FLOOR SPACE

FOR BROILERS

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A Comparison Of Floor Space Recommendations For Broilers

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For maximum income from broiler production, it is essential that the broiler house be used at its maximum capacity. In other words, the number of broilers per square foot of floor space must be kept as high as possible without reducing growth rate or efficiency of feed conversion.

The experiments reported in this bulletin were aimed at providing information useful in deciding how many birds to raise per square foot of space.

The recommendation for Oklahoma conditions has been between three-quarters and one square foot per broiler. One square foot was considered the minimum during summer months.

The two feeding trials reported in this bulletin compare the three-quarter and one square foot spacings at two seasons of the year—from June to mid-August, and from mid-November through most of January—at Stillwater. In general, the results showed that:

Summary and Recommendations

Where good management practices are followed, three-fourths of a square foot of floor space per broiler should be economically sound in both summer and winter.

One square foot of floor space per broiler would be the recommendation where management practices are not up to standard, where there are frequent disease outbreaks, or where housing conditions are less satisfactory than they were in the tests reported in this bulletin. (See page 6.)

Growth rate and economy of feed conversion were essentially equal at either spacing in both the summer and fall tests. The average re-

turn **per broiler** was the same for each of the four lots, but the spacing of three-fourths square foot per bird gave an advantage of about 10 cents **per square foot.** *This amounts to about $45.00 per pen.*

Thus, as long as average weight per broiler and economy of gain are essentially equal for both floor space allowances, the economic advantage lies with the three-fourths square foot per broiler. This will continue to be true as long as broilers are purchased on a body weight basis, with little or no consideration being given to market quality and grade.

The type of management being practiced, and the skill of the poultryman in charge of the broiler operation, must be considered in making any floor space recommendation. Where management practices are not up to standard and disease outbreaks give considerable trouble, one square foot of floor space or even more may be required.

Proper ventilation of the broiler house is important. Ventilation of the type of broiler house used in these tests proved adequate under the summer conditions prevailing at the time the summer trial was made. The arrangement of this house is described in the following paragraph.

Summer Feeding Test

How the Test Was Made

The summer feeding trial was run from June 1 to August 14, 1952. A 30 by 60 foot broiler house was used. It was of box batten construction with a straw loft and metal roof. Ventilation was provided by: (a) sixteen 22 by 41¼ inch windows on the south wall, (b) ten 22 by 41¼ inch windows on the north wall, and (c) four 29 by 31 inch windows on each of the east and west walls. All the windows were 21 inches from the floor. The wall height was approximately 7 feet. The house was divided into four 15 by 30 foot pens with the partitions running north and south. The center partition in the house was a solid wall, while the other two partitions were constructed of poultry netting.

The pens were identified by giving each a letter designation. Beginning with the east pen in the house, the pens were identified from east to west as follows: EE, EW, WE, and WW.

Infra-red brooders were used in all four pens. Each pen was provided with two automatic water fountains and feeder space equivalent to one inch per broiler for the first four weeks and one and one-half inches per broiler for the remainder of the growing period.

Pens EE and WE were set up to provide three-quarters of a square foot per broiler, with 600 New Hampshire broilers in each pen. Pens EW and WW were set up to provide one square foot per broiler with 450 New Hampshire broilers in each pen. As mortality occurred, the dead broilers were replaced immediately in order to hold constant the floor space per broiler.

A thermometer was placed in each half of the broiler house at a level of three inches from the floor. Maximum and minimum daily temperature readings for the preceding 24 hours were recorded at 8:00 a.m. each day.

The ration fed in both of the trials is shown in Table I.

Results

Table II shows data on body weight, pounds of feed required per pound of gain, feed cost, return per broiler, and return per square foot of floor space. In Table III, the returns are calculated at four different broiler feed prices representative of prices prevailing in Oklahoma at the time this trial was made.

Table I.—Broiler Mash Formula Used in Both Summer and Fall Tests.*

Ingredients	Percent
Ground yellow corn	54.5
Pulverized oats	5
Soybean meal (44%)	22.5
Fish meal (60%)	5
Dried brewer's yeast	3
Dried buttermilk	2
Meat and bone scrap	3
Alfalfa meal	2
Mono calcium phosphate	0.5
or Di calcium phosphate	1.0
Salt	0.5
Vitamin concentrate	2**
Manganese sulfate	6 grams
Antibiotic—according to manufacturer's directions	

* OAES Experimental Ration Ex-52.

** The vitamin concentrate must supply the following amounts of each vitamin per pound of ration: Vitamin A, 3000 IU; Riboflavin, 3.6 mg.; Choline, 120 mg.; Vitamin D, 475 ICU; Niacin, 10 mg.; and Vitamin B_{12}, 3 gamma.

Table II.—Results of Summer and Fall Trials.

Floor space per bird; and pen	No. broilers marketed	Total lbs. marketed	Av. weight per broiler (lbs.)	Percent mortality	Lbs. feed per pound gain	Receipts from sales	Receipts per sq. ft. of floor space
Summer Test							
One square foot							
Pen EW	454	1104	2.43	7.3	2.86	$353.28	$ .79
Pen WW	444	1089	2.45	9.0	3.00	$348.35	$ .77
Three-fourths square foot							
Pen EE	587	1426	2.43	6.8	2.86	$446.32	$1.01
Pen WE	588	1360	2.30	8.6	2.98	$435.20	$ .97
Fall Test							
One square foot							
Pen NW	435	1179	2.72	3.3	3.07	$330.12	$ .73
Pen NE	443	1217	2.77	1.6	3.02	$340.68	$ .76
Three-fourths square foot							
Pen WW	585	1473	2.53	2.5	2.86	$412.52	$ .92
Pen EE	580	1524	2.61	3.3	2.75	$426.78	$ .95

Growth rate and economy of gain were essentially equal in all four pens. The average body weight in all four lots ranged between 2.30 and 2.45 pounds per broiler; and the feed requirement per pound of gain ranged from 2.86 to 3.00 pounds.

Table IV shows the number of days upon which each maximum and minimum temperature prevailed in each half of the broiler house. Temperature apparently had no noticeable effect upon growth in any one of the four pens. The two pens in the west half of the house (Pens WE and WW) were subjected to the greatest range of temperature during any given 24-hour period. In these pens the daily maximum was the highest and the daily minimum the lowest. Temperature fluctuations in the two pens in the east half of the house (Pens EE and EW) did not cover as wide a range; the maximum daily temperature was not as high nor the minimum daily temperature as low as in the two west pens.

Table III.—Return Above Feed Cost Per Chick and Per Square Foot of Floor Space.

(Dollars)

	Return above feed cost when feed price per 100 pounds is: Summer Test				Fall Test		
	$5.35	$5.50	$5.65	$5.80	$5.10	$5.20	$5.50
Per Broiler							
One Square Foot							
EW	.41	.40	.38	.37	---	---	---
WW	.39	.38	.37	.36	---	---	---
NW	---	---	---	---	.33	.53	.30
NE	---	---	---	---	.35	.34	.31
¾-Square Foot							
EE	.41	.40	.39	.38	---	---	---
WE	.37	.36	.35	.34	---	---	---
WW	---	---	---	---	.34	.33	.31
EE	---	---	---	---	.37	.36	.34
Per Square Foot							
One Square Foot							
EW	.41	.40	.39	.38	---	---	---
WW	.39	.38	.36	.35	---	---	---
NW	---	---	---	---	.32	.32	.29
NE	---	---	---	---	.34	.33	.31
¾-Square Foot							
EE	.53	.52	.50	.49	---	---	---
WE	.49	.47	.46	.44	---	---	---
WW	---	---	---	---	.45	.43	.40
EE	---	---	---	---	.47	.46	.44

Fall Feeding Test

How the Test Was Made

The fall feeding trial was made from November 13, 1952, to January 22, 1953. The birds were housed in two 30 by 60 foot broiler houses, each of which was divided into four 15 by 30 foot pens. Half of each house (i.e., two pens) was used for this test. (The other half of each house was occupied by broilers being observed in another experiment.)

Construction details of House I were the same as those of the house used in the summer trial. House II was similar except that the wire partitions ran east and west instead of north and south. The pens in House II were designated NE, SE, NW, and SW.

Three-quarters square foot per broiler was allowed in Pens EE and WW in House I. One square foot per broiler was allowed in Pens NE and NW in House II.

Gas brooders were used in all four pens. Each pen was provided with two automatic water fountains. Feeder space was the same as in the summer test. The chicks were New Hampshire, and Gold Oklabar X New Hampshire. No attempt was made to replace chickens as mortality occurred, as had been done in the summer test.

Temperatures inside the brooder house were not recorded.

The ration fed was the same as in the summer test (See Table I.)

Table IV.—Number of Days Upon Which Each Maximum and Minimum Temperature Prevailed.

	Pens EE and EW	Pens WE and WW
Maximum Degrees (F.)		
75-79	3	1
80-84	12	3
85-89	13	1
90-94	35	35
95-98	5	27
100-105	0	4
Minimum Degrees (F.)		
65-69	0	0
70-74	3	10
75-79	8	14
80-84	47	45
85-89	10	2

Results

Table II shows data on body weight, pounds of feed required per pound of gain, feed cost, return per broiler, and return per square foot of floor space. In Table III, the returns are calculated at three different broiler feed prices representative of the price range in Oklahoma during the time the test was run.

The results of this feeding test are in agreement with those obtained in the summer feeding test. Average body weight was a little greater, which was to be expected under the cooler fall growing conditions. Pounds of feed required per pound of gain were essentially the same; and the economic advantage in return per square foot of floor space was with three-quarters of a square foot of floor space per broiler.


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