AGRICULTURAL
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North Carolina State University
School of Agriculture and Life Sciences

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October 21, 1980

I am enclosing the final summary of the Twenty-First 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 in New Hampshire 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. YES under category indicates full cooperation and financial support of the entry. Category I-A indicates voluntarily entered stocks with full cooperation by the breeder or distributor. Category II designates stocks lacking major distribution in North Carolina but enjoying commercial volume elsewhere and tested at the request of the breeder.

As in the previous flock, this flock had three reps of each stock in each of a curtain-side and a closed house that were phased fed and another three reps in each house that were fed to conform with feeding instructions provided by the breeder or distributor. Some specifications of the feeds used are listed in Table F. Feed consumption and egg production rate were calculated bi-weekly and needed changes in feed supplied to the birds were made. We apologize to Hubbard Farms for erroneously using a feeding program for the Hubbard Leghorn that oversupplied protein during the first 10 weeks and undersupplied it thereafter when compared to the program they recommended. (We are taking extra precautions this year to avoid a recurrence.)

All space not required for the laying test was utilized for cage shape and crowding research in the closed house and for feed restriction research in the open house. We express our appreciation to Chore Time Equipment, Inc., Swish Manufacturing Company, Babcock Poultry Farm, Inc., DeKalb AgResearch, Inc., Hubbard Farms, Pilch-Hisex, Shaver Poultry Breeding Farms, Ltd., and/or their distributors for providing the equipment and extra hatching eggs that made this research possible. Results are published elsewhere.

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,

Grady A. Martin

GRADY A. MARTIN
Extension Poultry Specialist

FINAL SUMMARY REPORT
TWENTY-FIRST NORTH CAROLINA RANDOM SAMPLE LAYING TEST
March 22, 1979 through July 30, 1980

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, P.O. Box 5307, Raleigh, North Carolina 27650, 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. Since no laying tests are now operating in the United States west of the Appalachian Mountain range, the Steering Committee of this test altered policy to permit a limited number of Category II stocks.

Data are presented in Tables 21-4A-I, II, III, and IV, 21-4C-I, II, III, and IV, and 21-4D-I, II, III, IV, V, and VI. Tables carrying the letters A and C in their numbers report performance data for birds housed @ 3 birds/12" X 16" cage in a light-and-air controlled house and housed @ 2 birds/10" X 18" cage in a curtain-side house, respectively. They are subdivided into sections for reps fed by breeder recommendations and for reps that were phased-fed as in prior tests. Tables carrying the letter D in their numbers report averages across the A and C tables. Due to the large number of items reported, each table is divided into parts I, II, etc. for the final report. Table 21-F lists selected specifications of feeds used for this flock. These data are for one year at one location. Other laying tests are conducted at Durhan, New Hampshire and Ottawa, Canada. Stock comparisons are available from each of the other tests.

INFORMATION CONCERNING DATA REPORTED

Samples of 1080 freshly gathered hatching eggs were taken at selected supply flocks, or by sampling from egg rooms when nest sampling was not feasible. Public employees in Agriculture supervised sample selection at cooperating hatcheries and sealed the cases for delivery to the test site where all eggs were incubated. Each entry had a maximum of 458 sexed pullets placed for brooding. Three groups of 60 birds each were grown in open (curtain-side) housing in 24" X 20" cages @ 24 sq. in./bird for 5 weeks and @ 56 sq. in./bird thereafter (65 and 28 brids/M^2). Two groups of 112 birds each were grown in a closed (light-and-air controlled) house in 24" X 20" cages @ 21 sq. in./bird for 5 weeks and @ 64 sq. in./bird thereafter (73 and 24 birds/M^2). Starting mash was fed at a rate of 2.5 lbs. per bird and then growing mash was fed ad lib until housing at 147 days or 5% production.

At 147 days, six reps of 26 birds each (when available) were randomly selected from pullets of each stock in the open house and placed in a similar house with two birds per 10" X 18" cage @ 90 sq. in. per bird (17 birds/M^2). At the same time six reps of 30 birds each (when available) were randomly selected from pullets of each stock in the closed house and placed in a similar house with three birds per 12" X 16" cage @ 64 sq. in. per bird (24 birds/M^2). Three reps in each house were assigned to the breeder-specified feeding program and the other three were placed on the regular phased-feeding program.

All-mash starting, growing, and six laying rations were purchased on contract from a commercial feed manufacturer to conform with selected specifications shown elsewhere in the report. Feed consumption and rate of production were calculated every 14 days during the laying period for blocks of layers having the same shell color and in the same house to guide formula assignment for phased-feeding. Similar data for the three reps of each stock in each house were used in following the breeders' feeding program.

All birds were vaccinated at day-old for Marek's with cell associated live turkey herpes virus vaccine. We express our appreciation to Dr. Bob Keenum, Keenum, Inc., P.O. Box 1706, Anniston, Alabama for providing this vaccine for the flock and to Larry Rose and Mike Williams of North Carolina State University, for supervising the administration of the vaccine. No mortality was attributable to Marek's during the growing or laying periods of this flock. All pullets were debeaked at between 6 and 10 days of age with touch-up at about 12 weeks for the few that needed it. All pullets were vaccinated for Newcastle at seven days (B1), four weeks (LaSota) and 16 weeks (LaSota) and for bronchitis at seven days and 16 weeks via water; vaccinated for pox via wing web at 12 weeks; and vaccinated for Avian encephalomyelitis at 16 weeks of age. The flock was monitored and remained negative for M.g. throughout the test. (The requirement for an M.g. clean supply source precluded some Category II stocks that might otherwise have been tested.)

We express our gratitude to Mr. Jim Arneson, Manager of the FCX egg processing plant at Charlotte for providing a grading service by entry and making Part V of the tables possible.

RESULTS
Part I of Tables

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

Type Housing: 1 = 3-bird cages in closed house, phased fed; 2 = 3-bird cages in closed house, fed by breeder's program; 3 = 2-bird cages in open house, phased fed; 4 = 2-bird cages in open house, fed by breeder's program; 0 = average of four 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 24 but less than 27 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 147 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 1979.

Values Per Pullet Housed. Weekly averages of Raleigh egg prices quoted by the Federal-State Market Service were adjusted to farm price and averaged over three years. Fowl prices in North Carolina for the week in which the test terminated were averaged over three years. Monthly feed prices quoted by the NCDA were averaged over three years and assumed to represent a 16% protein, 1300 Kcal./lb. feed. Prices of other feeds were adjusted up or down by an amount equal to the difference in ingredient prices at the middle of each quarter of the current year.

IOFCC is income over laying feed cost and growing chick and feed cost per pullet housed. 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 those of 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, since the eggs were graded unwashed.

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 on one day's production each quarter of the year. Since this factor undergoes seasonal change, the quarterly values 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, North Carolina. Percent Grade A or Better - jumbo, extra large, large, medium, small, and pee wee are consumer grades. % Breaker combines C quality, B quality, small inclusions, and stains which constitute breaker stock with sound shells and crax which 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 both types of housing and feed 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 21-4A-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
			147 Days	497 Days	Pee Wee	Small	Medium	Large	Extra Large and Over			148-231 Days	232-315 Days	316-399 Days	400-497 Days	456-497 Days	After 50% Production	
		Phased Feed																
1	1	H & N (PG-2)	2.8	3.9	0.2	0.2	18.0	43.1	38.5	25.0	166.0	72.7	84.1	74.1	66.8	65.7	77.9	246.2
2	1	Hubbard (Gld. Comet)	3.5	4.9	0.1	0.1	11.8	32.9	55.2	26.2	169.7	66.4	82.6	72.6	63.7	62.7	75.1	235.9
3	1	DeKalb (XL Link)	2.9	3.9	0.1	0.1	13.9	44.2	41.6	25.4	169.3	70.8	91.2	80.5	68.3	66.4	81.6	260.8
4	1	Euribrid (Hisex Wh.)	2.8	3.8	0.5	0.3	20.7	47.8	30.7	24.4	161.0	78.6	90.1	81.5	75.1	74.9	83.6	279.5
5	1	Hy-Line (W-36)	2.9	3.9	0.2	0.2	18.4	42.5	38.8	25.1	179.0	58.7	85.6	76.7	67.9	65.6	78.1	233.2
6	1	DeK. (S-S Link "G")	3.5	5.3	0.0	0.0	4.0	18.2	77.7	28.0	178.0	58.9	87.8	79.1	68.4	68.0	79.5	246.7
7	1	Babcock (B-380)	3.7	5.2	0.0	0.0	5.3	24.9	69.7	27.3	172.7	64.0	84.7	76.1	65.5	62.7	76.8	243.8
8	1	Babcock (B300V)	2.7	3.5	0.4	0.3	19.6	49.6	30.1	24.6	169.3	67.9	84.2	75.5	68.5	66.7	77.8	235.4
9	1	Haley (630)	3.0	4.3	0.2	0.1	13.6	40.0	46.2	25.6	168.0	67.0	84.0	75.0	65.9	64.8	76.6	231.4
10	1	Hubbard (Leghorn)	3.0	4.1	0.2	0.1	12.7	41.7	45.3	25.5	173.0	64.9	89.1	83.0	74.3	72.6	82.7	265.8
11	1	Colonial (365-S)	2.4	2.9	0.7	0.6	30.5	48.2	20.1	23.6	169.3	67.2	77.5	69.1	60.3	60.4	71.5	228.3
12	1	Shaver (288)	2.9	4.2	0.1	0.1	7.8	31.1	61.0	26.6	166.3	72.5	90.6	80.8	68.7	68.4	81.7	263.7
0	1	Average	3.0	4.2	0.2	0.2	14.7	38.7	46.2	25.6	170.2	67.5	86.0	77.0	67.8	66.6	78.6	247.6
		Breeders Prog. Feed																
1	2	H & N (PG-2)	2.9	3.7	0.3	0.1	19.2	41.5	38.9	25.2	165.0	72.4	84.8	75.8	65.7	65.7	77.9	242.8
2	2	Hubbard (Gld. Comet)	3.5	4.9	0.1	0.1	12.3	33.6	53.8	26.3	169.7	67.5	84.8	73.6	65.7	63.8	77.1	232.0
3	2	DeKalb (XL Link)	3.0	3.9	0.2	0.3	16.2	44.9	38.5	25.1	169.3	70.2	88.6	82.2	68.5	66.8	81.3	253.4
4	2	Euribrid (Hixes Wh.)	2.8	3.8	0.7	0.4	21.2	46.0	31.7	24.4	161.3	77.5	88.7	81.7	76.3	76.2	83.5	272.8
5	2	Hy-Line (W-36)	2.9	4.0	0.1	0.0	19.2	42.9	37.9	25.1	180.0	59.1	83.8	74.4	65.9	64.9	76.7	233.4
6	2	DeK. (S-S Link "G")	3.4	5.4	0.0	0.0	5.0	20.6	74.4	27.6	178.0	58.2	84.8	77.3	66.2	62.9	77.7	236.6
7	2	Babcock (B-380)	3.7	5.0	0.0	0.0	5.8	23.3	70.9	27.3	169.0	69.4	85.9	76.3	67.2	66.0	78.4	254.3
8	2	Babcock (B300V)	2.7	3.9	0.4	0.2	19.8	45.4	34.2	24.8	172.7	66.0	81.0	72.2	64.9	64.3	74.9	235.0
9	2	Haley (630)	3.0	4.3	0.2	0.1	13.9	44.3	41.4	25.2	169.3	69.4	85.7	74.1	66.4	65.5	77.4	244.8
10	2	Hubbard (Leghorn)	3.0	4.2	0.2	0.3	16.1	42.7	40.7	25.2	171.7	67.7	87.6	81.1	72.8	72.3	81.7	262.9
11	2	Colonial (365-S)	2.4	3.1	0.7	0.5	28.1	47.9	22.9	23.8	169.0	68.3	78.3	69.9	61.6	60.8	72.0	236.2
12	2	Shaver (288)	3.1	4.4	0.1	0.1	7.7	33.1	59.0	26.3	166.3	74.7	91.5	81.9	72.5	72.9	83.8	269.1
0	2	Average	3.0	4.2	0.2	0.2	15.4	38.9	45.4	25.5	170.1	68.4	85.5	76.7	67.8	66.8	78.5	247.8

TABLE 21-4C-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
			147 Days	497 Days	Pee Wee	Small	Medium	Large	Extra Large and Over			148-231 Days	232-315 Days	316-399 Days	400-497 Days	456-497 Days	After 50% Production	
		Phased Feed																
1	3	H & N (PG-2)	3.1	4.0	0.4	0.3	13.3	38.3	47.7	25.9	157.3	82.1	86.5	79.5	72.9	67.4	81.4	275.6
2	3	Hubbard (Gld. Comet)	3.6	5.0	0.1	0.1	6.5	22.9	70.5	27.5	165.3	68.5	82.0	72.7	67.9	65.7	75.4	248.6
3	3	DeKalb (XL Link)	3.1	4.1	0.3	0.6	9.4	35.6	54.0	26.5	165.7	72.8	84.1	78.1	75.4	74.3	80.6	257.3
4	3	Euribrid (Hisex Wh.)	3.1	3.8	1.3	0.6	19.3	43.8	35.1	24.9	152.0	85.0	82.5	7.40	72.6	72.1	78.1	272.2
5	3	Hy-Line (W-36)	3.1	4.0	0.4	0.4	18.9	35.8	44.5	25.8	174.7	66.0	79.2	70.9	68.4	64.7	74.4	223.8
6	3	DeK. (S-S Link "G")	3.5	5.1	0.0	0.0	2.8	16.4	80.7	28.4	176.0	55.8	81.7	73.4	64.5	63.1	73.8	235.9
7	3	Babcock (B-380)	4.1	5.1	0.0	0.4	5.2	19.3	75.0	27.7	161.3	75.0	83.8	73.4	68.2	65.7	77.0	261.8
8	3	Babcock (B300V)	3.0	4.0	0.7	0.5	13.9	34.6	50.2	26.0	161.0	78.0	81.1	73.4	67.4	65.1	76.0	242.8
9	3	Haley (630)	3.3	4.2	0.2	0.1	11.8	34.3	53.6	26.3	161.7	73.6	81.3	74.8	68.5	67.0	76.4	243.3
10	3	Hubbard (Leghorn)	3.2	4.1	0.7	0.3	14.4	34.6	50.0	25.8	159.0	74.2	83.5	77.2	73.3	71.6	78.5	257.3
11	3	Colonial (365-S)	2.6	3.0	1.1	0.7	22.1	44.9	31.2	25.1	157.3	76.3	72.0	62.7	58.9	58.2	68.1	221.2
12	3	Shaver (288)	2.9	4.5	0.0	0.0	7.3	26.7	65.9	27.1	165.0	72.4	86.8	77.8	72.9	66.2	80.4	262.7
0	3	Average	3.2	4.2	0.4	0.4	12.1	32.3	54.9	26.4	163.0	73.3	82.1	74.0	69.2	66.8	76.7	250.2
		Breeders Prog. Feed																
1	4	H & N (PG-2)	3.1	4.0	0.4	0.3	11.8	34.5	53.0	26.0	160.7	80.4	84.9	78.5	74.1	71.6	81.3	265.5
2	4	Hubbard (Gld. Comet)	3.6	4.9	0.1	0.1	6.9	28.7	64.2	27.2	167.7	69.6	84.6	75.8	65.6	62.6	76.8	249.3
3	4	DeKalb (XL Link)	3.2	4.1	0.3	0.3	12.3	36.4	50.7	26.3	165.0	73.1	84.2	74.6	70.8	67.1	78.2	250.7
4	4	Euribrid (Hisex Wh.)	3.0	3.8	1.3	0.7	17.3	39.8	40.9	25.3	152.3	83.1	82.9	76.0	72.1	69.7	78.3	259.6
5	4	Hy-Line (W-36)	3.0	3.9	0.2	0.3	18.5	34.5	46.4	25.8	173.0	60.9	79.0	69.2	60.9	55.4	71.5	204.6
6	4	DeK. (S-S Link "G")	3.4	4.9	0.0	0.0	4.1	17.6	78.3	28.2	177.3	57.0	85.0	75.0	66.8	62.4	76.5	247.3
7	4	Babcock (B-380)	4.1	5.0	0.0	0.1	4.9	18.5	76.5	28.0	164.0	74.4	83.4	73.1	69.0	66.1	76.9	261.0
8	4	Babcock (B300V)	3.0	3.8	0.8	0.5	12.6	36.4	49.7	26.0	159.3	75.5	81.7	73.7	70.8	69.9	77.0	246.2
9	4	Haley (630)	3.3	4.4	0.4	0.2	11.3	35.0	53.0	26.3	161.7	73.9	81.0	73.2	67.1	64.1	75.7	239.8
10	4	Hubbard (Leghorn)	3.2	4.0	0.6	0.3	11.9	37.0	50.1	26.2	165.7	72.8	81.6	71.2	71.5	71.2	76.3	255.1
11	4	Colonial	2.6	3.0	0.8	0.5	20.8	43.5	34.4	25.1	156.3	76.0	76.1	66.7	59.7	56.9	70.0	233.6
12	4	Shaver (288)	3.0	4.0	0.0	0.1	6.1	22.2	71.5	27.4	168.7	71.8	84.5	76.3	76.8	75.4	80.6	265.6
0	4	Average	3.2	4.2	0.4	0.3	11.5	32.0	55.7	26.5	164.3	72.4	82.4	73.6	68.8	66.0	76.6	248.2

TABLE 21-4D-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
			147 Days	497 Days	Pee Wee	Small	Medium	Large	Extra Large and Over			148-231 Days	232-315 Days	316-399 Days	400-497 Days	456-497 Days	After 50% Production	
		4 Treatment Means																
1	0	H & N (PG-2)	3.0	3.9	0.3	0.2	15.6	39.4	44.5	25.5	162.2	76.9	85.1	77.0	69.9	67.6	79.6	257.5
2	0	Hubbard (Gld. Comet)	3.5	4.9	0.1	0.1	9.4	29.5	60.9	26.8	168.1	68.0	83.5	73.7	65.7	63.7	76.1	241.5
3	0	DeKalb (XL Link)	3.1	4.0	0.2	0.3	13.0	40.0	36.2	25.8	167.3	71.7	87.0	78.8	70.8	68.7	80.4	255.6
4	0	Euribrid (Hisex Wh.)	2.9	3.8	0.9	0.5	19.6	44.4	34.6	24.7	156.7	81.1	86.0	78.3	74.0	73.2	80.9	271.0
5	0	Hy-Line (W-36)	3.0	4.0	0.2	0.3	18.7	38.9	41.9	25.4	176.7	61.2	81.9	72.8	65.8	62.6	75.2	223.8
6	0	DeK. (S-S Link "G")	3.4	5.2	0.0	0.0	4.0	18.2	77.8	28.0	177.3	57.5	84.8	76.2	66.5	64.1	76.9	241.6
7	0	Babcock (B-380)	3.9	5.1	0.0	0.1	5.3	21.5	73.0	27.6	166.7	70.7	84.4	74.8	67.5	65.1	77.3	255.2
8	0	Babcock (B300V)	2.9	3.8	0.6	0.4	16.5	41.5	41.1	25.4	165.6	71.9	82.0	73.7	67.9	66.5	76.5	239.9
9	0	Haley (63)	3.1	4.3	0.2	0.2	12.7	38.4	48.6	25.9	165.2	71.0	83.0	74.2	67.0	65.3	76.5	239.8
10	0	Hubbard (Leghorn)	3.1	4.1	0.4	0.3	13.8	39.0	46.5	25.7	167.4	69.9	85.5	78.1	73.0	71.9	79.8	260.3
11	0	Colonial (365-S)	2.5	3.0	0.8	0.6	25.4	46.1	27.2	24.4	163.0	71.9	76.0	67.1	60.3	59.1	70.4	229.8
12	0	Shaver (288)	3.0	4.3	0.1	0.1	7.2	28.3	64.3	26.9	166.6	72.9	88.4	79.2	72.7	70.7	81.6	265.3
0	0	Average	3.1	4.2	0.3	0.2	13.4	35.5	50.6	26.0	166.9	70.4	84.0	75.3	68.4	66.6	77.6	248.4

TABLE 21-4D-II. Birds, Mortality, Feed Use, and Cost and Income Data

Entry No.	Type Housing	Number of Birds			Mortality			Feed Consumed				Chick Price	Value Per Pullet Housed					IOFCC
		At One Week	Housed	At End of Test	% 8-147 Days	% 148-497 Days	Ave. Days Lost/ Hen Housed	Per Bird 1-147 Days	Per 100 Birds (One Day)	Per Pound of Eggs	Per Dozen Eggs		Growing Feed Cost	Laying Feed Cost	Total Feed and Chick Cost	Value of Eggs	Value of Meat	
	4 Treatment Means																	
1	0	344	335	295	2.3	11.9	15.9	12.7	24.2	2.41	3.85	0.36	1.64	6.71	8.35	10.89	0.39	2.934
2	0	344	336	301	2.4	10.1	17.0	13.4	25.5	2.51	4.21	0.36	1.71	6.89	8.60	10.47	0.50	2.369
3	0	339	336	306	0.8	8.9	17.5	12.6	23.8	2.34	3.78	0.36	1.62	6.54	8.16	10.77	0.42	3.025
4	0	342	336	315	1.7	6.3	9.9	12.6	24.3	2.38	3.68	0.36	1.62	6.73	8.35	11.15	0.40	3.203
5	0	348	335	279	3.0	17.2	31.3	12.3	22.3	2.44	3.89	0.36	1.60	5.88	7.48	9.65	0.37	2.541
6	0	345	336	316	2.0	5.7	9.7	13.2	26.5	2.59	4.54	0.36	1.69	7.43	9.13	10.42	0.55	1.842
7	0	348	336	324	3.7	3.4	5.4	14.2	26.1	2.51	4.33	0.36	1.79	7.49	9.29	10.78	0.56	2.048
8	0	343	336	295	1.8	12.2	24.1	11.7	23.0	2.42	3.83	0.36	1.54	6.23	7.77	10.25	0.38	2.867
9	0	341	336	298	1.3	11.3	24.3	12.5	24.1	2.48	4.02	0.36	1.61	6.50	8.12	10.02	0.43	2.329
10	0	348	336	318	3.2	5.4	9.5	12.7	25.2	2.46	3.96	0.36	1.65	6.97	8.62	10.87	0.44	2.667
11	0	340	336	305	1.0	9.2	15.2	11.4	19.9	2.28	3.47	0.36	1.51	5.39	6.90	9.64	0.31	3.056
12	0	341	335	315	1.3	5.9	10.2	12.2	25.0	2.35	3.95	0.36	1.59	7.09	8.68	11.11	0.46	2.890
0	0	344	336	306	2.0	9.0	15.8	12.6	24.2	2.43	3.96	0.36	1.63	6.65	8.29	10.50	0.43	2.648

TABLE 21-4A-II. Birds, Mortality, Feed Use, and Cost and Income Data

		Number of Birds			Mortality			Feed Consumed					Value Per Pullet Housed					
Entry No.	Type Housing	At One Week	Housed	At End of Test	%8-147 Days	% 148-497 Days	Ave. Days Lost/Hen Hsd.	Per Bird 1-147 Days	Per 100 Birds (One Day)	Per Lb. of Eggs	Per Dozen Eggs	Chick Price	Growing Feed Cost	Laying Feed Cost	Total Feed & Chick Cost	Value of Eggs	Value of Meat	IOFCC
	Phased Feed																	
1	1	91	91	78	0.6	13.3	19.1	12.1	21.7	2.35	3.67	0.36	1.58	6.11	7.69	10.51	0.38	3.201
2	1	90	90	79	0.9	12.2	18.3	12.8	24.7	2.50	4.09	0.36	1.65	6.55	8.20	10.27	0.49	2.562
3	1	91	90	84	1.0	6.7	13.2	12.2	22.7	2.28	3.62	0.36	1.58	6.41	7.99	11.11	0.42	3.542
4	1	90	90	87	0.6	3.3	5.4	12.1	24.0	2.35	3.58	0.36	1.57	6.79	8.36	11.67	0.42	3.727
5	1	92	90	80	2.4	11.1	25.5	11.7	22.1	2.35	3.69	0.36	1.54	5.85	7.39	10.18	0.39	3.184
6	1	90	90	82	0.6	8.9	13.4	13.1	27.9	2.59	4.53	0.36	1.67	7.59	9.27	10.62	0.55	1.904
7	1	90	90	84	0.5	6.7	12.4	12.8	25.4	2.54	4.34	0.36	1.64	7.18	8.82	10.25	0.54	1.978
8	1	93	90	77	2.6	14.4	30.5	11.2	21.7	2.36	3.63	0.36	1.49	5.80	7.29	10.14	0.34	3.188
9	1	90	90	77	0.6	14.4	32.1	12.0	24.1	2.51	4.01	0.36	1.56	6.27	7.84	9.62	0.42	2.196
10	1	93	90	87	2.3	3.3	7.9	12.3	25.0	2.38	3.80	0.36	1.60	6.86	8.46	11.37	0.45	3.354
11	1	91	90	80	1.3	11.1	16.2	10.7	18.6	2.22	3.28	0.36	1.43	5.07	6.50	9.66	0.29	3.446
12	1	91	89	84	1.8	5.6	11.1	12.3	24.4	2.32	3.85	0.36	1.60	6.90	8.50	11.11	0.45	3.064
0	1	91	90	82	1.3	9.3	17.1	12.1	23.5	2.40	3.84	0.36	1.58	6.45	8.03	10.54	0.43	2.946
	Breeders Program Feed																	
1	2	90	90	78	0.3	13.3	23.6	12.0	24.4	2.50	3.93	0.36	1.57	6.48	8.05	10.39	0.36	2.702
2	2	91	90	76	0.9	15.6	30.8	12.9	24.9	2.45	4.03	0.36	1.63	6.33	7.98	10.08	0.47	2.562
3	2	91	90	80	1.0	11.1	20.8	12.0	22.5	2.29	3.59	0.36	1.57	6.16	7.73	10.77	0.39	3.433
4	2	91	90	84	0.6	6.7	12.6	12.0	24.3	2.35	3.58	0.36	1.57	6.62	8.19	11.51	0.41	3.722
5	2	93	90	80	1.0	11.1	19.1	11.8	21.7	2.41	3.78	0.36	1.55	5.99	7.54	10.11	0.40	2.971
6	2	91	90	81	0.6	10.0	18.5	13.1	25.6	2.53	4.37	0.36	1.67	7.00	8.68	10.30	0.55	2.176
7	2	90	90	86	0.3	4.4	8.5	12.9	25.5	2.46	4.20	0.36	1.65	7.25	8.90	10.84	0.55	2.485
8	2	91	90	80	1.3	11.1	17.7	11.5	21.6	2.45	3.80	0.36	1.52	6.06	7.58	10.15	0.40	2.960
9	2	92	90	82	1.3	8.9	17.6	12.1	22.9	2.40	3.79	0.36	1.57	6.29	7.86	10.31	0.44	2.883
10	2	92	90	84	2.6	6.7	9.0	12.4	24.6	2.46	3.86	0.36	1.61	6.89	8.50	11.09	0.45	3.042
11	2	91	90	82	0.6	8.9	9.8	10.7	18.8	2.19	3.25	0.36	1.44	5.22	6.65	10.08	0.32	3.746
12	2	92	90	83	1.2	7.8	13.2	12.4	24.4	2.30	3.79	0.36	1.60	6.92	8.52	11.56	0.46	3.495
0	2	91	90	81	1.0	9.6	16.8	12.2	23.4	2.40	3.83	0.36	1.58	6.43	8.02	10.60	0.43	3.015

TABLE 21-4C-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: % 8-147 Days	Mortality: % 148-497 Days	Mortality: Ave. Days Lost/Hen Hsd.	Feed Consumed: Per Bird 1-147 Days	Feed Consumed: Per 100 Birds (One Day)	Feed Consumed: Per Lb. 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 & Chick Cost	Value Per Pullet Housed: Value of Eggs	Value Per Pullet Housed: Value of Meat	IOFCC
	Phased Feed																	
1	3	81	78	74	4.1	5.1	5.7	13.3	24.6	2.36	3.82	0.36	1.71	7.12	8.81	11.74	0.43	3.362
2	3	82	78	73	4.0	6.4	7.7	14.0	26.7	2.56	4.41	0.36	1.78	7.43	9.20	10.71	0.53	2.029
3	3	78	78	70	0.6	10.3	18.3	13.0	25.4	2.38	3.94	0.36	1.67	6.85	8.51	10.82	0.42	2.719
4	3	82	78	75	2.8	3.8	2.3	13.1	24.1	2.40	3.74	0.36	1.68	6.83	8.50	10.94	0.42	2.855
5	3	81	77	55	3.9	28.5	35.3	12.8	23.4	2.43	3.92	0.36	1.66	5.91	7.57	9.40	0.33	2.160
6	3	82	78	76	2.3	2.6	6.3	13.4	26.6	2.69	4.77	0.36	1.72	7.62	9.33	10.20	0.57	1.429
7	3	84	78	77	7.2	1.3	0.2	15.5	26.6	2.54	4.41	0.36	1.94	7.80	9.75	11.13	0.57	1.951
8	3	80	78	69	1.6	11.5	25.6	12.0	24.6	2.45	3.99	0.36	1.57	6.55	8.12	10.23	0.41	2.518
9	3	79	78	71	1.7	9.0	23.4	12.9	24.8	2.47	4.06	0.36	1.66	6.66	8.31	10.23	0.43	2.344
10	3	82	78	72	4.1	7.7	15.8	13.1	25.8	2.50	4.03	0.36	1.69	7.01	8.70	10.47	0.42	2.188
11	3	78	78	69	1.1	11.5	21.9	12.2	21.1	2.39	3.74	0.36	1.58	5.58	7.16	9.17	0.30	2.312
12	3	79	78	73	1.0	6.4	9.9	12.1	25.0	2.36	4.00	0.36	1.57	7.11	8.69	10.94	0.47	2.729
0	3	81	78	71	2.9	8.7	14.4	13.1	24.9	2.46	4.07	0.36	1.69	6.87	8.56	10.50	0.44	2.383
	Breeders Program Feed																	
1	4	82	77	65	4.1	15.9	15.1	13.3	26.1	2.45	3.98	0.36	1.71	7.15	8.84	10.93	0.38	2.470
2	4	81	78	73	4.0	6.4	11.3	14.0	25.8	2.53	4.29	0.36	1.78	7.24	9.02	10.81	0.53	2.323
3	4	79	78	72	0.6	7.7	17.9	13.0	24.8	2.42	3.97	0.36	1.67	6.73	8.40	10.37	0.43	2.406
4	4	79	78	69	2.8	11.5	19.3	13.1	24.9	2.42	3.84	0.36	1.68	6.69	8.36	10.50	0.38	2.509
5	4	82	78	64	4.6	17.9	45.5	12.8	22.2	2.58	4.16	0.36	1.66	5.75	7.42	8.90	0.36	1.847
6	4	82	78	77	4.5	1.3	0.6	13.4	25.9	2.54	4.49	0.36	1.72	7.52	9.24	10.55	0.55	1.857
7	4	84	78	77	6.8	1.3	0.7	15.5	26.9	2.51	4.38	0.36	1.94	7.75	9.68	10.90	0.56	1.778
8	4	79	78	69	1.6	11.5	22.9	12.0	24.2	2.40	3.91	0.36	1.57	6.50	8.07	10.49	0.39	2.802
9	4	80	78	68	1.7	12.8	24.2	12.9	24.7	2.55	4.20	0.36	1.66	6.80	8.46	9.92	0.43	1.891
10	4	81	78	75	4.1	3.8	5.8	13.1	25.5	2.52	4.13	0.36	1.69	7.13	8.82	10.46	0.44	2.085
11	4	80	78	74	1.1	5.1	12.8	12.2	21.2	2.30	3.62	0.36	1.58	5.70	7.28	9.67	0.33	2.718
12	4	79	78	75	1.0	3.8	6.6	12.1	26.2	2.41	4.13	0.36	1.57	7.43	9.01	10.84	0.44	2.274
0	4	81	78	71	3.1	8.3	15.2	13.1	24.9	2.47	4.09	0.36	1.68	6.87	8.55	10.36	0.43	2.247

TABLE 21-4A-III. Egg Quality Data

Entry No.	Type Housing	% Inclusion (Breakout)					% Candled Quality					Haugh Units					Shell Score (Specific Gravity)				
		Loss % (Downgrades)	Large Bloods	Small Bloods	Large Meats	Small Meats	A or Better	B	C Quality	Chex and Cracks	Loss Eggs	October	January	March	June	Average	November	January	March	July	Average
	Phased Feed																				
1	1	3.4	1.2	0.7	0.8	0.4	95.5	1.6	0.7	1.9	0.3	81.8	80.2	82.6	73.5	79.5	3.65	2.70	1.99	1.22	2.39
2	1	2.2	1.7	3.7	20.9	9.6	97.3	0.0	0.0	2.2	0.5	81.1	78.2	86.9	73.7	80.0	2.23	1.86	1.80	1.08	1.74
3	1	4.2	1.3	0.6	1.7	0.2	94.7	1.0	0.2	3.2	0.8	78.1	78.2	80.9	70.3	76.9	3.10	2.17	1.71	1.25	2.06
4	1	4.6	1.0	0.9	0.9	0.5	94.2	1.2	0.6	2.6	1.4	78.0	78.9	81.4	75.8	78.5	3.29	2.31	1.62	1.21	2.11
5	1	1.2	1.4	1.4	0.1	0.3	98.4	0.3	0.0	1.1	0.3	74.2	75.9	79.5	68.2	74.5	3.32	2.56	2.08	1.14	2.27
6	1	4.3	3.6	1.5	11.7	8.0	94.8	0.4	0.0	3.2	1.5	86.2	82.5	81.6	72.4	80.7	1.56	1.54	1.27	1.05	1.36
7	1	6.1	1.1	0.8	11.4	11.9	92.6	0.1	0.3	5.0	2.0	80.7	81.0	86.6	75.2	80.9	1.69	1.67	1.36	1.04	1.44
8	1	2.0	0.9	1.0	0.0	0.3	97.4	0.7	0.0	1.5	0.5	81.2	76.9	80.5	71.7	77.6	4.39	2.73	2.11	1.34	2.64
9	1	6.7	2.5	2.9	0.0	0.6	91.8	2.1	0.1	4.4	1.7	80.6	79.0	83.4	72.8	78.9	3.01	2.24	1.81	1.09	2.04
10	1	3.4	1.8	1.7	0.1	0.4	95.8	0.7	0.0	3.0	0.6	79.4	78.5	79.6	70.1	76.9	3.05	2.13	1.61	1.12	1.98
11	1	2.4	0.7	1.0	0.5	0.6	96.5	1.8	0.3	0.7	0.5	81.8	76.7	78.1	67.6	76.1	3.69	2.21	1.54	1.11	2.14
12	1	5.9	1.2	0.6	0.8	0.6	92.3	2.1	0.4	4.4	0.9	79.9	83.0	83.1	73.5	79.9	3.06	2.18	1.70	1.29	2.06
0	1	3.9	1.5	1.4	4.1	2.8	95.1	1.0	0.2	2.8	0.9	80.2	79.1	82.0	72.1	78.4	3.00	2.19	1.72	1.16	2.02
	Breeders Program Feed																				
1	2	3.1	1.1	0.4	0.7	0.4	95.7	1.0	0.4	1.8	0.7	83.1	79.3	83.8	74.4	80.1	3.79	2.64	2.41	1.03	2.47
2	2	2.4	2.7	2.5	16.1	12.5	97.3	0.1	0.2	2.0	0.5	79.3	77.0	80.1	72.5	77.2	2.54	1.81	1.45	1.19	1.75
3	2	4.0	1.0	0.6	0.8	0.5	94.8	1.2	0.1	3.2	0.6	78.9	80.0	84.6	71.6	78.8	2.72	2.34	2.01	1.14	2.05
4	2	3.2	0.3	0.6	0.3	0.2	95.7	0.7	0.3	2.8	0.5	77.8	77.5	82.2	71.0	77.1	3.11	2.43	1.85	1.19	2.14
5	2	2.1	0.3	0.7	0.8	0.3	97.5	0.0	0.0	1.7	0.8	77.3	74.4	79.7	68.0	74.9	3.44	2.50	1.97	1.10	2.25
6	2	3.2	2.1	1.1	14.4	9.3	96.2	0.0	0.0	3.1	0.8	83.4	82.2	83.3	76.9	81.5	2.03	1.43	1.31	1.03	1.45
7	2	4.9	1.3	2.2	12.1	10.9	94.1	0.4	0.1	4.1	1.3	82.2	81.8	83.3	72.4	79.9	2.00	1.59	1.43	1.00	1.51
8	2	1.8	1.2	0.5	0.1	0.3	97.6	0.4	0.0	1.4	0.5	77.0	75.5	81.8	70.8	76.3	4.37	3.14	2.43	1.49	2.86
9	2	5.2	1.4	1.2	0.5	0.8	93.7	1.7	0.4	2.1	2.0	80.7	82.3	83.3	78.2	81.1	2.96	2.11	2.00	1.23	2.08
10	2	4.4	3.1	1.1	0.5	0.1	94.7	0.9	0.2	3.0	1.3	82.0	76.9	80.6	72.0	77.9	2.86	2.16	1.66	1.07	1.94
11	2	1.8	0.8	1.0	0.4	0.1	97.7	0.7	0.1	1.3	0.3	78.5	78.1	82.7	87.3	81.6	3.19	2.50	1.50	1.18	2.09
12	2	4.1	1.0	0.9	0.1	0.2	94.8	1.4	0.0	3.4	0.5	80.4	83.1	85.6	75.9	81.3	2.90	2.34	1.73	1.16	2.03
0	2	3.3	1.4	1.1	3.9	3.0	95.8	0.7	0.2	2.5	0.8	80.1	79.0	82.6	74.3	79.0	2.99	2.25	1.81	1.15	2.05

TABLE 21-4C-III. Egg Quality Data

Entry No.	Type Housing	% Inclusion (Breakout)					% Candled Quality					Haugh Units					Shell Score (Specific Gravity)				
		Loss % (Downgrades)	Large Bloods	Small Bloods	Large Meats	Small Meats	A or Better	B	C Quality	Chex and Cracks	Loss Eggs	October	January	March	June	Average	November	January	March	July	Average
	Phased Feed																				
1	3	3.4	0.9	0.5	0.5	0.7	95.5	1.9	0.5	1.9	0.3	80.3	89.9	88.4	72.8	82.9	4.26	3.27	2.93	1.78	3.06
2	3	3.7	2.5	2.5	17.9	10.2	95.2	0.4	0.0	4.1	0.3	81.7	81.9	86.9	70.1	80.2	2.96	2.08	1.59	1.45	2.02
3	3	5.1	1.2	0.6	0.3	0.4	93.1	1.4	0.4	4.7	0.3	82.8	87.0	91.2	73.4	83.6	4.27	2.33	2.30	1.33	2.56
4	3	7.2	1.2	0.6	0.4	0.7	90.8	1.3	0.7	5.8	1.3	79.0	82.3	86.0	69.6	79.2	4.01	2.66	2.25	1.38	2.57
5	3	4.2	0.5	0.5	0.4	0.4	94.2	0.8	0.2	4.3	0.3	77.7	81.3	85.5	63.6	77.0	4.24	2.84	2.47	1.63	2.79
6	3	3.7	2.5	2.8	11.2	8.3	95.3	0.6	0.3	2.8	1.0	86.5	86.8	88.7	68.3	82.6	2.53	1.61	1.55	1.14	1.71
7	3	4.7	2.4	1.2	9.6	8.8	93.9	0.3	0.0	5.1	0.8	81.9	82.4	84.2	67.7	79.0	2.82	1.82	1.51	1.16	1.83
8	3	4.2	2.9	1.7	0.5	1.3	94.4	1.8	0.3	2.7	0.7	83.0	82.8	85.0	73.8	81.1	4.63	3.08	2.62	1.86	3.05
9	3	5.2	1.7	1.3	1.3	0.5	93.1	1.1	0.5	4.6	0.7	81.9	86.2	88.7	69.7	81.6	3.54	2.30	1.87	1.21	2.23
10	3	7.1	3.9	1.6	0.5	0.6	91.5	0.7	0.7	4.7	2.3	80.6	83.7	85.7	67.9	79.5	3.96	2.60	2.34	1.54	2.61
11	3	4.7	1.6	1.4	0.7	1.0	93.6	2.6	0.3	3.0	0.3	78.5	80.6	81.6	67.3	77.0	4.20	2.82	2.42	1.40	2.71
12	3	6.6	2.1	1.1	0.3	0.7	91.7	0.4	0.1	6.9	0.8	80.5	87.2	91.6	69.2	82.2	3.64	2.77	2.01	1.36	2.45
0	3	5.0	2.0	1.3	3.6	2.8	93.5	1.1	0.3	4.2	0.8	81.2	84.3	87.0	69.5	80.5	3.76	2.51	2.15	1.44	2.47
	Breeders Program Feed																				
1	4	6.9	1.2	0.9	0.2	0.3	90.9	2.5	0.4	5.2	1.1	79.9	83.5	87.4	74.8	81.4	4.22	3.09	2.53	1.57	2.85
2	4	3.1	3.5	1.5	16.8	10.6	95.8	0.6	0.1	3.4	0.0	80.8	81.2	86.6	71.2	79.9	3.03	1.83	1.29	1.31	1.87
3	4	6.4	1.1	0.6	0.2	0.2	91.6	0.7	0.1	6.8	0.7	81.7	84.0	88.4	70.4	81.1	3.88	2.52	2.20	1.46	2.51
4	4	7.0	1.1	0.9	0.5	1.4	90.9	1.9	0.7	5.8	0.8	78.8	81.9	85.7	69.9	79.1	3.99	2.51	1.94	1.68	2.53
5	4	1.4	1.1	0.4	1.6	0.9	98.3	0.2	0.0	1.2	0.3	77.6	78.4	84.7	64.9	76.4	4.01	2.97	1.95	1.50	2.61
6	4	5.0	3.4	3.0	13.2	6.8	93.8	0.0	0.0	5.7	0.5	84.0	85.2	89.5	72.4	82.8	2.66	1.57	1.56	1.22	1.75
7	4	6.6	3.1	2.4	11.9	7.4	91.4	0.3	0.1	7.5	0.7	81.8	84.1	84.7	67.9	79.6	2.76	1.69	1.43	1.19	1.77
8	4	3.2	1.1	0.9	0.5	0.5	95.9	0.7	0.3	2.3	0.7	79.5	80.3	83.8	68.9	78.1	4.70	3.09	2.41	1.58	2.94
9	4	6.5	2.2	1.9	0.3	0.0	91.6	1.4	0.6	5.4	1.1	79.0	85.3	87.2	73.0	81.1	3.43	2.34	1.97	1.16	2.22
10	4	6.8	2.6	1.2	0.7	0.9	91.3	0.7	0.6	6.5	1.0	79.1	82.9	85.2	71.4	79.6	3.89	2.58	2.40	1.50	2.59
11	4	5.2	1.8	1.1	0.5	0.7	93.0	2.3	0.3	3.7	0.6	81.8	84.6	84.9	68.7	80.0	4.12	2.92	1.80	1.16	2.50
12	4	8.3	1.6	0.6	0.3	0.4	89.2	2.1	0.0	7.8	0.9	83.4	85.9	88.5	76.1	83.5	3.94	2.56	2.61	1.44	2.64
0	4	5.5	2.0	1.3	3.9	2.5	92.8	1.1	0.3	5.1	0.7	80.6	83.1	86.4	70.8	80.2	3.72	2.47	2.01	1.40	2.40

TABLE 21-4A&D-IV. Causes of Mortality-Laying Period

Entry No.	Type Housing	Lymphoid Leukosis	Repro-ductive Disorders	Other Causes	No Visible Lesions	No Necropsy Report	% Total Mortality
			Phased Feed				
1	1	5.6	3.3	4.4	--	--	13.3
2	1	--	5.6	5.6	1.1	--	12.2
3	1	2.2	--	2.2	--	2.2	6.7
4	1	--	1.1	1.1	1.1	--	3.3
5	1	4.4	1.1	2.2	2.2	1.1	11.1
6	1	--	5.6	2.2	1.1	--	8.9
7	1	--	1.1	5.6	--	--	6.7
8	1	5.6	--	3.3	2.2	3.3	14.4
9	1	8.9	2.2	2.2	--	1.1	14.4
10	1	2.2	1.1	--	--	--	3.3
11	1	1.1	3.3	5.6	--	1.1	11.1
12	1	--	4.4	--	--	1.2	5.6
AV	1	2.5	2.4	2.9	0.6	0.8	9.2
			Breeder Program Feed				
1	2	1.1	6.7	2.2	3.3	--	13.3
2	2	--	4.4	8.9	2.2	--	15.6
3	2	2.2	4.4	2.2	2.2	--	11.1
4	2	--	3.3	3.3	--	--	6.7
5	2	2.2	3.3	5.6	--	--	11.1
6	2	2.2	3.3	2.2	1.1	1.1	10.0
7	2	--	1.1	--	2.2	1.1	4.4
8	2	1.1	2.2	5.6	1.1	1.1	11.1
9	2	3.3	4.4	--	1.1	--	8.9
10	2	--	4.4	2.2	--	--	6.7
11	2	3.3	1.1	3.3	1.1	--	8.9
12	2	1.1	6.7	--	--	--	7.8
AV	2	1.4	3.8	3.0	1.2	0.3	9.6
			4 Treatment Means				
1	0	2.0	3.2	4.3	1.8	0.6	11.9
2	0	--	3.8	4.9	1.2	0.3	10.2
3	0	2.7	2.7	1.8	0.9	0.9	8.9
4	0	0.6	2.1	1.8	1.2	0.6	6.3
5	0	7.2	1.8	6.1	1.2	0.9	17.2
6	0	0.6	2.5	1.4	0.9	0.3	5.7
7	0	--	0.9	1.7	0.6	0.3	3.4
8	0	4.2	1.5	2.9	1.8	1.8	12.2
9	0	4.0	4.2	1.8	0.6	0.6	11.3
10	0	1.2	2.7	0.9	0.3	0.3	5.4
11	0	2.4	3.0	2.5	0.9	0.3	9.2
12	0	0.9	4.4	0.3	--	0.3	5.9
AV	0	2.2	2.7	2.5	1.0	0.6	--

TABLE 21-4C-IVL. Causes of Mortality-Laying Period

Entry No.	Type Housing	Lymphoid Leukosis	Repro-ductive Disorders	Other Causes	No Visible Lesions	No Necropsy Report	% Total Mortality
				Phased Feed			
1	3	1.3	1.3	1.3	--	1.3	5.1
2	3	--	2.6	1.3	1.3	1.3	6.4
3	3	2.6	5.1	1.3	--	1.3	10.3
4	3	--	--	1.3	1.3	1.3	3.8
5	3	9.1	--	15.4	1.3	2.6	28.5
6	3	--	1.3	--	1.3	--	2.6
7	3	--	1.3	--	--	--	1.3
8	3	5.1	2.6	1.3	2.6	--	11.5
9	3	1.3	3.8	3.8	--	--	9.0
10	3	1.3	3.8	--	1.3	1.3	7.7
11	3	3.8	6.4	--	1.3	--	11.5
12	3	1.3	5.1	--	--	--	6.4
AV	3	2.1	2.8	2.1	0.9	0.8	8.7
				Breeder Program Feed			
1	4	--	1.3	9.3	4.0	1.3	15.9
2	4	--	2.6	3.8	--	--	6.4
3	4	3.8	1.3	1.3	1.3	--	7.7
4	4	2.6	3.8	1.3	2.6	1.3	11.5
5	4	12.8	2.6	1.3	1.3	--	17.9
6	4	--	--	1.3	--	--	1.3
7	4	--	--	1.3	--	--	1.3
8	4	5.1	1.3	1.3	1.3	2.6	11.5
9	4	2.6	6.4	1.3	1.3	1.3	12.8
10	4	1.3	1.3	1.3	--	--	3.8
11	4	1.3	1.3	1.3	1.3	--	5.1
12	4	1.3	1.3	1.3	--	--	3.8
AV	4	2.6	1.9	2.2	1.1	0.5	8.3

TABLE 21-4A,C,&D-IVG. Causes of Mortality-Growing Period

Entry No.	Type Housing	Lymphoid Leukosis	Repro-ductive Disorders	Other Causes	No Visible Lesions	No Necropsy Report	% Total Mortality
1	1 & 2	--	--	0.5	--	--	0.5
2	"	--	--	0.9	--	0.3	1.2
3	"	--	--	--	--	2.4	2.4
4	"	--	--	0.3	0.3	--	0.6
5	"	0.1	0.4	1.5	0.3	0.4	2.8
6	"	--	0.3	0.3	--	--	0.6
7	"	--	--	0.3	--	0.1	0.4
8	"	--	--	1.0	1.0	--	2.0
9	"	--	--	--	1.0	--	1.0
10	"	--	--	1.9	--	1.4	3.4
11	"	--	--	0.5	--	0.5	1.0
12	"	--	--	1.3	--	1.0	2.4
AV	"	0.0	0.1	0.7	0.2	0.5	1.5
1	3 & 4	--	--	1.1	0.6	2.9	4.6
2	"	--	0.6	2.3	--	1.7	4.5
3	"	--	--	0.6	--	--	0.6
4	"	--	--	1.1	1.1	1.1	3.3
5	"	--	1.1	1.7	1.1	--	3.9
6	"	--	--	2.2	0.6	2.2	5.0
7	"	--	--	3.7	0.6	3.1	7.4
8	"	--	--	--	1.6	0.5	2.1
9	"	--	--	1.7	--	--	1.7
10	"	--	--	0.6	2.3	1.7	4.6
11	"	--	--	--	--	2.3	2.3
12	"	--	--	0.5	0.5	--	1.0
AV	"	0.0	0.1	1.3	0.7	1.3	3.4
1	0	--	--	0.8	0.3	1.4	2.6
2	0	--	0.3	1.6	--	1.0	2.9
3	0	--	--	0.3	--	1.2	1.5
4	0	--	--	0.7	0.7	0.6	2.0
5	0	0.1	0.8	1.6	0.7	0.2	3.4
6	0	--	0.2	1.2	0.3	1.1	2.8
7	0	--	--	2.0	0.3	1.6	3.9
8	0	--	--	0.5	1.3	0.2	2.0
9	0	--	--	0.8	0.5	--	1.3
10	0	--	--	1.2	1.2	1.6	4.0
11	0	--	--	0.2	--	1.4	1.6
12	0	--	--	0.9	0.2	0.5	1.7
AV	0	0.0	0.1	1.0	0.5	0.9	2.5

TABLE 21-4D-III. Egg Quality Data

Entry No.	Type Housing	Loss % Downgrades	% Inclusion (Breakout)				% Candled Quality					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	March	June	Average	November	January	March	July	Average
	4 Treatment Means																				
1	0	4.2	1.1	0.6	0.5	0.4	94.4	1.7	0.5	2.7	0.6	81.3	83.2	85.6	73.9	81.0	3.98	2.92	2.47	1.40	2.69
2	0	2.9	2.6	2.5	17.9	10.7	96.4	0.3	0.1	3.0	0.3	80.7	79.6	85.1	71.9	79.3	2.69	1.90	1.53	1.26	1.84
3	0	4.9	1.2	0.6	0.7	0.3	93.6	1.1	0.2	4.5	0.6	80.4	82.3	86.3	71.4	80.1	3.49	2.34	2.05	1.29	2.30
4	0	5.5	0.9	0.7	0.5	0.7	92.9	[illegible]	0.6	4.3	1.0	78.4	80.2	83.8	71.6	78.5	[illegible]60	2.48	1.91	1.36	2.34
5	0	2.2	0.8	0.7	0.7	0.5	97.1	0.3	0.0	2.1	0.4	76.7	77.5	82.3	66.2	75.7	3.75	2.71	2.12	1.34	2.48
6	0	4.0	2.9	2.1	12.6	8.1	95.0	0.2	0.1	3.7	0.9	85.0	84.2	85.8	72.5	81.9	2.20	1.54	1.42	1.11	1.57
7	0	5.6	2.0	1.6	11.2	9.7	93.0	0.3	0.1	5.4	1.2	81.6	82.3	84.7	70.8	79.9	2.31	1.69	1.43	1.10	1.63
8	0	2.8	1.5	1.0	0.3	0.6	96.3	0.9	0.2	2.0	0.6	80.2	78.9	82.8	71.3	78.3	4.52	3.01	2.39	1.57	2.87
9	0	5.9	2.0	1.8	0.5	0.5	92.6	1.6	0.4	4.1	1.4	80.5	83.2	85.7	73.4	80.7	3.24	2.25	1.91	1.17	2.14
10	0	5.4	2.8	1.4	0.5	0.5	93.3	0.8	0.4	4.3	1.3	80.3	80.5	82.8	70.4	78.5	3.44	2.37	2.00	1.31	2.28
11	0	3.5	1.2	1.1	0.5	0.6	95.2	1.9	0.3	2.2	0.4	80.1	80.0	81.8	72.7	78.7	3.80	2.61	1.82	1.21	2.36
12	0	6.2	1.5	0.8	0.4	0.5	92.0	1.5	0.1	5.6	0.8	81.0	84.8	87.2	73.7	81.7	3.39	2.46	2.01	1.31	2.29
0	0	4.4	1.7	1.3	3.9	2.8	94.3	1.0	0.2	3.6	0.8	80.5	81.4	84.5	71.6	79.5	3.37	2.36	1.92	1.29	2.23

TABLE 21-4D-V. Commercial Egg Gradeout

Entry No.	Type Housing	Percent Grade A or Better: Ex. Large & Jumbo	Large	Medium	Small & Pee Wee	% Breaker: Sound	Crax	% Loss Eggs: Farm	Other
			October - 31 Weeks Old						
1	0	3.3	38.8	43.8	0.7	0.9	8.0	0.7	3.8
2	0	6.4	47.7	28.7	0.3	9.5	5.0	0.4	2.0
3	0	5.4	39.4	42.8	0.8	7.2	3.0	0.8	0.7
4	0	0.8	22.8	60.1	2.3	7.0	4.2	2.1	0.7
5	0	0.7	17.4	65.8	5.3	6.9	2.5	0.9	0.5
6	0	26.5	44.1	7.8	0.1	6.3	11.1	3.1	1.0
7	0	17.9	51.9	12.8	0.1	6.9	8.4	0.6	1.4
8	0	1.5	29.3	52.0	1.4	10.0	2.0	1.4	2.3
9	0	6.5	44.6	38.7	1.3	4.3	2.0	0.2	2.6
10	0	3.7	35.7	48.1	0.7	7.0	2.9	0.6	1.4
11	0	0.6	14.0	69.3	7.4	5.7	1.2	1.1	0.6
12	0	13.9	49.4	19.6	[illegible]	10.3	3.0	2.1	1.6
AV	0	7.3	36.3	40.8	[illegible]	6.8	4.4	1.2	1.6
			January - 44 Weeks Old						
1	0	19.7	53.8	18.2	0.1	1.0	3.0	1.6	2.6
2	0	41.8	44.1	6.1	0.2	2.0	3.5	0.7	1.7
3	0	20.0	51.0	19.2	0.2	2.1	3.3	2.1	2.1
4	0	9.6	51.8	28.2	0.1	2.0	5.0	1.3	2.0
5	0	14.2	50.0	25.9	0.3	1.1	2.3	2.6	3.7
6	0	57.2	28.6	1.9	0.0	1.6	4.3	1.9	4.4
7	0	54.2	31.4	2.3	0.0	1.8	3.7	2.4	4.1
8	0	16.6	55.8	16.9	0.0	2.5	2.9	1.4	3.8
9	0	23.1	51.8	16.2	0.0	1.3	4.2	0.4	3.0
10	0	21.7	50.8	17.1	0.1	1.8	4.3	1.2	3.0
11	0	6.6	44.6	40.4	0.6	2.8	2.7	0.3	1.8
12	0	37.2	44.2	6.1	0.0	2.1	5.7	1.6	3.2
AV	0	26.8	46.5	16.5	0.1	1.8	3.7	1.5	2.9
			April - 56 Weeks Old						
1	0	35.5	44.8	11.2	0.1	0.9	3.9	0.6	3.1
2	0	58.5	27.8	2.2	0.0	0.9	3.4	2.0	5.1
3	0	36.5	43.6	10.9	0.2	1.0	4.3	1.5	2.0
4	0	21.0	49.2	18.7	0.1	1.2	2.6	1.7	5.4
5	0	34.8	43.4	12.5	[illegible]	1.6	2.7	3.5	1.4
6	0	72.3	14.7	0.8	0.0	0.6	3.8	2.6	5.1
7	0	64.8	18.9	1.0	0.2	0.4	7.7	4.1	2.9
8	0	36.9	44.9	9.0	0.0	2.0	3.5	0.3	3.3
9	0	35.2	44.6	8.3	0.1	1.1	4.0	2.8	3.9
10	0	37.6	41.6	8.4	0.1	1.0	5.5	2.0	3.7
11	0	18.0	46.6	24.9	0.5	1.7	4.2	1.9	2.2
12	0	50.1	29.5	3.8	0.0	1.6	6.1	2.3	6.6
AV	0	41.8	37.4	9.3	0.1	1.2	4.3	2.1	3.7

TABLE 21-4D-V. (Continued)

Entry No.	Type Housing	Percent Grade A or Better: Ex. Large & Jumbo	Large	Medium	Small & Pee Wee	% Breaker: Sound	Crax	% Loss Eggs: Farm	Other
				July - 70 Weeks Old					
1	0	28.8	47.6	3.8	--	6.0	6.7	6.1	1.0
2	0	51.0	37.4	0.7	--	1.3	4.0	2.8	2.8
3	0	27.7	48.8	3.5	--	4.9	10.2	3.3	1.5
4	0	14.8	59.1	7.9	0.1	4.0	5.6	2.8	5.7
5	0	26.6	55.8	4.9	0.1	3.6	4.7	2.1	2.1
6	0	63.2	21.3	0.3	--	1.2	4.0	2.4	7.5
7	0	55.2	26.1	0.3	--	0.6	6.1	5.6	6.0
8	0	20.8	57.9	3.8	--	6.6	6.6	2.4	1.9
9	0	30.1	46.1	3.1	--	6.1	5.2	4.5	4.8
10	0	19.7	47.8	3.4	0.1	6.7	6.8	8.5	7.0
11	0	12.8	55.4	9.4	0.7	9.3	5.6	4.2	2.5
12	0	39.7	35.6	1.0	--	6.4	9.8	2.5	5.0
AV	0	32.5	44.9	3.5	0	4.7	6.3	4.0	4.0

TABLE 21-F

SOME SPECIFICATIONS OF FEEDS USED

	Feed Designation								
	Start	Grow 1	Grow 1	Lay-TF	Lay-TG	Lay-TH	Lay-TI	Lay-TJ	Lay-TK
Met. Energy, Kcal./lb.	1307	1328	1329	1275	1275	1280	1280	1300	1310
Protein, %	20.7	17.4	14.8	20.5	19.5	18.0	16.5	16.0	15.0
Lysine, %	1.10	0.84	0.64	1.04	0.99	0.87	0.82	0.78	0.71
Methionine, %	0.38	0.39	0.40	0.53	0.44	0.38	0.35	0.35	0.32
TSAA, %	0.70	0.66	0.55	0.84	0.74	0.65	0.62	0.60	0.56
Avail. Phos., %	0.38	0.37	0.37	0.59	0.50	0.46	0.43	0.41	0.39
Calcium, %	0.62	0.60	0.59	3.50	3.55	3.55	3.55	3.55	3.55
Fat, %	3.13	3.34	3.52	3.28	3.14	3.40	2.92	3.03	3.08
Relative Cost 5/79				164	158	151	145	143	139

TABLE 21-4D-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	4	271.0		1	12	81.6		1	11	2.28		1	7	5.4	
1	12	265.3		1	4	80.9		1	3	2.34		1	10	9.5	
1	10	260.3		1	3	80.4		1	12	2.35		1	6	9.7	
2	1	257.5		1	10	79.8		2	4	2.38		1	4	9.9	
2	3	255.6		2	1	79.6		2	1	2.41		1	12	10.2	
2	7	255.2		Mean		77.6		2	8	2.42		2	11	15.2	
Mean		248.4		3	7	77.3		Mean		2.43		Mean		15.8	
3	6	241.6		3	6	76.9		3	5	2.44		3	1	15.9	
3	2	241.5		3	9	76.5		3	10	2.46		3	2	17.0	
3	8	239.9		3	8	76.5		3	9	2.48		3	3	17.5	
3	9	239.8		3	2	76.1		3	2	2.51		4	8	24.1	
4	11	229.8		3	5	75.2		4	7	2.51		4	9	24.3	
4	5	223.8		4	11	70.4		4	6	2.59		4	5	31.3	

Breeder	Stock Identi-fication	Entry Cate-gory	Source of Sample
Babcock Poultry Farm, Inc. Box 280 Ithaca, NY 14850	Babcock B-300V WL INX	I-A YES	Babcock Southeast P.O. Box 671 Gainesville, GA 30501
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
Colonial Poultry Farms, Inc. P.O. Box 89 Pleasant Hill, MO 64080	Colonial 365-S WL 4wSX	II YES	Colonial Poultry Farms, Inc. P.O. Box 89 Pleasant Hill, MO 64080
DeKalb AgResearch, Inc. Sycamore Road DeKalb, IL 60115	DeKalb XL-Link WL 4wSX	I-A YES	Clay's Hatchery Route 1 Blackstone, VA 23824
DeKalb AgResearch, Inc. Sycamore Road DeKalb, IL 60115	DeKalb Sex-Sal Link "G" RIRxSYN BX	I-A YES	Pee Dee Hatchery P.O. Box 156 Hartsville, SC 29550
Euribrid B.U. Entry by Pilch-Hisex, Box 438 Troutman, NC 28677	Hisex White WL 4wSX	I-A YES	Chicks of Dixie 260 Howard Atlanta, GA 30317
H & N, Inc. 15305 N.E. 40th Street Redmond, WA 98052	H&N "P.G./Two" WL 4wSX	I-A	Harrold's Hatchery P.O. Box 98 Winterville, GA 30683
Haley Farms, Inc. Route 2 Canton, GA 30114	Haley 630 WL 3wSX	II YES	Haley Farms, Inc. Route 2 Canton, GA 30114
Hubbard Farms, Inc. Walpole, NH 03608	Hubbard Golden Comet NHxSYN BX	I-A YES	Bowers Brothers Hatchery Albemarle, NC 28001
Hubbard Farms, Inc. Walpole, NH 03608	Hubbard Leghorn WL SX	II YES	Hubbard Farms, Inc. Lancaster, PA
Hy-Line International 1206 Mulberry Des Moines, IA 50309	Hy-Line W-36 INX	I-C	Not Applicable
Shaver Poultry Breeding Farms, LTD. Box 400 Galt, Cambridge, Ontario, CANADA, N1R 5V9	Starcross 288 WL SX	I-A YES	Delta Hatcheries P.O. Box 769 Lake City, FL 32055