house (No. 1) in efficiency, it was considered unnecessary to further study houses more elaborate than the three-sided house. There was, however, a considerable difference between the results obtained from this house and the other less expensive houses (Nos. 4 and 5). Therefore, other houses were planned that would allow the differences between House No. 3 and the no-shelter group (House No. 6) to be studied in the second 5-year test.

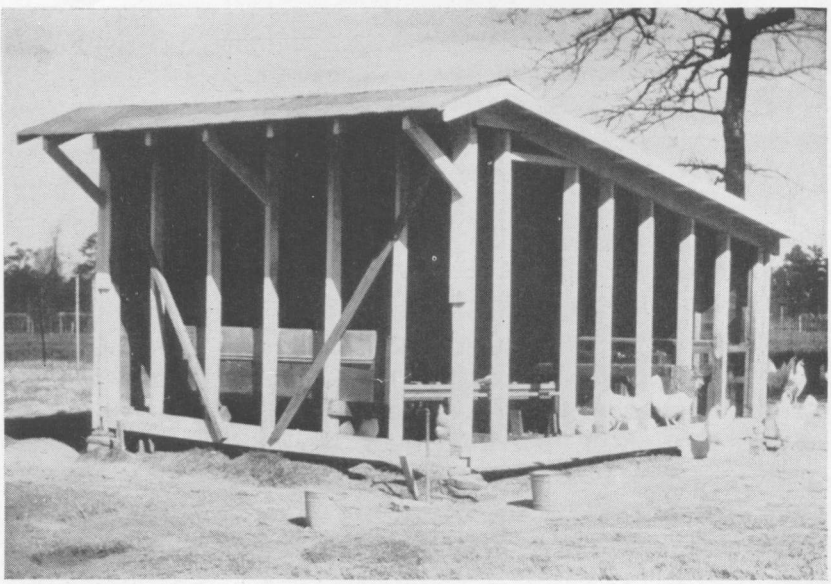
Second 5-Year Test

Housing Conditions

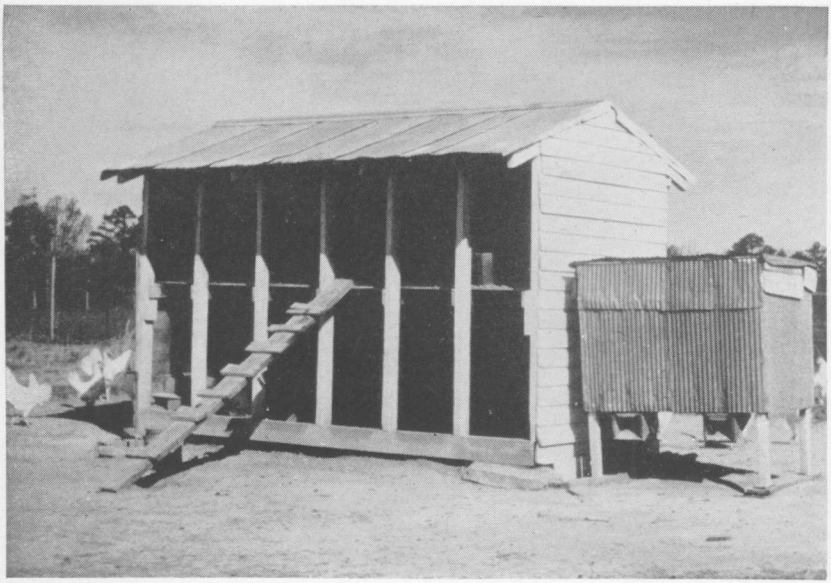
The housing methods studied from 1941 to 1946 are illustrated. All of the houses except No. 9 were 12 feet wide and 14 feet long. House No. 9 was 12 feet wide, 5 feet long, and contained a dropping board instead of the dropping pits used in the other houses. All of the houses were 6 to 8 feet high with the exception of No. 10, which had a north wall only 4 feet high. It will be noted that House No. 3 of the first 5-year test and House No. 7 of this test are identical, and that the unsheltered group of the first test (No. 6) is included in this test as No. 12. Equipment in each house was identical to that used in the earlier test.



House No. 7. — Dirt floor; north, east, and west walls tight; south side entirely open.

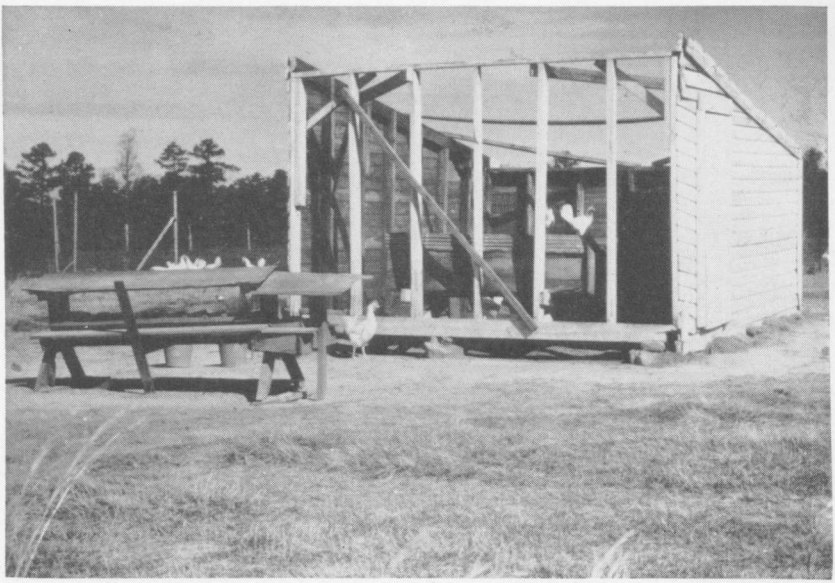


House No. 8. — Dirt floor; north and west walls tight; south and east sides entirely open.



House No. 9. — Only roosts are protected with tight north, east, and west walls and roof.

House No. 10. — Roof and low tight north wall.



House No. 11. — Tight north, east, and west walls; no roof.

House No. 12. — Hens here had no protection except that provided by shade in summer. The framework at the right supports the roosting poles. Other equipment shown are feed bins, nests, and hoppers.

Results

The results from the second 5-year test are given in Table 3.

TABLE 3.—SUMMARY OF RESULTS[1] OF POULTRY HOUSING EXPERIMENT, SAND MOUNTAIN SUBSTATION, CROSSVILLE, ALABAMA, 1941-1946

Items	House No. 7	House No. 8	House No. 9	House No. 10	House No. 11	House No. 12
Initial cost of house and equipment, *dollars*	27.50	25.00	19.00	21.50	13.50	6.00
Initial cost of house and equipment per bird, *dollars*	.55	.50	.38	.43	.27	.12
Eggs produced per bird, *number*	158	154	160	157	150	151
Fall and winter[2] eggs produced per bird, *number*	61	54	58	56	52	55
Mash consumed per bird, *pounds*	36	34	34	35	34	34
Grain consumed per bird, *pounds*	32	34	34	36	36	38
Income per bird, *dollars*	4.45	4.31	4.45	4.41	4.15	4.23
Feed cost per bird, *dollars*	1.86	1.83	1.85	1.92	1.89	1.93
Interest, depreciation and maintenance charges on house per bird, *dollars*	.07	.06	.05	.05	.03	.01
Income per bird over feed and annual house charges, *dollars*	2.52	2.42	2.55	2.44	2.23	2.29

[1]Egg and feed records represent averages of five 9½-month periods.
[2]Fall and winter eggs include average number laid from October through January for 1941-42 and 1943-44, but for other years September through January.

Discussion of Results

In the second test, the hens kept in the simple house with a dirt floor, three walls, and a roof (House No. 7) laid a few more eggs than the hens in a similar house with only two walls (House No. 8). Apparently the lack of protection from the east lowers the total eggs produced during the year only slightly, but lowers the average number of fall and winter eggs per hen by seven. The cost of the third wall is small, and the hens in No. 7 paid for this added cost by increased production.

Total egg production in houses No. 7 and No. 9 was about the same. This shows that the part of a chicken house, other than that enclosing the roosts, is of no particular value to the hens from the standpoint of egg production in mild climates. The sheltered-roost type house (No. 9) returned a greater income over feed and annual house charges than any of the houses studied. While this was apparently the most efficient house studied thus far, the caretakers complained about the inconvenience of

gathering eggs, filling feed hoppers, and otherwise caring for the hens under these conditions. No doubt, this house, although apparently adequate for the hens, does not allow much protection for the operator. As equipped in this test, it increased the labor necessary to care for the hens.

Production in House No. 10 with the low north wall was more nearly equal to that attained in the three-wall house (No. 7) than the production in a similar house with a high north wall (No. 4) in the first 5-year test. Also, in the first test hens in this house with only a high north wall and a roof for protection (No. 4) did not lay any more eggs than the unsheltered group (No. 6). On the other hand, in the second test, when the north wall was lower, the hens out-produced the unsheltered hens (No. 12) by six eggs per hen. Egg production records indicate that by lowering the north wall and roof the hens were afforded more protection.

In the first test, it was shown that a roof only (House No. 5) did not cause the hens to lay any better than those that had no protection (No. 6). From the results obtained in the second test from House No. 11 having no roof but three side walls for protection, it is apparent that the side walls alone are of no particular value, since these hens did not lay more eggs than the unsheltered hens (No. 12). Evidently the reason for the hens in the three-sided house (No. 3 in the first test and No. 7 of the second test) doing so well was due to the combination of a roof and side walls; however, neither of these types of protection is satisfactory when used alone.

The production obtained from hens having no protection (No. 6 in first test and No. 12 in second test) shows that farmers may maintain a profitable poultry flock even though they have no poultry house. The hens that were protected with a simple three-wall structure (Nos. 3, 7, and 9) laid enough more eggs to finance the cost of this type of simple protection.

There was no direct relationship between mortality and type of house during these tests. In no case were birds known to have died from overexposure.

For protection against thieves, rodents, foxes, dogs, and greater ease of maintaining sanitation, it is considered desirable to provide a poultry house.

Summary

1) Hens of good breeding, if fed and managed properly, will produce profitably in Alabama during their first year of production, even though no shelter is provided.

2) Hens kept in a house costing $90 produced only 8 per cent more eggs than those having no protection, and only 3 per cent more eggs than those in a $35 house having three sides and a roof.

3) The birds without a shelter consumed a larger amount of feed (proportionately more grain and less laying mash) than that consumed by the well protected hens.

4) There was no relationship between the type of shelter and mortality.

5) An inexpensive poultry house, such as House No. 3, 7 or 9, having a dirt floor, tight north, east, and west walls and a good roof, is satisfactory for laying hens in Alabama.

6) A house with north, east, and west walls is superior to one having only north and west walls.

7) A low north wall is more desirable than a high one when no side walls are provided.

8) Both roof and three walls are necessary to provide chickens with sufficient protection to enable them to lay most efficiently in climates such as are found in Northern Alabama.