AGRICULTURAL EXTENSION SERVICE

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

OFFICE OF EXTENSION POULTRY SCIENCE
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October 10, 1977

I am enclosing the final summary of the Eighteenth North Carolina Random Sample Laying Test which you have requested. We believe that the information contained herein is a useful guide for evaluating egg production stocks and management systems. Additional useful data on most of these stocks are published in the reports of other laying tests and in ARS-NE-21 series, a two-year combined summary of random sample laying tests in the United States and Canada. Please circulate this report among your associates in order that maximum use of it may be made. If additional copies are needed, they may be obtained from the address below.

The North Carolina Test continues its policy of acquiring those commercial stocks experiencing major distribution in this area. Category I-A identifies stocks voluntarily entered with full cooperation and financial support by the breeder or distributor (I-A-DIST) and I-C identifies stocks acquired without approval and cooperation of the breeder or distributor. Entry number five (5) was purchased as chicks and was fourteen (14) days younger than the other entries. Egg quality data on this entry was taken at the same time as for the other entries and consequently at a younger age. Body weights, production data, and feed data were taken at the same age for all entries and all were maintained the full 500 days.

All space not required for the laying test at the facility was utilized for management research. We express our appreciation to Babcock Poultry Farm, Inc., DeKalb AgResearch, Inc., Hubbard Farms, Inc., Shaver Poultry Breeding Farms, Ltd., and their distributors for providing extra hatching eggs to be used in this research. Results will be published from time to time as completed.

Requests for reports from this test should be sent to Mr. T. R. Burleson, Jr., PIEDMONT RESEARCH STATION, ROUTE 6, BOX 420, SALISBURY, NORTH CAROLINA 28144.

Very truly yours,

G. A. Martin

GRADY A. MARTIN
Extension Poultry Specialist

FINAL SUMMARY REPORT
EIGHTEENTH NORTH CAROLINA RANDOM SAMPLE LAYING TEST
March 26, 1976 through August 7, 1977

The North Carolina Random Sample Laying Tests are conducted under the auspices of the Agricultural Extension Service of North Carolina State University and the Division of Research Stations of the North Carolina Department of Agriculture. Mr. T. R. Burleson, Jr., Route 6, Box 420, Salisbury, North Carolina 28144, is Resident Manager of the tests and Dr. G. A. Martin, Department of Poultry Science, North Carolina State University, Raleigh, North Carolina 27607, is Project Leader. The purpose of the project is to assist poultrymen in evaluating stocks and management systems. A committee representing various poultry interests in the State advises the Steering Committee in establishing policies and practices which best serve this purpose.

Data are presented Tables 18-4A-I, II, III and IV, 18-4B-I, II, III and IV. 18-4C-I, II, III and IV, and 18-4D-I, II, III, IV, V and VI. Tables carrying the letters A, B, C and D in their numbers contain performance data for birds housed in 7-bird cages, on combination of litter and slats, in 2-bird cages and averaged across all three housing schemes, respectively. Due to the large number of items reported, each of the tables is divided into Parts I, II, etc., for the final report. These data are for one year at one location. The ARS NE-21 series of publications summarizes all laying tests in the United States and Canada over two years and may be obtained from the USDA. It provides an excellent basis for comparing the performance of different stocks.

INFORMATION CONCERNING DATA REPORTED

Samples of 1080 freshly gathered eggs were taken at randomly selected supply flocks or by random sampling from egg rooms when nest sampling was not feasible except for entry No. 5 (see above). Public employees in Agriculture selected the samples, sealed the cases, and sent them to the test site where the eggs were incubated. A maximum of 360 sexed pullets were divided into six equal lots and reared as two lots on litter over concrete floors at 1.4 square feet per bird and four lots in randomly assigned blocks of seven 24-inch x 20-inch cages with 8 or 9 pullets per cage for the 150-day growing period. First week mortality, sexing errors, and accidental deaths were not charged against the entry.

All birds were vaccinated at day-old for Marek's with DPL live turkey herpes virus vaccine grown in chicken tissue culture and lyophilized. We express our appreciation to Dr. Hiram Lasher, Sterwin Chemical Company, Millsboro, Delaware for providing this vaccine for the flock. The two lots per entry destined for housing in 24" x 20" laying cages were detoed at day-old (terminal segment of center and inside toes removed, bilaterally).

All birds were debeaked at seven days; vaccinated for Newcastle and bronchitis in water at seven days and four weeks; vaccinated for Pox via wing-web at nine weeks; vaccinated for Avian encephalomyclitis at 12 weeks; and vaccinated with LaSota Newcastle and bronchitis at seventeen weeks. Birds exposed to litter were given 6-species coccidiosis vaccine at five days.

At 150 days of age, a maximum of 50 randomly chosen pullets per lot were retained in the half slat - half litter pens at about 1.7 square feet per pullet, a maximum of 50 randomly chosen pullets per detoed lot were housed at seven birds per 24" x 20" cage, and a maximum of 52 non-detoed, cage grown pullets per lot were housed as two reps of 26 birds at two birds per 10" x 18" cage.

Commercial all-mash rations were purchased on contract. Starting mash (20% protein, 1300 K cal/lb.) was fed ad lib until housing at 150 days, with troughs allowed to run empty approximately two hours per day from 12 to 20 weeks of age. After 150 days layers were full-fed one of four commercial all-mash rations containing 20%, 18%, 16%, or 14.7% protein and near 1300 K cal. M.E./lb., phased by production rate and feed consumption within type of bird (white-egg or brown-egg) and house. Other management was as nearly commercial procedures as practical.

Many producers believe that cracks detected by candling eggs at the test site and specific gravity scores do not provide an adequate indicator of how eggs will grade out when shipped to a processing plant. In this test all eggs from each stock were accumulated for a week late in each quarter and shipped to the FCX egg processing plant at Charlotte. The gradeout data are in Table 18-4D-V. We express our gratitude to Mr. Jim Arneson and FCX for this service.

RESULTS

Part I of Tables

Entry No. is assigned at random to the particular entry.

Type Housing: 1 = 7-bird cages, 2 = slats and litter, 3 = 2-bird cages, 0 = average of three types.

Breeder is the name used to distinguish entries. Full information about the stock and source is listed elsewhere in this report.

Average Body Weight is recorded in pounds at housing and at end of test.

Egg Size, Distribution (%) was obtained by crediting each week's production to size classes in proportion to those observed in the total production of one day. Individual eggs weighing 23 but less than 26 oz./doz. are classified as large. Other size classes are scaled up or down from large in blocks of 3 oz./doz.

Average Egg Weight was obtained by crediting all eggs for each week at the average size observed on one day by mass weight.

Age at 50% Production was the age of pullets on the first day of the first two consecutive days on which production reached or exceeded 50%.

Hen-Day Production Percentages represent the daily average number of eggs produced per 100 hens of the entry during the specified periods.

Eggs Per Pullet Housed is the total number of eggs produced divided by the number of pullets housed.

Part II of Tables

Entry No. and Type Housing are the same as above.

No. of Birds are the net pullets or hens retained at the specified times. Sexing errors, first week mortality and accidental deaths are excluded.

Mortality is the percentage of birds that died during growing and laying periods and the average days per bird housed that were lost to mortality during the laying period.

Feed Consumed is average feed consumed for the 150 days in the growing period, per 100 birds per day in laying period, per pound of eggs produced in laying period, and per dozen eggs laid.

Chick Price is the average of prices quoted for all stocks in the test in March 1976.

Values Per Pullet Housed are the dollar amounts charged and credited to the entry at 3-year monthly average feed prices quoted by North Carolina Department of Agriculture, at 3-year weekly average egg prices quoted for Raleigh market by the Federal-State Market Service, and adjusted to farm price, and 3-year average fowl prices in North Carolina for the week in which the test terminated.

IOFCC is income over laying feed cost and growing chick and feed cost. This does not represent net return since many other costs are involved in egg production.

Part III of Tables

Entry No. and Type Housing are the same as above.

% Inclusion (Break-Out): Blood spots and colored meat spots were observed by breaking one day's production from each lot at about 30-day intervals throughout the year. Spots exceeding 1/8 inch were classified as large and thoseof lesser size as small. Break-out data were not used for egg value calculations.

% Loss (Downgrades) was the percentage by which total egg value was reduced below Grade A value due to downgrades detected by candling. We express our appreciation to the personnel of the North Carolina Department of Agriculture who provided candling service on one day of production each month. Market values of all eggs were calculated on the basis of these candling reports, with no discount for stained or dirty eggs.

Candled Quality Percentages: Official egg graders from the North Carolina Department of Agriculture candled the production of one day each month. The percentages reported are a summary of their findings and were used to determine egg value.

Haugh Units were measured one day each quarter of the year. Since this factor undergoes seasonal change, the quarterly averages and the annual average are given.

Shell Score (Specific Gravity) was secured by using salt solutions to determine the specific gravity of eggs. The eggs with specific gravity below 1.068 were given a score of 0; those between 1.068 and 1.072, a score of 1; etc. with those exceeding 1.100 receiving a score of 9. One day's production from each group of birds was classified in the months indicated.

Part IV of Tables

Entry No. and Type Housing are the same as above.

Causes of Mortality were assigned from autopsy findings. Birds were held in a freezer as mortality occurred and examined at a North Carolina Department of Agriculture Diagnostic Laboratory once each week. We express our appreciation to Dr. W. H. Emory for providing this service to the test. The 12-point classification system recommended by the Council of American Official Poultry Tests was used on autopsy reports. Some categories which accounted for little mortality were combined under "Other" in the interest of saving space.

Part V of Tables

Entry No., Type Housing, and Breeder are the same as above.

Commercial Egg Gradeout was made by stocks during the weeks indicated at the FCX plant at Charlotte, N. C. % A and % B are consumer grades. % Breaker combines C quality, small B quality, small inclusions, and stains which constitute breaker stock with sound shells. % Crax are non-leakers with unsound shells removed for breaker stock. % Farm Loss is the percentage of unsound eggs removed before shipping and % Other Loss includes all other eggs shipped (large spots, addled eggs, leakers, lost in machines, etc). Seasonal data are not combined.

Part VI of Tables

This section of the tables is presented only for the average performance of the entries in all types of housing and for only the four characteristics listed.

The Range column indicates those entries which are in the most desirable half of the range above the mean by 1, those between this point and the mean by 2, those in the least desirable half of the range below the mean by 4, and those between this point and the mean by 3.

Entry No. indicates which stock from earlier listing in the tables attained the average performance value shown.

Entries spanned by the same vertical line in the Duncan Test column have a greater than 5% probability that the indicated difference is due to sampling variation.

TABLE 18-4A-I - Body Weight, Egg Size, Maturity and Production Rate

Entry No.	Type Housing	Breeder	Average Body Weight		% Egg Size, Distribution					Average Egg Wt. Oz./Doz.	Age at 50% Production	Egg Production Rate - %						Eggs Per Pullet Housed
			150 Days	500 Days	Pee Wee	Small	Medium	Large	Extra Large and Over			151-240 Days	241-330 Days	331-420 Days	421-500 Days	471-500 Days	After 50% Production	
1	1	Hubbard (Gld. Comet)	3.1	4.6	0.0	0.3	1.2	15.0	83.6	27.6	184.5	54.4	83.9	73.4	63.0	61.4	74.8	228.9
2	1	Shaver (288)	2.8	4.1	0.0	0.7	2.2	19.8	77.2	27.0	176.0	61.1	84.6	75.9	64.5	64.0	76.0	243.0
3	1	H & N (Nick Chick)	2.6	3.6	0.0	1.2	3.4	31.8	63.6	26.1	176.0	60.2	83.0	75.3	66.2	63.5	75.3	242.9
4	1	DeKalb (XL-Link)	2.7	4.0	0.0	0.6	2.6	28.1	68.7	26.6	181.0	54.4	84.2	78.1	63.6	60.4	75.4	234.2
5	1	Hy Line (W-36)	3.0	3.9	0.0	1.0	4.9	31.8	62.3	26.0	174.5	64.4	83.1	74.7	68.3	65.5	76.7	250.2
6	1	Babcock (B-300)	2.6	3.7	0.0	2.2	4.5	32.4	60.9	25.7	171.0	65.5	79.5	75.2	65.9	65.5	74.5	247.1
7	1	DeKalb (Amber Link)	2.9	5.1	0.0	0.3	1.5	19.5	78.7	27.5	199.0	39.9	85.7	79.4	68.9	64.9	77.1	237.7
8	1	Euribrid (Hisex Wh.)	2.6	3.8	0.1	2.1	5.2	32.5	60.1	25.9	168.5	67.0	82.4	76.0	71.0	70.2	76.9	249.6
9	1	Babcock (B-380)	3.2	4.6	0.0	0.1	1.1	14.5	84.3	28.0	181.5	55.9	86.6	78.5	67.8	64.6	78.1	248.9
0	1	Average	2.8	4.2	0.0	0.9	3.0	25.0	71.0	26.7	179.1	58.1	83.7	76.3	66.6	64.4	76.1	242.5

TABLE 18-4B-I - Body Weight, Egg Size, Maturity and Production Rate

1	2	Hubbard (Gld. Comet)	3.2	4.7	0.0	0.4	2.9	21.0	75.6	27.0	176.5	64.7	88.8	78.5	65.1	61.0	79.4	247.9
2	2	Shaver (288)	3.2	4.3	0.0	0.6	2.1	26.6	70.7	26.7	166.0	74.6	92.4	83.6	77.1	71.9	85.0	287.2
3	2	H & N (Nick Chick)	2.8	3.7	0.0	1.4	6.8	37.9	53.9	25.6	169.0	66.5	78.9	67.9	60.0	57.8	71.3	234.5
4	2	DeKalb (XL-Link)	3.1	4.1	0.2	1.3	4.3	33.5	60.7	25.8	169.0	69.9	88.7	83.6	70.2	63.2	81.3	269.1
5	2	Hy Line (W-36)	3.3	3.9	0.0	2.0	5.3	36.2	56.5	25.7	169.0	72.3	88.5	79.9	68.7	63.4	80.5	271.1
6	2	Babcock (B-300)	2.9	4.0	0.1	2.0	6.6	41.6	49.7	25.2	167.0	77.2	82.3	70.7	63.7	61.1	75.2	254.0
7	2	DeKalb (Amber Link)	3.6	5.0	0.0	0.6	4.1	29.5	65.7	26.4	178.5	64.4	92.1	87.1	75.9	69.0	85.5	278.2
8	2	Euribrid (Hisex Wh.)	3.0	4.0	0.1	2.6	6.0	40.1	51.3	25.3	162.0	77.4	83.5	72.0	62.3	58.0	75.3	258.4
9	2	Babcock (B-380)	3.6	5.0	0.0	0.1	1.8	16.0	82.1	27.9	172.0	66.3	87.4	77.9	65.2	57.4	78.4	260.0
0	2	Average	3.2	4.3	0.0	1.2	4.4	31.4	62.9	26.2	169.9	70.4	87.0	77.9	67.6	62.5	79.1	262.3

TABLE 18-4A-II - Birds, Mortality, Feed Use, and Cost and Income Data

Entry No.	Type Housing	Number of Birds: At One Week	Number of Birds: Housed	Number of Birds: At End of Test	Mortality: % 8-150 Days	Mortality: % 151-500 Days	Mortality: Ave. Days Lost/ Hen Housed	Feed Consumed: Per Bird 1-150 Days	Feed Consumed: Per 100 Birds (One Day)	Feed Consumed: Per Pound of Eggs	Feed Consumed: Per Dozen Eggs	Chick Price	Value Per Pullet Housed: Growing Feed Cost	Value Per Pullet Housed: Laying Feed Cost	Value Per Pullet Housed: Total Feed and Chick Cost	Value Per Pullet Housed: Value of Eggs	Value Per Pullet Housed: Value of Meat	IOFCC
1	1	119	100	85	4.2	15.0	17.4	14.5	24.7	2.50	4.31	0.34	1.05	6.43	7.84	10.50	0.38	3.045
2	1	116	100	91	1.7	9.0	11.4	13.0	24.9	2.47	4.17	0.34	1.00	6.60	7.95	10.93	0.36	3.342
3	1	118	100	93	0.9	7.0	9.4	12.5	22.8	2.36	3.84	0.34	0.95	6.08	7.37	10.94	0.32	3.895
4	1	115	100	91	5.2	9.0	16.3	13.4	23.2	2.40	3.98	0.34	1.03	6.08	7.47	10.53	0.36	3.418
5	1	108	100	95	2.0	5.0	6.1	14.2	21.9	2.23	3.62	0.34	1.11	5.90	7.36	11.49	0.36	4.490
6	1	119	100	95	4.2	5.0	5.4	12.9	22.6	2.37	3.80	0.34	0.99	6.12	7.47	11.07	0.35	3.955
7	1	120	100	97	2.5	3.0	2.6	12.9	25.2	2.57	4.42	0.34	1.00	6.85	8.19	10.67	0.49	2.970
8	1	112	100	87	0.9	13.0	13.6	13.1	23.4	2.35	3.81	0.34	1.00	6.18	7.52	11.06	0.32	3.863
9	1	121	100	94	4.2	6.0	5.8	13.2	25.2	2.39	4.18	0.34	1.01	6.79	8.16	10.88	0.43	3.151
0	1	118	100	92	2.9	8.0	9.8	13.3	23.8	2.40	4.01	0.34	1.02	6.34	7.61	10.90	0.37	3.570

TABLE 18-4B-II - Birds, Mortality, Feed Use, and Cost and Income Data

1	2	120	99	87	0.0	12.1	17.7	15.0	25.5	2.44	4.13	0.34	1.15	6.65	8.15	11.44	0.40	3.697
2	2	116	100	100	2.6	0.0	0.0	14.5	25.8	2.27	3.79	0.34	1.13	7.07	8.55	12.95	0.42	4.817
3	2	117	100	94	0.8	6.0	8.7	14.1	22.5	2.49	3.98	0.34	1.09	6.08	7.52	10.68	0.35	3.502
4	2	117	100	96	1.8	4.0	6.5	14.6	24.4	2.32	3.76	0.34	1.13	6.57	8.04	12.17	0.39	4.518
5	2	111	100	99	1.8	1.0	0.9	15.5	22.9	2.21	3.55	0.34	1.20	6.25	7.80	12.38	0.38	4.957
6	2	116	99	95	0.0	4.0	6.1	14.5	23.3	2.40	3.81	0.34	1.12	6.27	7.73	11.40	0.37	4.049
7	2	116	100	97	0.9	3.0	2.2	15.8	25.9	2.35	3.90	0.34	1.22	7.05	8.61	12.68	0.48	4.546
8	2	116	100	97	0.0	3.0	1.7	14.1	24.0	2.47	3.92	0.34	1.09	6.53	7.96	11.53	0.38	3.953
9	2	119	100	99	0.0	1.0	0.9	15.5	26.4	2.44	4.26	0.34	1.19	7.20	8.73	11.62	0.49	3.376
0	2	116	100	96	0.9	3.8	5.0	14.8	24.5	2.37	3.90	0.34	1.15	6.63	8.12	11.87	0.41	4.157

TABLE 18-4A-III - Egg Quality Data

Entry No.	Type Housing	Loss % (Downgrades)	% Inclusion (Break-Out)				Candled Quality Percentages					Haugh Units					Shell Score (Specific Gravity)				
			Large Bloods	Small Bloods	Large Meats	Small Meats	A or Better	B	C Quality	Chex and Cracks	Loss Eggs	October	January	April	June	Average	November	February	May	July	Average
1	1	2.4	5.4	1.7	18.0	12.4	95.1	0.7	0.0	4.0	0.2	84.1	82.2	84.0	66.8	79.3	2.39	1.56	2.46	1.62	2.00
2	1	4.0	0.5	0.5	0.2	0.2	92.3	1.2	0.3	5.3	0.9	82.3	82.8	84.5	68.4	79.5	2.87	1.88	2.20	1.53	2.12
3	1	3.3	0.8	0.8	0.1	0.0	93.3	1.5	1.3	3.7	0.1	84.4	83.7	87.8	71.0	81.7	3.04	2.35	2.81	2.06	2.57
4	1	4.0	0.7	0.5	0.1	0.6	92.1	2.0	0.4	4.7	0.7	82.0	82.8	86.2	67.0	79.5	2.80	1.86	2.31	1.75	2.18
5	1	1.3	0.7	0.7	0.1	0.1	97.6	0.0	0.0	2.1	0.3	81.1	78.3	80.4	63.8	75.9	3.18	2.40	3.72	2.12	2.85
6	1	3.1	0.2	0.4	0.3	0.7	94.1	1.2	0.0	4.2	0.4	79.0	80.2	80.3	63.5	75.7	3.40	2.25	2.88	2.35	2.72
7	1	3.6	3.9	3.9	11.0	10.7	93.1	0.6	0.1	5.5	0.7	89.1	87.0	89.1	73.7	84.7	1.99	1.35	2.01	1.59	1.73
8	1	4.3	1.3	1.4	0.6	0.3	91.5	2.1	0.1	5.6	0.6	80.1	81.2	82.3	65.5	77.3	2.95	1.85	2.17	1.54	2.13
9	1	6.7	2.1	2.7	6.1	7.9	87.6	0.6	0.0	10.7	1.2	83.8	81.4	80.8	63.0	77.2	1.75	1.37	1.96	1.40	1.62
0	1	3.6	1.7	1.4	4.1	3.7	93.0	1.1	0.2	5.1	0.6	82.9	82.2	83.9	67.0	79.0	2.71	1.87	2.50	1.77	2.21

TABLE 18-4B-III - Egg Quality Data

1	2	1.7	1.7	1.8	18.3	14.3	96.7	0.9	0.2	2.0	0.2	88.4	82.9	74.9	60.0	76.6	2.05	1.23	1.69	1.80	1.69
2	2	3.4	0.2	0.7	0.1	0.7	93.2	2.1	0.3	3.8	0.6	89.4	83.9	79.7	61.8	78.7	3.14	1.42	1.83	1.91	2.07
3	2	2.4	0.8	0.4	0.5	0.7	94.8	2.6	0.2	2.4	0.0	89.2	79.5	76.4	65.8	77.7	3.31	1.77	2.28	2.56	2.48
4	2	2.6	0.3	1.0	0.1	0.4	94.3	2.0	0.4	3.1	0.1	90.4	81.9	77.6	66.5	79.1	3.10	1.77	2.26	2.20	2.33
5	2	1.4	0.4	0.6	0.9	1.0	96.7	1.3	0.5	1.5	0.0	89.1	82.2	74.9	60.4	76.6	3.65	1.63	2.31	1.74	2.33
6	2	3.5	0.5	0.3	0.4	0.5	92.6	2.3	0.1	4.7	0.3	85.3	79.7	77.1	62.1	76.1	3.18	2.26	2.21	2.01	2.41
7	2	1.9	0.6	1.3	10.6	10.0	96.2	0.5	0.2	2.9	0.2	94.9	83.6	81.9	68.6	82.2	1.83	1.08	1.56	1.54	1.50
8	2	3.9	0.4	0.3	0.0	0.7	92.4	1.4	0.3	5.1	0.8	86.2	79.5	75.0	60.9	75.4	2.94	1.65	1.96	1.39	1.98
9	2	4.7	0.3	1.5	11.9	11.8	90.9	1.6	0.8	5.5	1.2	88.1	79.2	73.2	57.6	74.5	1.69	1.15	1.40	1.60	1.46
0	2	2.8	0.6	0.9	4.8	4.5	94.2	1.6	0.3	3.4	0.4	89.0	81.4	76.7	62.6	77.5	2.77	1.55	1.94	1.86	2.02

TABLE 18-4 A & B -IV -- CAUSES OF MORTALITY

Entry Number	Type Housing	Marek's		Lymphoid Leukosis		Reproductive Disorders	Other		No Visible Lesions		No Necropsy Report		Total	
		Gro.	Lay	Gro.	Lay	Lay	Gro.	Lay	Gro.	Lay	Gro.	Lay	Gro.	Lay
A														
1	1	-	-	-	-	6.0	1.7	5.0	-	1.0	2.5	2.0	4.2	14.0
2	1	-	-	-	-	6.0	0.9	2.0	-	-	0.9	1.0	1.7	9.0
3	1	-	-	-	-	3.0	0.9	4.0	-	-	-	-	0.9	7.0
4	1	0.9	-	-	1.0	5.0	4.3	3.0	-	-	-	-	5.2	9.0
5	1	-	-	-	-	2.0	1.0	-	-	1.0	1.0	2.0	2.0	5.0
6	1	-	-	-	-	1.0	3.4	1.0	-	2.0	0.8	1.0	4.2	5.0
7	1	-	-	-	-	1.0	1.7	-	-	2.0	0.8	-	2.5	3.0
8	1	-	-	-	1.0	4.0	-	4.0	-	3.0	0.9	1.0	0.9	13.0
9	1	-	-	-	-	2.0	4.2	2.0	-	2.0	-	1.0	4.2	6.0
AV	1	0.1	0.0	0.0	0.2	3.3	2.0	2.3	0.0	1.1	0.8	0.9	2.9	7.9
B														
1	2	-	-	-	1.0	6.0	-	4.0	-	1.0	-	-	0.0	12.0
2	2	-	-	-	-	-	1.8	-	-	-	0.9	-	2.6	0.0
3	2	-	-	-	1.0	-	0.8	4.0	-	1.0	-	-	0.8	6.0
4	2	-	-	-	1.0	1.0	0.9	1.0	-	1.0	0.9	-	1.8	4.0
5	2	-	-	-	-	1.0	1.8	-	-	-	-	-	1.8	1.0
6	2	-	-	-	-	1.0	-	2.0	-	1.0	-	-	0.0	4.0
7	2	-	-	-	-	-	0.9	3.0	-	-	-	-	0.9	3.0
8	2	-	-	-	2.0	-	-	1.0	-	-	-	-	0.0	3.0
9	2	-	-	-	-	-	-	-	-	1.0	-	-	0.0	1.0
AV	2	0.0	0.0	0.0	0.6	1.0	0.7	1.7	0.0	0.6	0.2	0.0	0.9	3.8

TABLE 18-4C-I - Body Weight, Egg Size, Maturity and Production Rate

Entry No.	Type Housing	Breeder	Average Body Weight		% Egg Size, Distribution					Average Egg Wt. Oz./Doz.	Age at 50% Production	Egg Production Rate - %						Eggs Per Pullet Housed
			150 Days	500 Days	Pee Wee	Small	Medium	Large	Extra Large and Over			151-240 Days	241-330 Days	331-420 Days	421-500 Days	471-500 Days	After 50% Production	
1	3	Hubbard (Gld. Comet)	2.9	4.5	0.0	0.3	1.7	16.4	81.6	27.5	181.8	57.5	84.2	74.1	64.5	63.7	75.8	242.5
2	3	Shaver (288)	2.6	3.9	0.1	0.4	1.5	20.2	77.8	27.0	177.3	61.8	88.4	82.3	71.9	67.9	81.3	261.3
3	3	H & N (Nick Chick)	2.6	3.8	0.0	0.6	3.2	28.6	67.5	26.2	177.5	58.2	78.6	73.4	66.8	65.7	73.6	230.2
4	3	DeKalb (XL-Link)	2.9	4.0	0.1	0.8	3.5	26.6	69.0	26.6	174.5	62.9	82.3	77.7	67.9	65.0	76.8	240.8
5	3	Hy Line (W-36)	2.8	3.8	0.0	0.5	4.0	30.6	64.9	26.2	176.8	60.7	82.7	73.5	65.1	65.5	74.5	244.7
6	3	Babcock (B-300)	2.6	3.6	0.0	1.3	4.0	30.8	63.9	26.0	170.3	66.7	82.4	76.9	71.7	70.1	77.7	254.1
7	3	DeKalb (Amber Link)	3.0	5.0	0.0	0.4	1.4	15.8	82.4	27.2	183.0	51.8	88.5	80.8	74.1	72.0	81.1	256.7
8	3	Euribrid (Hisex Wh.)	2.6	3.7	0.1	1.6	5.7	33.0	59.5	25.7	171.5	67.9	85.0	80.0	73.2	70.6	80.2	263.1
9	3	Babcock (B-380)	3.2	5.0	0.0	0.1	0.6	12.8	86.6	28.1	179.5	62.1	88.9	79.9	69.3	65.6	81.0	258.3
0	3	Average	2.8	4.1	0.0	0.7	2.8	23.9	72.6	26.7	176.9	61.1	84.6	77.6	69.4	67.3	78.0	250.2

TABLE 18-4D-I - Body Weight, Egg Size, Maturity and Production Rate

1	0	Hubbard (Gld. Comet)	3.1	4.6	0.0	0.3	1.9	17.5	80.3	27.3	180.9	58.8	85.6	75.4	64.2	62.1	76.7	239.7
2	0	Shaver (288)	2.9	4.1	0.0	0.6	1.9	22.2	75.3	26.9	173.1	65.8	88.5	80.6	71.2	67.9	80.8	263.8
3	0	H & N (Nick Chick)	2.7	3.7	0.0	1.1	4.4	32.8	61.7	26.0	174.2	61.6	80.2	72.2	64.4	62.3	73.4	235.9
4	0	DeKalb (XL-Link)	2.9	4.1	0.1	0.9	3.5	29.4	66.2	26.3	174.8	62.4	85.1	79.8	67.2	62.9	77.8	248.0
5	0	Hy Line (W-36)	3.0	3.8	0.0	1.2	4.7	32.9	61.2	25.9	173.4	65.8	84.8	76.0	67.4	64.8	77.2	255.3
6	0	Babcock (B-300)	2.7	3.8	0.0	1.8	5.0	34.9	58.2	25.6	169.4	69.8	814.	74.3	67.1	65.6	75.8	251.7
7	0	DeKalb (Amber Link)	3.2	5.0	0.0	0.5	2.3	21.6	75.6	27.1	186.8	52.0	88.7	82.5	73.0	68.6	81.2	257.5
8	0	Euribrid (Hisex Wh.)	2.7	3.8	0.1	2.1	5.7	35.2	57.0	25.6	167.3	70.8	83.6	76.0	68.8	66.3	77.4	257.1
9	0	Babcock (B-380)	3.3	4.9	0.0	0.1	1.2	14.4	84.3	28.0	177.7	61.4	87.6	78.8	67.4	62.5	79.2	255.7
0	0	Average	2.9	4.2	0.0	1.0	3.4	26.8	68.9	26.5	175.3	63.2	85.1	77.3	67.9	64.8	77.7	251.6

TABLE 18-4C-II - Birds, Mortality, Feed Use, and Cost and Income Data

Entry No.	Type Housing	Number of Birds: At One Week	Number of Birds: Housed	Number of Birds: At End of Test	Mortality: % 8-150 Days	Mortality: % 151-500 Days	Mortality: Ave. Days Lost/ Hen Housed	Feed Consumed: Per Bird 1-150 Days	Feed Consumed: Per 100 Birds (One Day)	Feed Consumed: Per Pound of Eggs	Feed Consumed: Per Dozen Eggs	Chick Price	Value Per Pullet Housed: Growing Feed Cost	Value Per Pullet Housed: Laying Feed Cost	Value Per Pullet Housed: Total Feed and Chick Cost	Value Per Pullet Housed: Value of Eggs	Value Per Pullet Housed: Value of Meat	IOFCC
1	3	120	104	95	4.2	8.7	5.1	13.9	24.4	2.43	4.18	0.34	1.11	6.60	8.07	11.06	0.41	3.397
2	3	116	104	101	1.7	2.9	6.9	13.1	24.7	2.31	3.89	0.34	6.64	7.99	7.99	11.74	0.37	4.120
3	3	118	104	93	1.7	10.6	17.6	12.8	23.1	2.44	4.00	0.34	0.99	6.00	7.34	10.35	0.33	3.347
4	3	107	104	94	4.7	9.6	18.9	14.2	23.8	2.36	3.93	0.34	1.11	6.17	7.63	10.84	0.36	3.564
5	3	109	104	99	3.7	4.8	3.7	15.1	21.1	2.19	3.59	0.34	1.18	5.71	7.25	11.18	0.35	4.286
6	3	123	104	99	4.9	4.8	8.7	12.7	22.7	2.25	3.67	0.34	0.98	6.08	7.42	11.45	0.34	4.368
7	3	115	104	101	0.9	2.9	2.0	13.3	25.2	2.41	4.10	0.34	1.02	6.87	8.24	11.58	0.47	3.813
8	3	121	104	99	1.7	4.8	6.3	12.6	23.6	2.31	3.71	0.34	0.97	6.36	7.68	11.68	0.35	4.348
9	3	119	104	90	5.1	13.5	7.0	14.2	26.0	2.36	4.14	0.34	1.12	6.97	8.45	11.54	0.42	3.514
0	3	116	104	97	3.1	7.0	8.5	13.5	23.8	2.34	3.91	0.34	1.05	6.38	7.79	11.27	0.38	3.862

TABLE 18-4D-II - Birds, Mortality, Feed Use, and Cost and Income Data

1	0	399	335	293	2.8	11.9	13.4	14.5	24.9	2.46	4.21	0.34	1.10	6.56	8.02	11.00	0.40	3.380
2	0	387	336	322	2.0	4.0	6.1	13.5	25.1	2.35	3.95	0.34	1.05	6.77	8.16	11.87	0.39	4.093
3	0	392	336	311	1.1	7.9	11.9	13.1	22.8	2.43	3.94	0.34	1.01	6.05	7.41	10.66	0.33	3.581
4	0	381	336	312	3.9	7.5	13.9	14.1	23.8	2.36	3.89	0.34	1.09	6.27	7.71	11.18	0.37	3.833
5	0	365	336	325	2.5	3.6	3.6	14.9	22.0	2.21	3.58	0.34	1.17	5.95	7.47	11.68	0.36	4.578
6	0	395	335	319	3.0	4.6	6.8	13.4	22.9	2.34	3.76	0.34	1.03	6.15	7.54	11.31	0.35	4.124
7	0	391	336	326	1.4	3.0	2.2	14.0	25.4	2.44	4.14	0.34	1.08	6.92	8.35	11.64	0.48	3.776
8	0	385	336	311	0.9	6.9	7.2	13.3	23.7	2.38	3.81	0.34	1.02	6.36	7.72	11.42	0.35	4.055
9	0	399	336	317	3.1	6.8	4.6	14.3	25.9	2.39	4.19	0.34	1.11	6.99	8.45	11.35	0.45	3.347
0	0	388	336	315	2.3	6.2	7.7	13.9	24.1	2.37	3.94	0.34	1.07	6.45	7.86	11.35	0.39	3.863

TABLE 18-4C-III - Egg Quality Data

Entry No.	Type Housing	Loss % (Downgrades)	% Inclusion (Break-Out)				Candled Quality Percentages					Haugh Units					Shell Score (Specific Gravity)				
			Large Bloods	Small Bloods	Large Meats	Small Meats	A or Better	B	C Quality	Chex and Cracks	Loss Eggs	October	January	April	June	Average	November	February	May	July	Average
1	3	2.7	2.6	2.5	14.8	12.0	94.5	0.3	0.0	4.9	0.3	79.7	83.2	75.1	71.7	77.4	2.13	1.56	1.94	1.50	1.78
2	3	3.8	0.7	1.1	0.6	0.1	92.8	0.8	0.2	5.5	0.8	81.8	84.9	76.9	68.8	78.1	2.83	1.80	1.98	1.53	2.03
3	3	3.5	1.0	0.9	0.5	0.6	93.7	0.9	0.3	4.5	0.6	84.3	85.4	77.0	71.4	79.5	3.14	2.22	2.57	1.90	2.46
4	3	3.5	0.8	1.4	0.2	0.5	93.1	1.4	0.5	4.7	0.3	81.4	85.4	76.7	68.1	77.9	2.96	2.13	2.10	1.73	2.23
5	3	2.0	0.9	0.8	0.0	0.5	95.9	0.6	0.0	3.4	0.2	79.8	81.6	72.5	63.6	74.4	3.19	1.96	2.44	1.70	2.32
6	3	2.9	0.3	0.4	0.2	0.0	94.4	1.0	0.3	3.9	0.4	79.5	81.9	69.5	66.2	74.3	3.49	2.30	2.50	1.74	2.51
7	3	3.2	1.9	2.7	9.6	9.8	93.3	0.2	0.1	6.1	0.2	87.9	90.4	81.0	73.0	83.1	1.78	1.31	1.61	1.35	1.51
8	3	4.0	1.2	0.3	0.3	0.3	92.8	1.1	0.9	4.7	0.6	78.8	81.2	75.2	68.0	75.8	2.59	1.83	1.99	1.48	1.97
9	3	4.8	1.1	2.5	7.6	8.8	91.0	0.4	0.1	7.3	1.2	80.3	82.6	74.5	66.8	76.1	1.80	1.21	1.48	1.26	1.43
0	3	3.4	1.2	1.4	3.8	3.6	93.5	0.7	0.3	5.0	0.5	81.5	84.1	75.4	68.6	77.4	2.66	1.81	2.07	1.58	2.03

TABLE 18-4D-III - Egg Quality Data

1	0	2.3	3.2	2.0	17.0	12.9	95.4	0.6	0.1	3.6	0.3	84.1	82.8	78.0	66.1	77.7	2.19	1.45	2.03	1.64	1.83
2	0	3.7	0.5	0.8	0.3	0.3	92.8	1.4	0.3	4.9	0.7	84.5	83.9	80.4	66.4	78.8	2.95	1.70	2.00	1.66	2.08
3	0	3.1	0.9	0.7	0.4	0.4	93.9	1.7	0.6	3.5	0.2	86.0	82.9	80.4	69.4	79.7	3.16	2.11	2.56	2.17	2.50
4	0	3.4	0.6	1.0	0.2	0.5	93.2	1.8	0.5	4.2	0.4	84.6	83.4	80.2	67.2	78.8	2.95	1.92	2.22	1.90	2.25
5	0	1.5	0.7	0.7	0.3	0.5	96.7	0.6	0.2	2.3	0.2	83.3	80.7	75.9	62.6	75.6	3.34	2.00	2.82	1.85	2.50
6	0	3.1	0.3	0.4	0.3	0.4	93.7	1.5	0.1	4.3	0.4	81.3	80.6	75.7	63.9	75.4	3.36	2.27	2.53	2.03	2.55
7	0	2.9	2.1	2.6	10.4	10.2	94.2	0.4	0.1	4.9	0.4	90.7	87.0	84.0	71.7	83.3	1.87	1.25	1.73	1.49	1.58
8	0	4.1	1.0	0.7	0.3	0.4	92.2	1.5	0.4	5.1	0.7	81.7	80.6	77.5	64.8	76.2	2.83	1.78	2.04	1.47	2.03
9	0	5.4	1.2	2.2	8.5	9.5	89.8	0.9	0.3	7.8	1.2	84.0	81.1	76.2	62.5	75.9	1.74	1.24	1.61	1.42	1.50
0	0	3.3	1.2	1.2	4.2	3.9	93.5	1.2	0.3	4.5	0.5	84.5	82.6	78.7	65.8	78.1	2.71	1.75	2.17	1.74	2.09

TABLE 18-4 C & D - IV -- CAUSES OF MORTALITY

		Marek's		Lymphoid Leukosis		Reproductive Disorders	Other		No Visible Lesions		No Necropsy Report		Total	
		Gro.	Lay	Gro.	Lay	Lay	Gro.	Lay	Gro.	Lay	Gro.	Lay	Gro.	Lay
C														
1	3	-	-	-	-	-	2.5	4.8	-	2.9	1.7	1.0	4.2	8.7
2	3	-	-	-	1.0	1.9	0.9	-	-	-	0.8	-	1.7	2.9
3	3	-	-	-	1.0	3.8	0.9	2.9	-	2.9	0.9	-	1.7	10.6
4	3	-	-	-	2.9	2.9	2.8	2.9	-	1.0	1.9	-	4.7	9.6
5	3	-	-	-	1.0	1.0	2.7	1.9	-	1.0	0.9	-	3.7	4.8
6	3	-	-	-	-	1.9	2.5	2.9	0.8	-	1.6	-	4.9	4.8
7	3	-	-	-	1.0	-	0.9	1.0	-	1.0	-	-	0.9	2.9
8	3	-	-	-	1.9	1.9	0.8	1.0	-	-	0.8	-	1.7	4.8
9	3	-	-	-	-	3.8	4.2	1.0	-	8.6	0.8	-	5.1	13.5
AV	3	0.0	0.0	0.0	1.0	1.9	2.0	2.0	0.1	1.9	1.0	0.1	3.2	7.0
D														
1	0	-	-	-	0.3	4.0	1.4	4.6	-	1.6	1.4	1.0	2.8	11.6
2	0	-	-	-	0.3	2.6	1.2	0.7	-	-	0.9	0.3	2.0	4.0
3	0	-	-	-	0.7	2.3	0.8	3.6	-	1.3	0.3	-	1.1	7.9
4	0	0.3	-	-	1.6	3.0	2.6	2.3	-	0.6	0.9	-	3.9	7.5
5	0	-	-	-	0.3	1.3	1.8	0.6	-	0.6	0.6	0.7	2.5	3.6
6	0	-	-	-	-	1.3	2.0	2.0	0.3	1.0	0.8	0.3	3.0	4.6
7	0	-	-	-	0.3	0.3	1.1	1.3	-	1.0	0.3	-	1.4	3.0
8	0	-	-	-	1.6	2.0	0.3	2.0	-	1.0	0.6	0.3	0.9	6.9
9	0	-	-	-	-	2.0	2.8	1.0	-	3.6	0.3	0.3	3.1	6.8
AV	0	0.0	0.0	0.0	0.6	2.1	1.6	2.0	0.0	1.2	0.7	0.3	2.3	6.2

TABLE 18-4D-V - Commercial Egg Gradeout

Entry No.	Type Housing	35 WEEKS OLD - NOVEMBER						46 WEEKS OLD - FEBRUARY					
		% A	% B	% Breaker	% Crax	% Farm Loss	% Other Loss	% A	% B	% Breaker	% Crax	% Farm Loss	% Other Loss
1	0	91.0	0.1	0	4.8	0.7	3.4	91.0	0.3	0	5.1	1.0	2.6
2	0	92.3	0.2	0	5.5	0.6	1.3	84.8	1.5	0	7.9	2.2	3.6
3	0	96.1	0.1	0	2.0	1.1	0.6	91.0	1.2	0	4.4	1.0	2.5
4	0	94.7	0.3	0	4.2	0.2	0.5	85.4	1.3	0	7.8	0.6	4.9
5	0	95.2	0.2	0	2.7	1.1	0.8	92.4	1.2	0	3.8	1.0	1.5
6	0	94.6	0.3	0	3.8	0.5	0.8	89.6	1.2	0	6.6	1.5	1.2
7	0	91.8	0.2	0	4.0	1.4	2.6	87.8	0.1	0	8.5	1.2	2.4
8	0	92.6	0.1	0	4.0	1.3	1.9	85.0	2.8	0	7.8	2.4	2.0
9	0	81.5	0.8	0	10.2	2.0	5.5	77.9	1.4	0	11.3	2.1	7.4
0	0	92.2	0.3	0	4.6	1.0	1.9	87.2	1.2	0	7.0	1.4	3.1

		59 WEEKS OLD - MAY						70 WEEKS OLD - JULY					
1	0	86.4	0	0.3	5.4	2.7	5.2	89.5	0	1.0	6.6	0.5	2.4
2	0	85.5	0	0.7	9.0	1.5	3.2	79.6	0	3.9	9.8	2.0	4.7
3	0	86.3	0	1.2	8.7	0.3	3.5	81.0	0	3.2	9.8	0.8	5.1
4	0	77.8	0	2.1	9.3	2.4	8.3	82.4	0	3.5	8.7	0.6	4.8
5	0	88.2	0	0.6	4.8	3.9	2.5	87.1	0	2.3	6.9	0.2	3.5
6	0	85.7	0	0.4	8.6	1.7	3.6	85.2	0	3.7	8.9	0.5	1.8
7	0	88.5	0	0.4	6.1	1.3	3.7	87.4	0	0.6	6.4	1.1	4.5
8	0	84.9	0	1.1	9.0	1.4	3.6	77.1	0	3.5	10.3	2.5	6.6
9	0	79.2	0	0.7	11.0	1.8	7.2	77.9	0	1.2	7.6	1.4	11.9
0	0	84.7	0	0.8	8.0	1.9	4.5	83.0	0	2.5	8.3	1.1	5.0

TABLE 18-4D-VI - Duncan Range Test and Range Groups

Range	Entry	Eggs Per Pullet Housed	Duncan Test	Range	Entry	% Production After 50%	Duncan Test	Range	Entry	Feed Per Lb. of Eggs	Duncan Test	Range	Entry	Days Lost to Mortality	Duncan Test
1	2	263.8		1	7	81.2		1	5	2.21		1	7	2.2	
2	7	257.5		1	2	80.8		2	6	2.34		1	5	3.6	
2	8	257.1		2	9	79.2		2	2	2.35		1	9	4.6	
2	9	255.7		2	4	77.8		2	4	2.36		2	2	6.1	
2	5	255.3		3	8	77.4		3	8	2.38		2	6	6.8	
2	6	251.7		3	5	77.2		3	9	2.39		2	8	7.2	
3	4	248.0		3	1	76.7		4	3	2.43		4	3	11.9	
4	1	239.7		3	6	75.8		4	7	2.44		4	1	13.4	
4	3	235.9		4	3	73.4		4	1	2.46		4	4	13.9	

Breeder	Stock Identi-fication	Entry Cate-gory*	Source of Sample
Babcock Poultry Farm, Inc. Box 280 Ithaca, NY 14850	Babcock B-300F WL INX	I-A YES	Harrold's Hatchery P. O. Box 98 Winterville, GA 20683
Babcock Poultry Farm, Inc. Box 280 Ithaca, NY 14850	Babcock B-380 RIRxSYN IBX	I-A YES	Babcock Poultry Farm, Inc. Box 280 Ithaca, NY 14850
DeKalb AgResearch, Inc. Sycamore Road DeKalb, IL 60115	DeKalb XL-Link WL 4wSX	I-A YES	Hillcrest Hatchery Route 2, Box 163 Bogart, GA 30622
DeKalb AgResearch, Inc. Sycamore Road DeKalb, IL 60115	DeKalb Amber Link RIRxSYN BX	I-A YES	Hillcrest Hatchery Route 2, Box 163 Bogart, GA 30622
Euribrid B.U. by Pilch, Inc. Box 438 Troutman, NC 28166	Hisex White WL 4wSX	I-A YES	Chicks of Dixie, Inc. 260 Howard Street, N.E. Atlanta, GA 30317
H&N, Inc. Entry by Owens Hatchery, Inc. Box 125 Dahlonega, GA 30533	H&N "Nick Chick" WL 4wSX	I-A DIST.	Owens Hatchery, Inc. Box 125 Dahlonega, GA 30533
Hubbard Farms, Inc. Walpole, NH 03608	Hubbard Golden Comet NHxSYN BX	I-A YES	Hubbard Farms, Inc. Statesville, NC 28677
Hy-Line International 1206 Mulberry Des Moines, IO 50309	**Hy-Line W-36 INX	I-C NO	Not Applicable
Shaver Poultry Breeding Farms, Ltd. Box 400 Galt, Cambridge Ontario, NIR 5W6, CANADA	Starcross 288 WL SX	I-A YES	Delta Hatcheries Lake City, FL 32055

Eighteenth Test.

*Category I stocks have extensive distribution in North Carolina and adjacent states. A shows entry made by Breeder or Distributor. C shows stocks which were obtained by test management without formal entry request. YES indicates full cooperation of the Breeder including financial support, DIST. indicates that entry was made by the Distributor, and NO indicates that entry space was not requested by the producing organization.

**Hatching eggs for this stock were not available to the test at setting time. Sexed pullets were purchased when available and are 14 days younger than the other entries. Data are reported on all entries for the full 500-day test.