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Animal and
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Veterinary
Services

APHIS 91-44
May 1980

1979 Report of Random Sample Egg Production Tests in the United States and Canada.

Performance of Stocks 1978-79 . 4

PRODUCTION SECTION
CURRENT SERIAL RECORDS

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PREFACE

Egg production tests are designed to provide poultrymen, hatcherymen, and breeders with a reliable guide to the performance of poultry stocks offered for sale. This publication contains information on many egg production traits that are of economic importance to the trade. The data were compiled from the records of official Random Sample Egg Production Tests conducted in the United States and Canada.

The publication of this report is based on recommendations of the National Committee on Random Sample Poultry Testing and the Council of American Official Poultry Tests. The information was compiled by the Poultry Improvement Staff, Animal and Plant Health Inspection Service-Veterinary Services of the U.S. Department of Agriculture from data furnished by Test supervisors.

The publication of this report does not imply approval or endorsement by the U.S. Department of Agriculture of any of the stocks mentioned.

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1979 REPORT OF RANDOM SAMPLE EGG PRODUCTION TESTS, UNITED STATES AND CANADA

This 1979 Report of Random Sample Egg Production Tests differs from those reports published by the United States Department of Agriculture in past years in that no attempt was made to treat the data by approved statistical methods. The data reported in the various tables in this publication are exactly the same as published by the individual test management. In the past, the USDA analyzed data obtained from the previous two years of testing, combining them by stocks and across tests. The data reported, herein are just for the single years production performance.

The USDA first became involved in analyzing data from the random sample egg production tests in 1958 on the recommendation of the National Committee on Random Sample Poultry Testing and the Council of Official American Poultry Tests. The first four summaries starting with the 1958-59 test data, were made from each single year's data. Starting with the 1963-64 test year the summary consisted of the combined data for the preceding two years. This type of summary continued until this, the 1979 report. During that time, 22 separate State and Canadian Providence tests were involved in this testing work.

This will be the final report in this series in which the USDA has been involved. The following tests are operating for the 1979-80 test year and a report of their results can be obtained by writing directly to each test:

Central Canada Egg Production Test

A. H. Bentley, Poultry Production Section, Canada Department of Agriculture,
Ottawa, Ontario, Canada
Phone 613/994-9571

Central Canada Brown Egg Test

A. H. Bentley, Poultry Production Section, Canada Department of Agriculture,
Ottawa, Ontario, Canada
Phone 613/994-9571

Florida Poultry Evaluation Center

R. B. Christmas, Chipley, Fla. 32428
Phone 904/638-0588

New Hampshire Multiple Unit Egg Production Test

W. C. Skoglund, Department of Animal Science, University of New Hampshire,
Durham, N. H. 03824
Phone 603/862-2130

North Carolina Random Sample Laying Test, Salisbury

G. A. Martin, Poultry Extension Department, North Carolina State University,
Raleigh, N. C. 27607
Phone 919/755-2621

FINAL REPORT

Twentieth New Hampshire Multiple Unit Egg Production Test 1978-79

Sponsored by the Department of Animal Sciences
University of New Hampshire, Durham, N.H.
W. C. Skoglund - Test Supervisor
Michael Horvath - Research Farm Superintendent
A. M. Gearwar - Test Foreman

This is the final and complete report of the Twentieth New Hampshire Unit Egg Production Test. Twenty nine breeders were entered in the Cage Test with 8 replicates of 24 birds each.

Hatching eggs from each breeder's supply flocks or home farm were selected at random by a selecting agent and sent to a commercial hatchery for hatching. The resulting chicks were sexed and the pullets toe-marked and delivered to the University of New Hampshire Poultry Farm on May 10, 1978. Records were kept of brooder house mortality. At housing time, housing weights were obtained and the birds selected at random and assigned to the various replicates. Feed consumption during the growing period was based on actual records. Feed consumed by birds that died during the period was charged against the entry.

During the laying year, egg production, egg weights, egg quality, mortality and feed consumption records were obtained. Final rankings were based on net income per pullet housed over total feed and chick costs. The New Hampshire Department of Agriculture Market Bulletin egg prices by color and size and fowl prices by size were used to determine egg and meat income. Feed prices were obtained from weekly price sheet of a New England feed company.

Entries listed as Experimental should not be considered in the final placings.

Glossary of Terms Used in Report

Chick Cost - The price the entrant quotes in his catalog for chicks of this grade obtained at the time the test began in lots of 1000 or more pullet chicks. An average of all the chick costs is used for every entry.

Days of Age to 50% Production - Number of Days of Age of the Entry when on three successive days 50% or more of the birds laid.

Percent Jumbo, Large & Extra Large Eggs - Actual percentage distribution into the various grades when two days' eggs are graded with a commercial egg grader each month. Minimum weights by grades are: Jumbo, 29 1/2; Extra large, 26 1/2; Large, 23 1/2; Medium, 20 1/2; and Pullet, 18.

Feed Costs - The weekly price sheet of a New England based feed company were used.

Feed Efficiency - Pounds of feed required to produce a dozen actual eggs, and also a dozen weighing 24 ounces, and finally per pound of eggs.

Hen Day Eggs Per Bird - Total number of eggs laid for the month by an entry and divided by the average number of birds in the entry during the month.

Income - Income from sales of eggs and meat. Egg prices are average of each week's quotations in the New Hampshire Department of Agriculture Market Bulletin. Fowl prices are based on USDA price for Boston Market at time of disposal.

Interior Quality - Based on average Haugh Units at end of 6 and 11 months production.

Meat Spots - Colored spots other than bright red.

Rearing Feed Cost - Same as Feed Costs above.

Specific Gravity - A measure of shell condition which involved testing whether an egg floats in various concentrations of salt solutions. There is very high correlation between the specific gravity of an egg and its shell strength.

Blood Spots - Large - Bright red spots 1/8" or larger in size.

Blood Spots - Small - Bright red spots less than 1/8" in size.

Twentieth New Hampshire Egg Production Test 1978-79

Summary

Stock Entered	Income Over Chick & Feed Cost Per Hen Housed	Egg Prod. Per Hen Housed	% Prod. Hen Day Basis From 50%	Laying House Mortality	Lbs. Feed Per Doz. 24 oz. Eggs	% Jumbo Ex. Lg. & Lg. Eggs	Body Wt. 500 Days of Age
1 DeKalb Warren	8.34	258.6	79.8	9.9	3.74	76.1	4.54
1 Hubbard Farms	8.44	254.9	76.2	5.7	3.87	84.5	5.02
1 Hubbard Farms	8.36	260.2	81.1	10.9	3.77	74.0	4.50
1 Pilch	8.41	265.9	79.8	9.4	3.75	57.2	4.17
1 Shaver Pltry. Breed	8.74	260.5	78.3	8.3	3.62	82.0	4.60
2 Babcock Poul. Farm	8.15	258.5	77.9	5.7	4.16	84.0	5.25
2 DeKalb Warren	7.77	246.8	76.9	8.9	4.14	83.7	5.90
2 DeKalb Warren	7.82	237.9	74.1	7.8	3.97	92.2	5.65
2 Harmen Pedigree	8.31	253.1	76.5	2.1	3.82	77.9	4.86
2 Shaver Pltry Breed	7.60	236.1	71.6	4.2	4.05	89.4	5.72
3 Babcock Poul. Farm	7.46	238.0	75.8	15.6	3.80	69.5	4.22
3 Carey Farms	7.21	243.6	75.3	10.4	4.06	62.9	4.36
3 Shaver Pltry Breed	7.20	230.8	75.3	13.7	3.93	89.5	4.72
3 Tatum Farms	7.51	242.1	74.7	15.5	3.82	69.9	4.64
3 Tatum Farms	7.30	237.2	72.8	9.9	4.15	79.0	5.10
4 DeKalb-Warren	7.19	243.2	76.3	7.8	4.34	84.3	5.95
4 Hardy & Son	6.55	228.2	70.6	8.3	4.42	76.6	5.10
4 Parks Poul. Farm	6.62	225.8	70.0	6.8	4.27	72.5	5.09
4 Parks Poul. Farm	5.96	220.4	71.1	13.7	4.28	62.7	4.49
4 Welp Inc.	7.12	249.0	74.8	13.5	3.95	49.3	4.13
<u>EXPERIMENTAL ENTRIES</u>							
Babcock Poultry Farm	8.03	249.4	77.0	11.4	3.69	72.4	4.26
Joe K. Davis	6.72	230.6	70.1	4.7	4.32	68.0	5.65
Joe K. Davis	7.59	244.7	74.4	4.2	4.13	76.9	5.53
Hardy & Son	5.38	208.0	65.2	9.5	4.91	76.5	6.44
Hubbard Farms	7.84	250.3	76.0	7.3	4.09	82.4	5.04
Hubbard Farms	8.48	267.9	80.5	7.1	3.79	68.8	4.33
Hy-Line Internat.	6.97	240.6	73.0	6.5	4.32	83.3	6.20
Rytman	4.84	194.5	66.5	20.8	4.55	58.5	5.15
Shaver Poul. Breed	7.23	236.3	75.7	13.1	3.87	80.0	4.23
BROWN EGG AVG.	7.35	239.7	73.4	6.6	4.20	80.7	5.50
WHITE EGG AVG.	7.74	249.3	77.0	11.5	3.84	68.7	4.37
TINTED EGG AVG.	6.02	212.7	70.9	17.2	4.24	74.0	4.94
TEST AVG.	7.42	241.8	74.7	9.4	4.05	75.3	4.99

Feed Conversion Data (AVG of replicates)

	Pounds of Feed Required per Actual		Pounds of Feed Required per		Pounds of Feed Required per Dozen 24 oz. Eggs
	Dozen Eggs	Eggs	Pound of Eggs	Eggs	
Hubbard Comet	4.40		2.58		3.87
Hubbard Exper Brown	4.64		2.73		4.09
DeKalb Sex Sal Link	4.74		2.65		3.37
DeKalb Amber Link	4.69		2.76		4.14
DeKalo 527 Black Sex Link	4.94		2.89		4.34
Parks Sil-Go-Link	4.67		2.85		4.27
Shaver 579 RIR	4.30		2.70		4.05
Babcock B 380 Brown	4.72		2.77		4.15
Tatum T-173 Brown	4.60		2.76		4.15
Harmen Golden Link	4.25		2.54		3.82
Davis Exper Sex Link	4.59		2.75		4.13
Davis Exper Brown Egg	4.65		2.88		4.32
Hylline Exper "A"	4.91		2.88		4.32
Hardy Concord	4.93		2.95		4.42
Hardy Exper	5.45		3.27		4.91
BROWN EGG AVG	4.73		2.80		4.20
Hubbard White Leghorn	4.08		2.51		3.77
Hubbard Exper W. Leg.	4.01		2.52		3.79
DeKalb XL Link W. Leg.	4.08		2.49		3.74
Parks Keystone W. Leg	4.49		2.83		4.28
Shaver 238 W. Leg.	4.07		2.42		3.62
Shaver Exper W. Leg.	4.26		2.58		3.87
Babcock B300V W. Leg.	4.07		2.53		3.80
Babcock Exper W. Leg.	3.97		2.46		3.69
Tatum T-100 W. Leg.	4.11		2.54		3.82
Pilch Euribrid W. Leg.	3.87		2.50		3.75
Carey Nick 310 W. Leg.	4.23		2.71		4.06
Welp 937A W. Leg.	4.01		2.63		3.95
WHITE EGG AVG	4.10		2.56		3.84
Shaver 444 Tint	4.57		2.61		3.93
Rytman RYTI-Brenn Exper	4.74		3.03		4.55
TINT EGG AVG	4.64		2.82		4.24
TEST AVG	4.46		2.70		4.05

20th N. H. Egg Production Test 1978-79

Egg Quality

	Haugh Unit Score		Percent Flood Spots		Percent Meat Spots		Specific Gravity Measurements	
	6 mo.	11 mo.	6 mo.	11 mo.	6 mo.	11 mo.	6 mo.	11 mo.
Hubbard Golden Comet	70.1	72.8	1.1	4.0	11.1	16.0	2.66	1.25
Hubbard Exp. Brown	70.0	70.9	---	---	11.3	5.2	2.53	1.48
DeKalb Sex Sal Link	72.2	73.8	2.1	3.0	8.5	8.0	2.03	1.04
DeKalb Amber Link	77.1	74.2	1.0	1.0	5.1	3.0	2.07	1.19
DeKalb 527 Black	71.4	68.8	7.0	4.1	7.1	2.0	1.95	1.20
Parks Sil-Go-Link	73.3	70.7	2.0	1.0	14.2	4.2	2.40	1.41
Shaver 579 RIR	71.1	72.3	4.0	3.0	9.0	2.0	1.65	0.91
Babcock B 380 Br.	70.1	72.1	---	---	10.4	3.0	1.98	0.97
Tatum T-173 Br.	68.4	66.3	1.0	---	9.2	1.0	2.09	1.14
Harmen Golden Link	71.5	69.6	2.1	---	6.1	3.0	2.17	1.25
Davis Exp Sex Link	71.6	68.7	---	---	6.0	6.0	2.20	1.19
Davis Exp. Brown	69.0	68.8	---	1.0	6.1	4.0	1.91	0.67
HyLine Exp. A	73.8	74.4	1.0	3.0	6.2	4.0	2.72	1.67
Hardy Concord	72.3	69.4	---	2.1	9.4	3.0	2.59	1.18
Hardy Exp. Brown	69.1	72.3	1.0	4.2	5.0	1.0	2.65	1.49
BROWN EGG AVERAGE	71.4	71.0	1.5	1.8	8.3	4.4	2.24	1.20
Hubbard W. Leg	72.6	74.0	11.2	4.1	---	---	3.02	1.32
Hubbard Exp. W. Leg	70.6	73.9	2.0	---	---	---	2.88	1.34
DeKalb XL Link W.L.	71.6	71.8	1.0	1.0	---	---	2.57	1.40
Parks W. Leg	63.6	69.6	5.0	1.0	---	---	2.55	1.39
Shaver 288 W. Leg	73.8	79.3	1.0	3.0	1.0	---	2.91	1.34
Shaver Exp. W. Leg	70.4	70.1	2.0	1.0	---	---	3.19	1.75
Babcock B 300 W. Leg	71.7	73.6	2.0	---	---	---	4.02	1.89
Babcock Exp. W. Leg	73.9	69.8	---	---	---	---	4.20	2.19
Tatum T-100 W. Leg	72.4	73.1	7.1	4.8	1.0	---	2.57	1.37
Pilch Hisex W. Leg	71.8	71.2	1.0	2.1	---	---	2.72	1.44
Carey 310 W. Leg	70.3	68.7	1.0	---	---	---	3.21	1.81
Welp 937 W. Leg	70.8	72.3	2.0	1.0	---	---	2.97	0.99
WHITE EGG AVERAGE	71.1	71.8	2.9	1.5	0.2	0.0	3.08	1.52
Shaver 444 Tint	74.4	71.3	---	1.0	2.0	---	2.53	1.60
Rytman Exp. Tint	73.3	73.9	1.0	1.0	---	---	2.68	1.28
TINT AVERAGE	73.9	72.6	0.5	1.0	1.0	0.0	2.61	1.44
TEST AVERAGE	71.5	71.4	2.0	1.6	0.4	2.3	2.61	1.35

20th N. H. Egg Test 1978-79 BODY WEIGHTS

Housing Weight Avg.	January 24, 1979		FINAL WEIGHTS	
	1st Rep	2nd Rep	1st Rep	2nd Rep
Hubbard Comet	4.86	4.80	4.97	5.06
Hubbard Exper. Br.	4.95	4.89	4.82	5.26
DeKalb Sex Sal Link	5.02	5.46	5.54	5.26
DeKalb Amber Link	5.72	5.60	6.02	5.28
DeKalb 527 Black S L	5.65	5.49	6.07	5.82
Parks Sil-Go-Link	4.83	4.61	5.33	4.85
Starcross 579 RIR	5.69	5.53	5.82	5.61
Babcock B 380 Br.	5.15	5.19	5.37	5.13
Tatum T-173 Br.	4.96	5.08	5.23	4.96
Harmen Golden Link	4.67	4.94	4.76	4.95
Davis Exp. Sex Link	5.05	5.44	5.50	5.55
Davis Exp. Br. Egg	5.33	5.28	5.81	5.49
HyLine Exper. A	5.75	5.69	6.15	6.25
Hardy Concord	5.02	4.64	5.28	4.92
Hardy Exp.	5.80	5.78	6.29	6.58
BROWN EGG AVERAGE	3.51	5.23	5.50	5.50
Hubbard Leghorn	4.15	4.34	4.45	4.55
Hubbard Exp. Leghorn	4.04	4.17	4.37	4.28
DeKalb XL Link W Leg	4.13	4.03	4.59	4.48
Parks Leghorn	3.94	4.25	4.54	4.44
Shaver 288 W.L.	4.18	4.20	4.53	4.66
Shaver Exp. W.L.	3.99	3.87	4.14	4.32
Babcock B 300 W.L.	4.05	3.82	4.28	4.16
Babcock Exp. W.L.	3.94	4.13	4.16	4.36
Tatum T-100 W.L.	4.43	4.16	4.86	4.42
Pilch Euribrid W.L.	3.69	3.87	4.41	3.93
Carey 310 W.L.	3.97	4.20	4.45	4.26
Welp 937A W.L.	3.97	3.72	4.14	4.11
WHITE EGG AVERAGE	2.86	4.06	4.37	4.37
Shaver 444 Tint	3.10	4.87	4.69	4.75
Rytman Exp. Tint	3.15	4.01	5.46	4.84
TINT AVERAGE	3.13	4.68	4.94	4.94
TEST AVERAGE	3.22	4.70	4.99	4.99

Twentieth New Hampshire Egg Production Test 1978-79

Miscellaneous Data Through Rearing Period

Days to 50% Production

	Brooding and Rearing Mortality	Average Price Per Chick	Days to 50% Production								Average
			1	2	3	4	5	6	7	88	
Hubbard Golden Comet	8.9%	37.6	164	170	169	166	164	164	163	164	165
Hubbard Exp. Brown	7.9		170	169	163	171	165	161	162	159	165
DeKalb Sex Sal Link	1.8		184	185	191	185	170	186	176	183	182
DeKalb Amber Link	3.6		184	184	191	183	182	170	176	172	180
DeKalb 527 Black	3.6		176	184	182	176	182	168	184	176	178
Parks Sil-Co-Link	12.5		176	172	179	183	186	172	170	172	176
Shaver 579 RIR	3.6		184	176	170	172	164	165	164	166	170
Babcock B 300 Br.	7.1		164	163	169	168	172	169	169	163	167
Tatum T-173 Br.	0.0		170	169	170	169	175	158	165	163	167
Harmen Golden Link	1.8		183	176	176	182	185	169	170	173	176
Davis Exp. Sex Link	0.0		176	176	179	179	171	176	173	---	175
Davis Exp. Brown	3.6		171	184	176	171	184	165	166	170	173
HyLine Exp. A	13.2		175	171	176	171	165	170	170	---	171
Hardy Concord	1.8		184	183	176	176	179	170	171	170	176
Hardy Exp. Brown	1.8		179	184	179	179	175	173	176	---	177
Brown Egg Average	4.7	37.6									173
Hubbard White Leghorn	3.6		164	160	169	163	165	166	164	166	166
Hubbard Exp. W. Leghorn	8.9		163	158	162	163	159	159	163	---	161
DeKalb XL Link W.L.	10.7		163	164	164	165	166	164	165	165	164
Parks W. Leghorn	10.7		171	172	179	179	169	172	163	---	172
Shaver 280 W. Leghorn	5.6		165	162	165	162	157	157	170	164	162
Shaver Exp. W. Leghorn	8.9		168	162	168	173	165	161	164	---	165
Babcock B 300 W. Leghorn	0.0		164	165	158	163	162	162	159	164	162
Babcock Exp. W. Leghorn	0.0		158	161	163	165	164	162	163	165	162
Tatum T-100 W. Leghorn	8.9		170	170	168	172	164	163	164	---	167
Pilch Hisex W. Leghorn	3.6		156	156	155	149	149	156	151	152	153
Carey 310 W. Leghorn	5.6		169	170	173	171	176	173	173	169	171
Welp 937 W. Leghorn	8.9		154	155	154	158	157	156	151	151	154
White Egg Average	6.3	37.6									163
Shaver 444 Tint	0.0		183	172	185	186	185	171	170	---	178
Rytman Exp. Tint	10.7		183	176	183	175	182	172	166	166	175
Tint Average	5.4	37.6									177
Test Average	5.4	37.6									169

Twentieth New Hampshire Egg Production Test 1978-79

PRICES USED IN COMPUTATION

	Brown Eggs			White Eggs			Feed Cost Per 100 Pounds				
	Jumbo	Ex. Lg.	Lg.	Med.	Sm.	Jumbo		Ex. Lg.	Lg.	Med.	Sm.
September, 1978	89.5	76.0	75.0	68.0	42.0	86.8	72.5	70.5	59.8	39.0	6.21
October	80.8	72.4	71.3	66.3	45.1	80.8	69.9	67.0	62.7	42.6	6.29
November	81.4	77.0	76.0	71.4	51.0	81.4	73.6	73.0	71.4	51.0	6.43
December	83.0	80.7	80.5	76.3	55.5	83.0	76.7	76.7	74.7	55.5	6.43
January, 1979	85.3	81.4	80.7	77.8	59.0	85.2	78.6	78.0	76.5	59.0	6.61
February	80.3	77.1	75.5	71.7	50.4	79.3	75.1	73.5	69.9	50.4	6.85
March	82.4	80.1	79.2	75.2	49.8	81.4	80.0	79.3	75.2	49.8	7.06
April	83.0	74.3	73.0	67.8	48.4	83.0	76.3	75.2	67.9	48.4	7.06
May	79.6	71.4	68.3	61.1	44.8	79.4	68.9	66.6	61.1	44.8	7.30
June	80.8	73.5	71.0	58.0	39.0	80.3	71.5	69.5	58.0	40.8	7.37
July	90.0	77.0	75.0	62.5	41.0	90.0	75.0	73.0	62.5	41.0	8.30
August	87.2	74.7	72.3	62.9	37.3	86.2	72.1	70.1	62.9	37.1	8.05
Average	83.6	76.3	74.8	68.3	46.9	83.1	74.2	72.7	66.9	46.6	7.00

Egg Prices are based on the weekly average of the Boston Market.

Feed Prices are based on a weekly feed price sheet from a New England based feed company.

Fowl Prices: Heavies 7½¢ Leghorns 7¢

FINAL SUMMARY REPORT
TWENTIETH NORTH CAROLINA RANDOM SAMPLE LAYING TEST
March 23, 1978 through August 1, 1979

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 20-4A-I, II, III, and IV, 20-4C-I, II, III, and IV, and 20-4D-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. These data are for one year at one location. The USDA publishes a Report of Random Sample Egg Production Tests in the United States and Canada which includes results from other location. Other 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 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 birds/M²). 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/M²). Starting mash was fed at a rate of 2.67 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/M²). 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/M²). 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 five 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 Dr. Max Colwell, who was then a Professor in the Department of Veterinary Science at 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, even though hatched and grown on the same farm with a positive adult flock. (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, 3 = 2-bird cages in open house, 0 = average to two 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 1978.

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, 1288 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 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, North Carolina. % A large and over and % A 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. % 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 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.

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	Harrold's Hatchery P. O. Box 98 Winterville, GA 30683
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	Clay's Hatchery Route 1 Blackstone, VA 23824
DeKalb AgResearch, Inc. Sycamore Road DeKalb, IL 60115	DeKalb Amber-Link RIRxSYN BX	I-A YES	Hillcrest Hatcheries Route 2, Box 163 Bogart, GA 30622
Euribrid B.U. Entry by Pilch-Hisex, Box 438 Troutman, NC 28677	Hisex White WL 4wSX	I-A YES	Grassy Knoll Hatchery P. O. Box 6036 Charlottesville, VA 22906
H & N, Inc. 15305 N.E. 40th St. Redmond, WA 98052	H & N "Nick Chick" WL 4wSX	I-A YES	Walter Wheelock Hatchery Route 8 Chambersburg, PA 17201
Hubbard Farms, Inc. Walpole, NH 03608	Hubbard Golden Comet NHxSYN BX	I-A YES	Bowers Brothers Hatchery Albemarle, NC 28001
Hy-Line International 1206 Mulberry Des Moines, IA	Hy-Line W-36 INX	I-C NO	Not Applicable
Shaver Poultry Breeding Farms, Ltd. Box 400 Galt, Cambridge Ontario, CANADA N1R 5W6	Starcross 288 WL SX	I-A YES	Delta Hatcheries P. O. Box 769 Lake City, FL 32055
Tatum Farms Route 3 Dawsonville, GA 30534	Tatum T-100 WL SX	II YES	Tatum Farms Route 3 Dawsonville, GA 30534

TWENTIETH NORTH CAROLINA RANDOM SAMPLE LAYING TEST

TABLE 20-4A-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	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	Hubbard (Gld. Comet)	3.1	4.8	0.4	1.7	13.8	37.7	46.3	25.9	168.7	70.6	85.4	73.6	65.4	62.4	77.4	244.1
2	1	Babcock (B-300V)	2.7	3.8	0.9	2.5	18.9	45.2	32.5	25.3	164.7	73.9	84.3	75.1	65.5	60.4	77.4	253.6
3	1	Babcock (B-380)	3.5	5.0	0.2	0.9	7.5	30.7	60.7	27.2	167.7	70.1	84.6	76.1	67.9	64.5	78.0	256.9
4	1	Euribrid (Hisex Wh.)	2.7	3.9	1.4	3.2	22.9	44.9	27.5	24.6	160.3	80.4	88.5	79.4	72.3	68.0	81.9	273.3
5	1	Tatum (T-100)	2.8	4.1	0.7	2.5	16.5	40.2	40.2	25.7	163.3	73.3	84.4	71.3	57.5	52.3	74.1	239.1
6	1	Hy Line (W-36)	2.8	3.8	0.9	4.6	22.3	43.6	28.6	24.9	173.0	61.3	84.3	74.7	63.2	59.4	75.7	210.6
7	1	Shaver (288)	2.8	4.0	0.2	0.9	9.0	33.3	56.6	26.6	163.7	76.3	92.8	82.9	67.1	58.5	82.3	268.3
8	1	DeKalb (XL Link)	2.7	3.8	0.6	2.0	20.3	42.0	35.1	25.3	166.3	75.4	91.2	82.2	71.6	67.6	83.4	270.9
9	1	DeKalb (Amber Link)	3.2	5.6	0.7	1.3	10.2	36.0	51.8	26.4	172.0	64.4	85.2	76.0	66.6	62.3	77.4	250.5
10	1	H & N ("Nick Chick")	2.7	3.8	0.6	1.5	18.3	44.9	34.7	25.2	162.0	76.7	87.4	77.0	65.5	60.3	78.7	265.4
0	1	Average	2.9	4.3	0.7	2.1	16.0	39.9	41.4	25.7	166.2	72.3	86.8	76.8	66.3	61.6	78.6	253.3
Breeders Program Feed																		
1	2	Hubbard (Gld. Comet)	3.1	4.8	0.3	1.2	13.5	35.2	49.9	26.2	168.0	70.5	83.5	73.6	63.3	61.3	76.1	243.8
2	2	Babcock (B-300V)	2.7	3.7	0.9	2.4	18.8	44.5	33.4	25.1	164.3	75.0	84.9	77.0	65.1	60.4	77.7	260.5
3	2	Babcock (B-380)	3.5	5.0	0.2	0.8	7.3	27.5	64.3	27.4	168.0	72.3	85.3	75.3	67.5	65.4	78.3	256.9
4	2	Euribrid (Hisex Wh.)	2.8	3.9	1.0	3.1	22.4	43.3	30.2	24.9	160.7	79.1	87.4	78.9	70.8	63.9	81.0	266.3
5	2	Tatum (T-100)	2.9	4.0	0.9	2.4	17.8	40.5	38.5	25.5	167.3	70.3	84.8	74.6	61.5	56.7	75.8	245.9
6	2	Hy Line (W-36)	2.7	3.9	0.6	4.1	23.2	43.5	28.6	25.0	174.7	62.4	83.1	73.4	59.7	53.4	74.6	214.4
7	2	Shaver (288)	2.8	4.2	0.5	1.0	10.4	34.8	53.4	26.3	164.7	76.0	89.7	80.4	64.7	56.0	80.9	258.3
8	2	DeKalb (XL Link)	2.8	3.8	0.5	1.6	16.5	44.8	36.6	25.2	166.0	73.6	91.1	81.3	64.6	56.2	80.5	259.6
9	2	DeKalb (Amber Link)	3.2	5.6	0.5	0.9	10.3	37.7	50.5	26.4	171.0	64.2	85.6	76.8	69.3	65.6	78.4	251.1
10	2	H & N ("Nick Chick")	2.7	3.7	0.9	2.5	21.1	43.9	31.6	25.1	163.7	73.9	83.5	73.2	66.8	62.5	76.9	251.4
0	2	Average	2.9	4.3	0.6	2.0	16.1	39.6	41.7	25.7	166.8	71.7	85.9	76.5	65.3	60.2	78.0	250.8

TABLE 20-4C-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	Hubbard (Gld. Comet)	3.2	4.7	0.1	0.7	9.5	34.0	55.6	26.8	186.7	56.1	82.2	72.6	66.5	74.2	244.1	
2	3	Babcock (B-300V)	2.7	3.9	0.7	1.2	11.4	41.3	45.4	26.0	168.0	63.9	84.1	74.3	69.5	75.5	247.5	
3	3	Babcock (B-380)	3.6	5.0	0.2	0.3	6.1	19.1	74.2	28.5	171.7	63.7	86.8	77.7	70.3	78.8	257.0	
4	3	Euribrid (Hisex Wh.)	2.8	3.6	1.4	2.9	20.4	45.5	29.7	25.0	154.7	77.4	84.9	78.6	74.6	78.8	273.3	
5	3	Tatum (T-100)	3.1	4.1	0.3	1.6	14.3	38.9	44.8	26.0	166.3	70.2	79.9	71.6	70.2	75.5	249.2	
6	3	Hy Line (W-36)	2.8	3.8	0.5	1.8	15.5	41.0	41.2	25.8	173.3	63.2	84.2	75.5	68.8	77.3	231.3	
7	3	Shaver (288)	2.9	4.2	0.2	0.4	5.9	28.0	65.5	27.3	176.3	60.6	86.4	79.0	75.9	74.4	262.2	
8	3	DeKalb (XL Link)	3.0	4.0	0.5	1.4	12.1	38.9	47.0	26.3	170.0	62.4	85.0	78.8	72.5	69.8	258.0	
9	3	DeKalb (Amber Link)	3.1	5.2	0.1	0.3	3.1	25.6	70.9	27.6	210.0	37.7	84.0	78.4	76.3	74.6	238.1	
10	3	H & N ("Nick Chick")	3.0	3.7	0.8	2.4	17.7	44.6	34.5	25.5	160.0	70.3	83.8	77.0	66.9	65.6	255.0	
0	3	Average	3.0	4.2	0.5	1.3	11.6	35.7	50.9	26.5	173.7	62.6	84.1	76.3	71.4	69.4	251.6	
Breeder Program Feed																		
1	4	Hubbard (Gld. Comet)	3.2	4.6	0.1	0.7	8.4	34.4	56.4	26.5	177.0	57.5	82.8	73.5	68.2	75.4	246.2	
2	4	Babcock (B-300V)	2.7	3.7	3.0	0.9	13.9	41.7	40.5	25.3	165.7	65.3	82.5	72.7	70.7	74.8	252.2	
3	4	Babcock (B-380)	3.5	5.1	0.1	0.5	5.7	19.5	74.2	28.2	174.0	63.5	86.4	77.3	70.4	68.3	257.8	
4	4	Euribrid (Hisex Wh.)	2.9	4.0	0.9	3.0	19.5	41.7	34.9	25.2	152.3	79.0	83.5	75.1	73.8	73.3	266.2	
5	4	Tatum (T-100)	3.0	4.4	0.4	1.7	14.0	38.7	45.2	26.4	164.3	69.2	77.9	71.2	64.0	62.6	242.5	
6	4	Hy Line (W-36)	2.8	4.0	0.5	1.9	13.7	36.9	47.1	26.1	176.7	61.1	84.4	76.2	70.5	67.3	237.6	
7	4	Shaver (288)	3.0	4.3	0.2	0.2	6.6	20.2	72.8	27.9	171.3	62.3	88.8	72.6	72.6	71.8	246.7	
8	4	DeKalb (XL Link)	2.8	4.1	0.3	1.4	14.0	41.0	43.3	26.0	169.7	65.2	89.2	79.5	73.7	72.1	265.1	
9	4	DeKalb (Amber Link)	3.2	5.2	0.1	0.5	4.0	30.0	65.3	27.4	199.3	38.1	85.3	75.9	76.0	76.1	241.9	
10	4	H & N ("Nick Chick")	2.9	3.7	0.8	1.9	18.5	46.9	31.8	25.3	161.3	69.4	85.1	77.5	69.8	66.1	251.9	
0	4	Average	3.0	4.3	0.6	1.3	11.8	35.1	51.2	26.4	171.2	63.1	84.6	75.2	71.1	69.7	250.8	

TABLE 20-4D-I. Body Weight, Egg Size, Maturity and Production Rate

Entry No.	Type Housing	Breeder	Average Body Weight		% Egg Size, Distribution					Average Egg Wt.		Egg Production Rate - %					Eggs Per Pullet Housed	
			147 Days	497 Days	Small	Medium	Large	Extra Large and Over	Oz./Doz.	Age at 50% Production	148-231 Days	232-315 Days	316-399 Days	400-497 Days	456-497 Days	After 50% Production		
4 Treatment Means																		
1	0	Hubbard (Gld. Comet)	3.1	4.8	0.2	1.1	11.3	35.3	52.0	26.4	175.1	63.7	83.5	73.3	66.6	64.6	75.8	244.5
2	0	Babcock (B-300V)	2.7	3.7	1.4	1.8	15.7	43.2	38.0	25.4	165.7	69.5	84.0	74.8	67.7	65.3	76.4	253.4
3	0	Babcock (B-380)	3.5	5.0	0.2	0.6	6.6	24.2	68.4	27.8	170.3	67.4	85.8	76.6	69.0	66.4	78.5	257.1
4	0	Euribrid (Hisex Wh.)	2.8	3.9	1.2	3.0	21.3	43.8	30.6	24.9	157.0	79.0	86.1	78.0	72.9	69.0	79.8	269.8
5	0	Tatum (T-100)	2.9	4.1	0.6	2.0	15.7	39.6	42.2	25.9	165.3	70.8	81.8	72.2	63.3	60.2	74.5	244.2
6	0	Hy Line (W-36)	2.8	3.9	0.6	3.1	18.7	41.2	36.4	25.4	174.4	62.0	84.0	75.0	65.6	61.7	76.3	223.5
7	0	Shaver (288)	2.9	4.2	0.3	0.6	8.0	29.0	62.1	27.0	169.0	68.8	89.4	78.7	70.1	65.2	80.3	258.9
9	0	DeKalb (XL Link)	2.8	3.9	0.5	1.6	15.8	41.7	40.5	25.7	168.0	69.1	89.1	80.5	70.6	66.4	80.7	263.4
9	0	DeKalb (Amber Link)	3.2	5.4	0.4	0.8	6.9	32.3	59.6	26.9	188.1	51.1	85.0	76.8	72.0	69.7	78.3	245.4
10	0	H & N ("Nick Chick")	2.8	3.7	0.8	2.1	18.9	45.1	33.2	25.3	161.7	72.6	84.9	76.2	67.3	63.6	77.0	255.9
0	0	Average	3.0	4.3	0.6	1.7	13.9	37.5	46.3	26.1	169.5	67.4	85.4	76.2	68.5	65.2	77.8	251.6

TABLE 20-4A-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	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		
Phased Feed																		
1	1	90	90	80	0.0	11.1	18.2	13.8	23.9	2.47	4.01	0.38	1.09	6.47	7.94	10.78	0.35	3.192
2	1	90	90	84	0.6	6.7	9.0	13.5	21.4	2.21	3.50	0.38	1.06	6.08	7.52	10.95	0.29	3.716
3	1	88	86	84	1.6	2.2	4.7	15.4	25.9	2.48	4.21	0.38	1.23	7.19	8.81	11.06	0.40	2.652
4	1	90	90	83	0.5	7.8	8.5	12.8	23.3	2.24	3.45	0.38	1.01	6.43	7.83	11.41	0.30	3.876
5	1	82	81	74	2.3	8.6	14.1	15.4	21.4	2.36	3.79	0.38	1.18	6.21	7.78	10.32	0.31	2.850
6	1	92	90	68	2.1	24.4	51.2	13.2	20.9	2.24	3.48	0.38	1.05	5.01	6.45	9.15	0.24	2.945
7	1	91	90	86	0.9	4.4	11.4	14.2	23.7	2.19	3.64	0.38	1.12	6.69	8.19	11.51	0.31	3.632
8	1	90	90	84	0.3	6.7	10.9	13.9	22.6	2.14	3.39	0.38	1.10	6.30	7.77	11.75	0.29	4.267
9	1	91	90	87	0.6	3.3	6.0	14.6	27.1	2.70	4.45	0.38	1.15	7.37	8.91	10.94	0.45	2.469
10	1	91	90	89	0.8	1.1	1.9	13.3	23.1	2.32	3.66	0.38	1.04	6.64	8.07	11.38	0.31	3.612
0	1	90	89	82	1.0	7.6	13.6	14.0	23.3	2.33	3.76	0.38	1.10	6.44	7.93	10.92	0.33	3.322
Breeders Program Feed																		
1	2	90	90	83	0.0	5.6	13.2	13.8	24.2	2.44	4.00	0.38	1.09	6.56	8.02	10.72	0.37	3.057
2	2	90	90	88	0.3	2.2	3.1	13.6	21.7	2.24	3.52	0.38	1.07	6.33	7.78	11.13	0.30	3.642
3	2	82	81	77	2.0	4.9	6.9	15.5	25.7	2.36	4.05	0.38	1.23	6.91	8.53	10.96	0.38	2.814
4	2	90	90	83	0.3	7.8	12.2	13.2	24.3	2.33	3.62	0.38	1.04	6.53	7.95	11.13	0.30	3.476
5	2	85	84	78	1.1	7.0	10.6	14.9	22.2	2.34	3.74	0.38	1.16	6.29	7.83	10.67	0.31	3.146
6	2	93	90	73	2.4	18.9	40.6	12.9	20.8	2.31	3.60	0.38	1.03	5.39	6.81	9.38	0.26	2.831
7	2	90	90	81	0.9	10.0	16.2	14.2	24.1	2.30	3.78	0.38	1.12	6.55	8.05	11.19	0.31	3.452
8	2	90	90	83	0.3	7.8	13.4	14.2	22.5	2.24	3.54	0.38	1.12	6.23	7.73	11.19	0.29	3.755
9	2	90	90	82	0.3	8.9	9.9	14.6	26.8	2.62	4.32	0.38	1.15	7.10	8.62	10.93	0.42	2.722
10	2	90	90	82	0.9	8.9	11.2	13.2	22.6	2.33	3.66	0.38	1.04	6.26	7.69	10.69	0.28	3.286
0	2	89	89	81	0.8	8.2	13.7	14.0	23.5	2.35	3.78	0.38	1.10	6.41	7.90	10.80	0.32	3.218

TABLE 20-4C-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	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
Phased Feed																	
1	3	78	76	0.6	2.6	0.4	13.5	23.8	2.47	4.13	0.38	1.06	6.65	8.10	10.64	0.38	2.924
2	3	79	75	1.1	3.8	10.0	13.4	23.5	2.40	3.91	0.38	1.06	6.49	7.94	10.52	0.31	2.889
3	3	65	62	4.6	1.5	4.7	16.5	26.3	2.48	4.42	0.38	1.25	7.52	9.18	10.91	0.41	2.138
4	3	80	76	2.1	2.6	2.9	13.6	23.6	2.32	3.63	0.38	1.08	6.60	8.07	11.37	0.29	3.597
5	3	61	56	4.0	5.1	8.3	16.2	25.0	2.59	4.21	0.38	1.26	7.03	8.69	10.75	0.32	2.383
6	3	78	66	0.6	15.4	31.9	12.9	23.0	2.39	3.85	0.38	1.01	5.99	7.39	10.09	0.26	2.962
7	3	79	77	1.1	2.6	2.7	13.8	25.7	2.40	4.10	0.38	1.08	7.22	8.69	11.27	0.34	2.916
8	3	78	75	0.16	3.8	3.9	13.4	23.8	2.33	3.83	0.38	1.06	6.65	8.09	11.05	0.31	3.276
9	3	78	76	0.0	2.6	5.9	13.9	26.5	2.55	4.41	0.38	1.09	6.94	8.41	10.33	0.42	2.343
10	3	71	67	0.0	5.6	6.5	14.1	23.7	2.47	3.94	0.38	1.11	6.73	8.22	10.70	0.29	2.772
0	3	75	74	1.5	4.6	7.7	14.1	24.5	2.44	4.04	0.38	1.11	6.78	8.28	10.76	0.33	2.820
Breeders Program Feed																	
1	4	79	77	1.1	1.3	1.9	13.7	22.4	2.40	3.98	0.38	1.07	6.56	8.02	10.90	0.38	3.259
2	4	79	73	1.1	6.4	10.6	13.4	22.9	2.39	3.86	0.38	1.06	6.38	7.83	10.70	0.28	3.152
3	4	67	62	4.6	1.7	2.9	16.0	25.6	2.49	4.38	0.38	1.25	7.39	9.04	10.94	0.41	2.304
4	4	79	74	1.8	5.1	7.4	13.7	23.8	2.35	3.72	0.38	1.08	6.59	8.06	10.90	0.32	3.160
5	4	63	57	4.0	5.1	5.5	16.2	23.1	2.50	4.12	0.38	1.26	6.69	8.34	10.62	0.34	2.618
6	4	79	71	0.6	9.0	23.9	12.9	22.7	2.32	3.79	0.38	1.01	6.07	7.47	10.34	0.30	3.169
7	4	79	72	1.1	7.7	16.6	13.8	25.5	2.39	4.17	0.38	1.08	6.90	8.27	10.59	0.33	2.543
8	4	79	75	0.6	3.8	4.9	13.4	24.9	2.32	3.76	0.38	1.06	6.71	8.15	11.36	0.32	3.534
9	4	79	78	0.6	0.0	0.0	13.9	26.4	2.62	4.49	0.38	1.09	7.14	8.61	10.61	0.43	2.424
10	4	71	66	0.0	6.9	14.5	14.1	23.9	2.48	3.93	0.38	1.11	6.62	8.13	10.72	0.38	2.875
0	4	75	74	1.6	4.7	8.8	14.1	24.1	2.43	4.02	0.38	1.11	6.70	8.20	10.77	0.34	2.904

TABLE 20-4D-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	337	336	316	0.4	5.1	8.4	13.7	23.6	2.45	4.03	0.38	1.08	6.56	8.02	10.76	0.37	3.108
2	0	338	336	320	0.8	4.8	8.2	13.5	22.4	2.31	3.70	0.38	1.06	6.32	7.77	10.82	0.29	3.350
3	0	302	293	285	3.2	2.6	4.8	15.9	25.9	2.45	4.26	0.38	1.24	7.25	8.89	10.97	0.40	2.477
4	0	339	336	316	1.2	5.8	7.7	13.3	23.7	2.31	3.60	0.38	1.05	6.54	7.98	11.20	0.30	3.527
5	0	291	284	265	2.8	6.5	9.6	15.7	22.9	2.45	3.97	0.38	1.21	6.55	8.16	10.59	0.32	2.748
6	0	342	336	278	1.4	16.9	36.9	13.0	21.8	2.31	3.68	0.38	1.03	5.61	7.03	9.74	0.26	2.977
7	0	339	335	314	1.0	6.2	11.7	14.0	24.7	2.32	3.92	0.38	1.10	6.84	8.33	11.14	0.32	3.136
8	0	337	336	317	0.4	5.5	8.3	13.7	23.4	2.26	3.63	0.38	1.08	6.47	7.94	11.34	0.30	3.708
9	0	338	336	323	0.4	3.7	5.4	14.3	26.7	2.62	4.42	0.38	1.12	7.14	8.64	10.70	0.43	2.492
10	0	323	322	304	0.4	5.6	8.5	13.7	23.3	2.40	3.79	0.38	1.08	6.56	8.03	10.87	0.29	3.136
0	0	329	325	304	1.2	6.3	11.0	14.1	23.9	2.39	3.90	0.38	1.11	6.58	8.08	10.81	0.33	3.066

TABLE 20-4A-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	December	March	June	Average	October	January	April	July	Average	
Phased Feed																					
1	1	2.5	2.8	1.8	17.4	16.3	95.4	2.2	0.0	1.9	0.5	83.0	76.5	71.6	72.6	75.9	2.34	2.46	1.60	1.51	1.98
2	1	3.2	0.9	0.5	0.1	0.5	94.1	3.6	0.4	1.2	0.8	84.0	75.9	75.5	72.8	77.0	3.40	3.75	2.91	1.57	2.91
3	1	5.6	2.3	2.0	11.8	10.5	89.6	2.9	0.0	6.4	1.1	88.3	79.2	75.5	73.7	79.2	1.52	1.63	1.31	1.24	1.42
4	1	5.4	0.3	1.6	0.3	0.8	89.4	6.5	0.5	2.8	0.8	82.2	76.8	73.0	70.9	75.7	2.70	2.66	1.72	1.55	2.16
5	1	4.1	2.0	1.3	0.2	0.2	91.5	4.3	0.3	3.3	0.6	87.5	75.9	78.7	73.9	79.0	2.23	2.52	1.57	1.49	1.95
6	1	2.4	1.1	1.3	0.0	0.2	95.1	3.3	0.0	1.4	0.2	83.4	74.7	68.4	67.3	73.5	2.52	3.34	2.14	1.95	2.49
7	1	6.0	1.0	1.0	0.5	0.0	88.9	5.1	0.6	4.3	1.3	84.3	77.8	73.0	72.6	65.9	2.59	2.90	1.94	1.46	2.22
9	1	3.2	0.7	0.3	0.3	0.1	93.5	3.1	0.0	3.0	0.3	86.2	77.9	72.9	70.6	76.9	2.49	3.19	2.08	1.77	2.38
10	1	3.7	3.3	1.9	12.8	7.5	93.4	2.2	0.0	3.4	1.0	88.6	80.6	79.5	76.3	81.3	1.55	2.08	1.44	1.19	1.57
10	1	4.8	0.7	0.7	0.7	0.3	90.5	6.5	0.7	1.8	0.5	85.4	80.0	74.8	71.9	78.0	3.12	3.64	2.50	2.19	2.86
0	1	4.1	1.5	1.2	4.4	3.6	92.1	4.0	0.2	3.0	0.7	85.3	77.5	74.3	72.3	77.3	2.44	2.82	1.92	1.59	2.19
Breeders Program Feed																					
1	2	3.1	3.4	2.2	14.1	13.9	94.0	2.5	0.1	2.9	0.5	86.7	76.2	72.1	72.7	76.9	1.84	2.35	1.58	1.53	1.82
2	2	4.3	0.9	0.3	0.3	0.3	92.3	4.4	0.5	2.1	0.8	83.3	75.3	71.7	69.7	75.0	3.72	4.01	2.82	2.27	3.21
3	2	6.6	2.2	1.7	10.7	14.1	88.2	3.8	0.3	5.9	1.9	90.0	82.4	75.1	74.4	80.5	1.65	1.67	1.27	1.34	1.48
4	2	5.6	1.4	1.2	0.9	1.4	89.6	4.9	0.9	3.4	1.2	84.1	75.9	70.8	71.1	75.5	2.73	2.76	1.97	2.04	2.37
5	2	3.1	1.6	0.7	0.3	0.6	94.2	2.9	0.1	2.1	0.6	85.5	78.3	77.3	73.4	78.6	2.20	2.40	1.61	1.49	1.92
6	2	2.0	1.2	1.2	0.9	0.2	95.7	2.4	0.1	1.8	0.0	85.6	74.3	68.2	62.8	72.7	2.78	3.06	2.09	1.30	2.31
7	2	4.8	1.1	1.5	0.4	0.5	90.9	3.5	0.5	4.6	0.6	86.3	78.1	71.2	71.4	76.7	2.69	2.99	2.03	1.54	2.31
8	2	4.4	0.7	1.6	0.0	0.0	90.9	4.4	0.0	4.4	0.2	83.6	77.5	72.6	71.0	76.2	2.99	3.11	1.85	1.53	2.37
9	2	4.2	2.9	2.9	11.8	7.9	92.8	1.3	0.0	4.5	1.2	89.1	80.4	76.7	70.8	79.2	1.60	2.05	1.30	1.31	1.57
10	2	4.5	0.6	0.1	0.1	0.1	90.9	6.3	0.7	1.8	0.3	86.3	80.4	72.7	73.8	78.3	3.29	3.70	2.86	2.12	2.99
0	2	4.3	1.6	1.3	3.9	3.9	91.9	3.7	0.3	3.4	0.7	86.1	77.9	72.8	71.1	77.0	2.55	2.81	1.94	1.65	2.24

TABLE 20-4C-III. Egg Quality Data

Entry No.	Type Housing	% 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	December	March	June	Average	October	January	April	July	Average	
<u>Phased Feed</u>																					
1	3	4.1	1.4	1.1	18.9	13.4	92.0	2.1	0.3	5.1	0.4	82.6	74.0	72.9	72.9	75.6	3.06	2.69	2.34	1.98	2.52
2	3	5.9	1.1	0.6	0.3	0.3	90.3	4.5	0.5	2.8	1.9	78.6	74.6	69.1	72.5	73.7	4.05	4.02	3.10	2.21	3.34
3	3	7.2	0.9	1.7	11.2	10.7	88.2	2.4	0.4	6.5	2.6	83.4	78.0	75.8	73.4	77.7	1.96	1.64	1.37	1.18	1.54
4	3	5.6	1.0	0.4	0.5	0.3	89.3	4.3	1.5	4.3	0.7	78.9	74.0	69.8	73.8	74.1	3.56	3.47	2.48	1.70	2.80
5	3	4.2	2.9	2.4	1.2	0.8	92.0	3.5	0.2	3.9	0.4	81.0	77.8	70.5	70.6	75.0	2.93	2.97	2.21	1.53	2.41
6	3	3.3	1.4	0.3	0.3	0.3	94.1	2.6	0.2	2.6	0.6	76.0	67.6	66.3	61.5	67.8	3.59	3.64	2.72	2.08	3.01
7	3	5.8	1.4	1.1	0.4	0.7	89.3	4.4	0.6	4.8	0.9	82.4	76.7	74.2	72.9	76.5	3.45	3.40	2.59	1.80	2.81
8	3	4.9	1.3	0.7	0.1	0.1	90.9	2.8	0.7	4.9	0.7	82.6	75.1	72.3	70.6	75.1	3.44	3.97	2.62	1.94	2.99
9	3	5.1	1.3	2.0	11.4	10.6	91.0	1.4	0.0	6.4	1.2	87.4	82.7	78.2	79.4	81.9	2.22	2.16	1.58	1.71	1.92
10	3	6.0	1.0	1.0	0.0	0.3	88.0	5.7	1.0	4.8	0.5	82.6	78.2	73.6	73.9	77.1	3.50	3.92	2.78	2.39	3.15
0	3	5.2	1.4	1.1	4.5	3.8	90.5	3.4	0.5	4.6	1.0	81.5	75.9	72.3	72.1	75.5	3.18	3.19	2.38	1.85	2.65
<u>Breeders Program Feed</u>																					
1	4	2.8	2.1	2.4	17.9	13.5	94.5	1.7	0.0	3.3	0.5	81.1	73.7	70.7	70.6	74.0	2.62	2.76	2.26	1.79	2.36
2	4	3.8	1.5	1.1	1.5	0.6	93.1	2.9	0.2	2.9	1.0	79.1	72.5	69.5	73.0	73.5	4.07	4.21	3.44	2.21	3.48
3	4	7.2	1.4	0.7	11.6	7.7	87.5	2.1	0.3	8.5	1.7	84.1	77.1	73.7	74.1	77.3	1.87	1.83	1.49	1.40	1.65
4	4	7.5	0.8	0.6	0.3	0.6	85.3	6.6	1.1	6.1	0.9	76.8	72.6	73.4	72.4	73.8	3.57	3.06	2.32	1.65	2.65
5	4	2.8	2.0	1.0	0.9	0.4	94.7	1.8	0.4	2.7	0.4	82.5	74.9	74.8	73.3	76.4	3.05	2.91	2.06	1.69	2.43
6	4	3.4	1.4	1.2	0.5	0.5	93.4	3.0	0.0	3.3	0.3	77.6	71.6	68.7	67.0	71.2	3.30	3.79	2.97	2.12	3.04
7	4	6.3	1.5	0.3	0.2	0.8	88.5	3.3	0.3	6.8	1.1	80.5	77.8	79.7	75.1	78.3	3.39	3.37	2.37	1.89	2.75
8	4	5.1	1.1	0.4	0.1	0.6	90.6	3.1	0.8	4.5	1.0	78.1	76.3	74.6	72.4	75.4	3.30	3.61	2.66	2.20	2.94
9	4	4.0	1.4	0.7	11.1	10.4	92.2	1.6	0.0	5.9	0.3	88.5	84.5	80.2	79.6	83.2	1.93	2.49	1.46	1.44	1.83
10	4	4.7	1.0	0.8	1.3	1.3	91.5	3.3	0.7	3.8	0.8	78.7	76.1	74.8	74.4	76.0	3.36	3.68	3.71	2.40	3.29
0	4	4.8	1.4	0.9	4.5	3.6	91.1	2.9	0.4	4.8	0.8	80.7	75.7	74.0	73.2	75.9	3.05	3.17	2.47	1.88	2.64

TABLE 20-4D-III. Egg Quality Data

Entry No.	Type Housing	% 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	Cracks and	Loss Eggs	October	December	March	June	Average	October	January	April	July	Average	
4 Treatment Means																					
1	0	3.1	2.4	1.9	17.1	14.3	94.0	2.1	0.1	3.3	0.5	83.3	75.1	71.8	72.2	75.6	2.46	2.57	1.95	1.70	2.17
2	0	4.3	1.1	0.6	0.7	0.4	92.4	3.8	0.4	2.3	1.1	81.3	74.6	71.4	72.0	74.8	3.81	4.00	3.07	2.06	3.23
3	0	6.7	1.7	1.5	11.3	10.7	88.3	2.8	0.2	6.8	1.8	86.4	79.2	75.0	73.9	78.6	1.75	1.69	1.36	1.29	1.52
4	0	6.0	0.9	0.9	0.5	0.8	88.4	5.6	1.0	4.2	0.9	80.5	74.8	71.7	72.0	74.8	3.14	2.99	2.12	1.73	2.50
5	0	3.6	2.1	1.3	0.6	0.5	93.1	3.1	0.2	3.0	0.5	84.1	76.7	75.3	72.8	77.2	2.60	2.70	1.86	1.55	2.18
6	0	2.8	1.3	1.0	0.4	0.3	94.6	2.8	0.1	2.3	0.3	80.7	72.1	67.9	64.7	71.3	3.05	3.46	2.48	1.86	2.71
7	0	5.7	1.2	1.0	0.4	0.5	89.4	4.1	0.5	5.1	1.0	83.4	77.6	74.5	73.0	77.1	3.03	3.16	2.23	1.67	2.52
8	0	4.4	1.0	0.8	0.1	0.2	91.5	3.4	0.4	4.2	0.6	82.6	76.7	73.1	71.2	75.9	3.05	3.47	2.30	1.86	2.67
9	0	4.2	2.2	1.9	11.8	9.1	92.4	1.6	0.0	5.1	0.9	88.4	82.1	78.6	76.5	81.4	1.83	2.20	1.44	1.41	1.72
10	0	5.0	0.8	0.7	0.5	0.5	90.2	5.5	0.8	3.0	0.5	83.2	78.7	74.0	73.5	77.3	3.32	3.74	2.96	2.28	3.07
0	0	4.6	1.5	1.2	4.3	3.7	91.4	3.5	0.4	3.9	0.8	83.4	76.8	73.3	72.2	75.4	2.80	3.00	2.18	1.74	2.43

TABLE 20-4D-VI. Duncan Range Test and Range Groups

Range	En-try	Eggs Per Pullet Housed	Duncan Test	Range	En-try	% Production After 50%	Duncan Test	Range	En-try	Feed Per Lb. of Eggs	Duncan Test	Range	En-try	Days Lost to Mortality	Duncan Test
1	4	269.8		1	8	80.7		1	8	2.26		1	3	4.8	
1	8	263.4		1	7	80.3		1	4	2.31		1	9	5.4	
2	7	258.9		1	4	79.8		1	2	2.31		1	4	7.7	
2	3	257.1		2	3	78.5		1	6	2.31		2	2	8.2	
2	10	255.9		2	9	78.3		1	7	2.32		2	8	8.3	
2	2	253.4		Mean		77.7		Mean		2.39		2	1	8.4	
Mean		251.6		3	10	77.0		3	10	2.40		2	10	8.5	
3	9	245.4		3	2	76.4		3	1	2.45		2	5	9.6	
3	1	244.5		3	6	76.3		3	5	2.45		Mean		11.0	
3	5	244.2		4	1	75.8		3	3	2.45		3	7	11.7	
4	6	223.5		4	5	74.5		4	9	2.62		4	6	36.9	

THE 24TH CENTRAL CANADA EGG PRODUCTION TEST

The 24th Central Egg Production Test stock was hatched on April 27, 1978, and terminated on August 28, 1979. The birds on test represented commercial stocks from one Canadian, five United States, one European breeder and a control stock from the Research Branch, Agriculture Canada. There were also three experimental stocks entered in the test.

The test began by selecting a random sample of 1,440 eggs from commercial breeding flocks and hatching these at the Central Test Station, Ottawa. A maximum of 528 pullet chicks per entry were selected at random and these constituted the test birds. Eight replicates of 66 birds each, were housed and brooded in cages. The records given in this report are the average performance of the eight cage replicates; four replicates housed at 2 birds per cage and four at four birds per cage. All cages allowed 62 square inches of floor area per bird.

All birds were fed commercial starter ration to 8 weeks of age, grower ration to 20 weeks of age, and layer crumbles from 20 weeks on.

All stocks were grown in cages and received the same care and management during the growing period. All birds that died were sent to the Animal Diseases Research Institute in Ottawa for diagnosis on the major cause of death. Any chick mortality occurring during the first week of the test was not charged against the entry.

All entries were vaccinated with a Marek's vaccine at day old; a combined Newcastle (B1) and modified Bronchitis vaccine at 10 days of age; an Avian Encephalomyelitis vaccine at eight weeks of age; a booster Bronchitis vaccine at 12 weeks of age; an Avian Encephalomyelitis vaccine at 15 weeks of age; a booster Newcastle (Lasota) vaccine at 19 weeks of age.

The birds were debeaked and dubbed at 7 days of age. The birds were housed 141 days of age and all records on a per pen housed basis started at that time.

The record on income is referred to as net revenue but is a record of income over feed and chick cost. The income is egg receipts and carcass value of the hens finishing the test; the costs include only that of the pullet chicks and of the feed consumed throughout the test. All other costs such as litter, vaccines, depreciation, labour, etc., are not included.

The feed prices used to calculate feed costs were: starter 8.811¢; grower 8.334¢; layer 9.477¢ per pound. Each shipment of feed used at the station was analyzed for protein, fat, fibre, calcium and phosphorous. The average of these nutrients was:

<u>Control</u>	<u>Protein</u>	<u>Fat</u>	<u>Fibre</u>	<u>Calcium</u>	<u>Phosphorous</u>
Starter	16.5	3.3	3.8	1.5	0.64
Grower	15.7	3.0	3.4	0.78	0.64
Lay Crumbles	17.7	2.9	3.3	3.8	0.74

Meat value of the fowl at the end of the test was \$0.12 per pound.

The records of this test have been compiled through a computer process that has accumulated weekly records into 28-day periods and ultimately the total test period. Egg revenue was calculated weekly based on a two-year average price at Vancouver, Winnipeg, Toronto and Montreal markets. Feed prices were current prices paid for feed delivered Ottawa in 25 kilogram bags.

Glossary of Terms

Body weight - an average of each entry's individual bird weights at the completion of the test for market body weight.

Blood spots - large spots are those 1/8" or more in diameter; small spots are those less than 1/8". Observations taken quarterly on 200 eggs per entry.

Egg Weight - (1) ounces per dozen - average weight of mass weighing a maximum of 480 eggs per entry each week; (2) percentage of various grade sizes - average size for the test period of a weekly sample of a maximum of 480 eggs per entry.

Feed efficiency - (1) the pounds of feed required to produce one dozen eggs; (2) calculated feed required to produce one pound of egg based on feed consumed and egg size as calculated under Egg Weight - (1) above.

Haugh Units - measurement of albumen strength. High Haugh units indicate good albumen quality. Measurements taken during the 6th, 22nd, 38th and 50th week of production on 200 eggs per entry after 2 days storage.

Hen-day - one hen-day is allocated for every day each hen lives after the entry reaches sexual maturity.

Hen-day production - total eggs laid divided by total hen days and expressed as a percentage.

I.O.F. & C.C. - income over feed and chick cost and based on number of hens housed.

Meat spots - large spots are those 1/8" or more in diameter; small spots are those less than 1/8". Observations taken quarterly on 200 eggs per entry.

Mortality - (1) 8 days to 491 days - entire test mortality.
(2) Laying house-deaths after 141 days of age.

Net revenue - revenue from eggs and meat reduced by chick cost and cost of feed consumed throughout the entire test period and based on number of hens housed.

Persistency of lay - means % hen-day production during last 8 weeks of test.

Pullet chick cost - A standard chick price was used for all entries.

Quartile - entries divided into four groups. Group 1 has the best records, e.g., highest egg production and lowest mortality, and group 4 has the poorest records, e.g., lowest egg production and highest mortality. Quartile 1 and 2 are above the test average; quartile 3 and 4 are below the test average. Division of quartile 1 and 2 is point midway between test average and record of best entry; division of quartile 3 and 4 is point midway between test average and record of poorest entry.

Rank - numerical ranking of the 9 entries.

Sexual maturity - age of the entry on the first day of two consecutive days when rate of lay in the pen is at least 50%.

Shell score - indicates shell strength as measured by specific gravity records. The higher the score, the thicker the egg shell. Measurements taken during the 6th, 22nd, 38th and 50th week of production on 200 eggs per entry.

Explanation of Causes of Mortality

1. Avian Leukosis Complex:

- a. Marek's disease: (1) All birds with lymphoid neoplasms dying through 150 days of age. (2) All birds with lymphoid neoplasms and gross neural or ocular involvement dying at any age.

- b. Lymphoid Leukosis: All birds dying after 150 days of age with a lymphoid neoplasm(s) one of which must be located in the bursa of Fabricius, and no gross nerve involvement.
 - c. Other Neoplasms: Myeloblastosis, myelocytomatosis, erythroblastosis fibrosarcome, endothelioma, nephroblastoma, osteopetrosis, and hemangioma.
2. Tumors and cysts not of the avian leukosis complex: (leiomyoma, carcinomata).
 3. Hemorrhages:
 4. Respiratory diseases: including viral, bacterial (CRD) and aspergillosis.
 5. Reproductive disorders: include abdominal ovulation, prolapse, egg peritonitis, non-specific peritonitis associated with the reproductive tract.
 6. Kidney disorders: includes nephritis, visceral and renal gout, and bluecomb.
 7. Cannibalism:
 8. Miscellaneous conditions: Round worms, cecal worms, etc.
 9. No visible lesions:

ENTRANTS IN THE TWENTY-FOURTH CENTRAL EGG PRODUCTION TEST

NAME	TYPE OF ENTRY	COMMERCIAL NAME
Shaver Poultry Breeding Farm Ltd. P. O. Box 400 Cambridge, Ontario N1R 5V9	Strain Cross W.L.	Shaver Starcross 288
Euribred B.V. Pilch Inc. P. O. Box 439 Troutman N.C. U. S. A. 28166	Strain Cross W.L.	hisex White
Animal Research Inst. C.E.F. Ottawa, Ontario K1A 0C6	Random Bred S.C.W.L.	Kentville Control
W. L. Tatum Inc. Route 3 Dawsonville, Georgia U. S. A. 30534	Strain Cross W.L.	Tatum - T100
Heisdorf & Nelson Farms Inc. P. O. Box 426 Redmond, Washington D.C. U. S. A. 98052	Strain Cross W.L.	H & N p.g./one
Dekalb Ag. Research Inc. Sycamore Road Dekalb, Illinois U. S. A. 60115	Strain Cross W.L.	Dekalb XL-Link
Hubbard Farm Inc. Walpole, New Hampshire U. S. A. 03608	Strain Cross W.L.	Hubbard Leghorn
Babcock Poultry Farms Inc. P. O. Box 280 Ithaca, New York U. S. A. 14850	Strain Cross W.L.	Babcock 300V

TABLE 1

Breeder	% Mortality Laying House	% Mortality 7 days- 491 days	Egg Prod. Per hen housed	% Hen day pro- duction	Persis- tency of lay %	Pounds of feed per doz. egg	Cal.lbs. of feed per lb. of egg	Market body weight	Av. Egg weight per doz.	% Extra Large & lg. size eggs	Income over Feed & chick cost per hen housed
Hisex White	13.6	14.5	241.2	73.1	58.6	4.26	2.82	4.0	24.2	51.0	3.18
Hubbard W.L.	7.0	8.3	253.1	76.2	65.1	4.20	2.70	4.2	24.9	63.2	3.93
Shaver Star- cross 288	11.7	15.0	241.5	75.4	61.9	4.10	2.59	4.3	25.3	66.5	4.11
Tatum T-100	11.2	12.5	225.7	69.8	55.1	4.45	2.89	4.3	24.6	56.2	2.80
A.R.I.	13.1	17.1	182.9	58.2	40.6	5.00	3.46	4.2	23.1	35.9	0.40
DeKalb XL- Link	7.0	8.0	251.0	75.9	62.1	4.02	2.64	4.2	24.3	52.8	4.16
H&N p.g./one	8.5	10.9	240.6	73.0	58.4	4.06	2.70	3.8	24.1	47.4	3.71
Babcock B300V	11.4	13.0	238.3	72.6	57.7	4.01	2.63	4.0	24.4	56.1	3.97
TEST AVERAGE	10.4	12.4	234.3	71.8	57.4	4.26	2.80	4.1	24.4	53.6	3.28
Shaver Exp.	20.9	23.6	227.4	74.6	62.4	4.14	2.64	4.3	25.1	64.9	3.79
Hubbard Exp.	8.7	10.1	244.5	75.3	62.7.	4.27	2.74	4.3	25.0	63.1	3.71
Babcock Exp.	8.8	9.9	246.0	75.7	66.1	4.11	2.63	4.1	25.0	64.4	4.35

TABLE 2

Breeder	Shell Score	Haugh Units	Blood %		Meat %		Spots %		Extra Large %	Egg Size %			Ounces per dozen
			Large	Small	Large	Small	Large	Medium		Small			
Cage Test													
Shaver 579	2.04	80.1	.3	6.9	1.2	13.2	55.1	36.2	7.8	.9	-	27.5	
Babcock B380	2.16	79.2	.9	5.7	1.8	15.0	46.2	39.2	12.5	2.0	.1	27.0	
Nelson 264	3.09	77.4	2.1	9.3	3.0	21.9	24.8	45.4	23.5	6.0	.3	25.6	
Hubbard Golden Comet													
Tatum T-173	2.88	79.5	.6	9.0	6.3	22.5	32.0	44.6	18.6	4.5	.3	26.0	
DeKalb Amber Link	2.70	77.7	.9	8.1	3.6	17.4	32.2	41.8	20.7	5.0	.3	26.0	
DeKalb Amber Link													
Test Average	2.04	83.1	.9	8.7	3.6	11.1	37.9	47.0	13.2	1.8	.1	26.6	
Shaver Exp.	2.49	79.5	1.0	8.0	3.3	16.9	38.0	42.3	16.1	3.4	.2	26.5	
Floor Test													
Shaver 579	2.10	79.2	1.8	9.0	3.0	13.8	43.0	43.2	11.9	1.8	.1	26.8	
Shaver 579	2.07	77.4	-	5.4	.9	8.4	47.5	42.1	8.9	1.3	.2	27.2	
Babcock B380	2.28	75.9	-	2.4	.6	6.6	44.5	41.3	11.9	2.2	.1	26.9	
Nelson 264	2.64	72.6	-	6.9	6.0	21.0	22.0	427	26.3	8.5	.5	25.2	
Hubbard Golden Comet													
Tatum T-173	2.97	75.3	.9	5.4	3.6	15.6	33.2	43.1	19.4	4.0	.3	26.1	
DeKalb Amber Link	2.49	76.2	-	3.9	2.4	11.4	28.1	42.9	23.5	5.3	.2	25.8	
DeKalb Amber Link													
Test Average	2.16	78.6	.6	3.6	2.1	15.6	37.0	45.1	15.1	2.6	.2	26.4	
Shaver Exp.	2.44	76.0	.2	4.6	2.6	13.1	35.4	42.8	17.5	4.0	.3	26.3	
Shaver Exp.													
	1.95	76.2	.9	6.0	2.4	15.6	28.8	48.1	20.3	2.5	.1	26.0	

TABLE 3

Breeder	Pullet Chick cost (\$)	Pullet rearing cost (feed)	Chick & feed cost per bird housed	Laying mash cost per hen housed	Egg revenue per hen housed	Carcass value per hen (\$)	I.O.F. & C.C. per hen housed	Sexual Maturity (days)
Cage Test								
Shaver 579	.35	1.36	1.71	9.39	13.50	.725	3.04	179
Babcock B380	.35	1.41	1.76	9.52	13.90	.660	3.20	166
Nelson 264	.35	1.30	1.65	8.57	9.68	.661	.03	169
Hubbard Comet	.35	1.34	1.69	9.27	13.40	.614	2.97	169
Tatum T-173	.35	1.31	1.66	8.97	12.17	.640	2.08	170
DeKalb Amber Link	.35	1.33	1.68	9.34	12.93	.718	2.55	186
Test Average	.35	1.34	1.69	9.18	12.60	.670	2.31	173
Shaver Exp.	.35	1.37	1.72	7.71	13.80	.717	2.61	174
Floor Test								
Shaver 579	.35	1.36	1.71	9.17	14.69	.614	4.36	172
Babcock B380	.35	1.41	1.76	9.03	14.14	.571	3.85	165
Nelson 264	.35	1.30	1.65	8.45	12.31	.600	2.76	162
Hubbard Comet	.35	1.34	1.69	8.50	13.44	.560	3.75	167
Tatum T-173	.35	1.31	1.66	8.85	13.44	574	3.44	168
DeKalb Amber Link	.35	1.33	1.68	9.54	14.72	.637	4.08	178
Test Average	.35	1.34	1.69	8.92	13.79	.592	3.71	169
Shaver Exp.	.35	1.37	1.72	9.07	15.03	.583	4.76	165

TABLE 4

Breeder	INDIVIDUAL RESULTS						RANK				QUARTILE				
	Egg Prod.	Total test mort. %	Egg size L & XL %	Feed efficiency (lbs)	Net revenue	Egg prod.	total test mort.	Egg size L & XL	Feed efficiency	Net revenue	Egg prod.	Total test mort.	Egg size L & XL	Feed efficiency	Net revenue
Hisex White	241.2	13.6	51.0	2.82	3.18	6	9	9	9	1	1	2	3	2	2
Hubbard W.L.	253.1	7.0	63.2	2.70	3.93	1	1	4	6	1	1	1	1	1	1
Shaver Star-cross 288	241.5	11.7	66.5	2.59	4.11	5	8	1	1	1	3	2	1	1	1
Tatum T-100	225.7	11.2	56.2	2.89	2.80	10	6	6	10	2	10	2	2	2	2
Kentville Control	182.9	13.1	35.9	3.46	.40	11	10	11	11	4	11	2	4	4	4
Dekalb XL Link	251.0	7.0	52.8	2.64	4.16	2	1	8	4	1	2	1	2	1	1
H&N p.g./one	240.6	8.5	47.4	2.70	3.71	7	3	10	6	1	1	1	3	1	1
Babcock B300V	238.3	11.4	56.1	2.63	3.97	8	7	7	2	1	2	2	2	1	1
TEST AVERAGE	234.3	10.4	53.6	2.80	3.28										
Shaver Exp.	227.4	20.9	64.9	2.64	3.79	9	11	2	4	2	4	4	1	1	1
Hubbard Exp.	244.5	8.7	63.1	2.74	3.71	4	4	5	8	1	1	1	1	1	1
Babcock Exp.	246.0	8.8	64.4	2.63	4.35	3	5	3	2	1	1	1	1	1	1

TABLE 5 - Causes of Mortality 141 - 490 days inclusive

Breeder	Avian Leukosis complex Marek's	Repro- ductive disorder	Liver- kidney disorder	Tumors and cysts	Canni- balism	Hemorr- hage	Respir- atory diseases	Injury	Others	No diag- nosis
Hisex White	3	18	6	-	10	1	-	4	21	6
Hubbard W.L.	1	6	5	-	6	2	1	1	8	5
Shaver Starcross 288	15	12	1	-	13	1	-	3	10	3
Tatum T-100	2	2	10	-	7	1	1	-	8	5
A.R.I. Kentville Control	12	6	7	2	5	1	2	-	23	5
DeKalb XL-Link	11	6	3	-	4	1	-	1	4	5
H&N p.g./one	9	6	4	-	4	1	2	-	11	6
Babcock B300V	15	2	8	1	2	3	-	2	17	4
TEST AVERAGE % of Mortality	21	17.2	8.9	1.2	14.0	2.4	1.7	2.0	22.9	8.7
Shaver Exp.	50	16	5	2	11	2	-	-	13	3
Hubbard Exp.	2	14	3	-	10	1	-	-	10	4
Babcock Exp.	3	13	-	2	10	-	4	1	10	5

FIRST CENTRAL CANADA BROWN EGG TEST

The First Test was hatched on May 23, 1978, and terminated on September 25, 1979. The birds in the test represented commercial stocks from three Canadian and four American breeders. One Canadian stock was entered as an experimental stock.

The test began by selecting a random sample of 1,260 eggs from entrants hatchery supply flocks. The eggs were shipped to Ottawa and hatched together at the Central Test Station. A maximum of 472 pullet chicks per entry were selected at random and placed on litter under hot water brooders. No coccidostat was used during the growing period. At 141 days of age the pullets were housed in the laying house. Two replicates of 70 birds of each strain were housed in floor pens. Six replicates of 51 birds of each strain were housed in cages (16" x 16") at the rate of 3 birds per cage. The test terminated when the birds were 490 days of age. Two sets of results are published for your information:

- (1) Birds reared in cages, and;
- (2) Birds reared on litter (BIF).

No attempt has been made to combine the results of the two tests.

TABLE 1

Breeder	% Mortality Laying House	7 days-491 days	Egg Prod. Per hen housed	% Hen production	Persis-tency of lay %	Pounds of feed per doz. egg	Cal.lbs. of feed per lb. of egg	Market body weight	Average weight per doz. lg. size eggs	% Extra Large & lg. size eggs	Income over Feed & chick cost per hen housed
Cage Test											
Shaver 579	5.3	6.4	228.2	67.0	59.2	5.17	3.01	6.0	27.5	91.1	3.04
Babcock B380	8.5	8.7	243.3	72.0	64.1	4.93	2.92	5.5	27.0	85.3	3.20
Nelson 264	9.5	9.9	170.2	50.7	39.0	6.37	3.99	5.5	25.6	70.0	.03
Hubbard Comet											
	16.4	17.3	232.2	71.8	60.6	5.02	3.09	5.1	26.0	76.5	2.97
Tatum T-173	180.0	18.2	213.4	66.7	52.9	5.32	3.27	5.3	26.0	74.0	2.08
DeKalb Amber Link											
	12.1	12.3	222.3	67.0	61.5	5.29	3.18	6.0	26.6	84.8	2.55
Test Average	11.6	12.1	218.3	65.9	56.2	5.35	3.24	5.6	26.5	80.3	2.31
Shaver Exp.	6.0	6.4	226.6	66.9	54.4	5.21	3.11	6.0	26.8	86.1	2.61
Floor Test											
Shaver 579	2.1	3.2	250.5	76.3	63.7	4.60	2.70	5.1	27.2	89.6	4.36
Babcock B380	10.7	10.9	245.4	77.3	66.2	4.62	2.75	4.8	26.9	85.6	3.85
Nelson 264	1.4	1.8	219.1	64.4	56.8	4.85	3.07	5.0	25.2	64.6	2.76
Hubbard Comet											
	15.7	16.6	236.6	76.3	64.7	4.51	2.76	4.7	26.1	76.2	3.75
Tatum T-173	3.6	3.8	240.3	72.5	54.7	4.63	2.87	4.7	25.8	70.8	3.44
DeKalb Amber Link											
	5.0	5.2	255.5	79.4	66.3	4.69	2.84	5.0	26.4	81.9	4.08
Test Average	6.4	6.9	241.2	74.4	62.1	4.65	2.83	4.9	26.3	78.1	3.71
Shaver Exp.	3.6	4.0	259.6	77.4	67.0	4.39	2.69	4.9	26.0	76.9	4.76

TABLE 2

Breeder	Shell Score	Haugh Units	Blood %		Spots %		Meat %		Egg Size %				Ounces per dozen
			Large	Small	Large	Small	Large	Small	Extra Large	Large	Medium	Small	
Hisex white	2.85	75.3	2.4	3.0	0	.3	13.6	37.4	33.1	13.9	2.0	24.2	
Hubbard W.L.	2.70	77.1	2.1	5.1	0	.6	20.3	42.9	26.8	9.3	0.7	24.9	
Shaver Star-cross 288	2.76	77.1	1.5	4.2	0	.6	24.3	42.3	24.8	8.0	0.6	25.3	
Tatum T-100	2.37	77.1	2.4	7.5	0	.9	17.9	38.2	29.5	13.1	1.3	24.6	
Kentville Control	2.79	74.4	3.9	5.7	.3	.9	6.1	29.7	38.3	22.4	3.5	23.1	
DeKalb XL Link	2.70	77.1	1.2	3.6	0	.6	13.5	39.3	34.9	11.3	1.0	24.3	
H&N p.g./one	3.15	78.9	1.5	3.9	0	.6	10.8	36.5	38.0	13.6	1.1	24.1	
Babcock B300V	3.45	74.4	1.5	2.4	0	.6	14.2	41.8	30.8	11.7	1.5	24.4	
TEST AVERAGE	2.85	76.4	2.1	4.2	0	.6	15.1	38.5	32.0	12.9	1.5	24.4	
Shaver Exp.	2.73	77.1	1.5	5.7	.3	.6	19.4	45.5	27.0	7.6	.5	25.1	
Hubbard Exp.	2.61	76.5	3.0	4.5	.3	1.2	19.7	43.5	26.7	9.2	0.9	25.0	
Babcock Exp.	3.84	77.4	.9	3.3	.3	.9	20.5	43.9	25.9	8.7	0.9	25.0	

TABLE 3

Breeder	Pullet Chick cost (\$)	Pullet rearing cost (feed)	Chick & feed cost per bird housed	Laying mash cost per hen housed	Egg revenue per hen housed	Carcass value per hen (\$)	I.O.F. & C.C. per hen housed	Sexual Maturity (days)
Hisex	0.35	1.32	1.67	8.10	12.53	.48	3.18	149
Hubbard M.L.	0.35	1.30	1.65	8.40	13.53	.51	3.93	161
Shaver Starcross 288	0.35	1.35	1.70	7.80	13.17	.51	4.11	157
Tatum T-100	0.35	1.25	1.60	7.90	11.89	.52	2.80	164
Kentville Control	0.35	1.38	1.73	7.19	8.89	.50	0.40	168
DeKalb XL Link	0.35	1.32	1.67	7.94	13.34	.50	4.16	160
H&N p.g./one	0.35	1.27	1.62	7.68	12.63	.46	3.71	156
Babcock B300V	0.35	1.38	1.73	7.53	12.80	.48	3.97	154
TOTAL AVERAGE	0.35	1.32	1.67	7.82	12.35	.50	3.28	159
Shaver Exp.	0.35	1.30	1.65	7.39	12.41	.51	3.79	156
Hubbard Exp.	0.35	1.32	1.67	8.23	13.16	.52	3.71	162
Babcock Exp.	0.35	1.28	1.63	7.98	13.53	.49	4.35	160

TABLE 4

Breeder	INDIVIDUAL RESULTS										RANK				QUARTILE			
	Egg Prod.	Total test mort. %	Egg size L & XL %	Feed efficiency (lbs)	Net revenue	Egg prod.	total test mort.	Egg size L & XL	Feed efficiency	Net Revenue	Egg prod.	Total test mort.	Egg size L & XL	Feed efficiency	Net revenue			
Cage Test																		
Shaver 579	228.2	5.3	91.1	3.01	3.04	3	1	1	2	2	1	1	1	1	1			
Babcock B380	243.3	8.5	85.3	2.92	3.20	1	3	3	1	1	1	1	2	1	1			
Nelson 264	170.2	9.5	70.0	3.99	.03	7	4	7	7	7	4	2	4	4	4			
Hubbard Golden Comet	232.2	16.4	76.5	3.09	2.97	2	6	5	3	3	1	4	3	1	1			
Tatum T-173	213.4	18.0	74.0	3.27	2.08	6	7	6	6	6	2	4	4	2	2			
DeKalb Amber Link	222.3	12.1	84.8	3.18	2.55	5	5	4	5	5	2	3	2	1	1			
Test Average	218.3	11.6	80.3	3.24	2.31													
Shaver Exp.	226.6	6.0	86.1	3.11	2.61	4	2	2	4	4	1	1	1	1	1			
Floor Test																		
Shaver 579	250.5	2.1	89.6	2.70	4.36	3	2	1	2	2	1	1	1	1	1			
Babcock B380	245.4	10.7	85.6	2.75	3.85	4	6	2	3	4	2	3	1	1	2			
Nelson 264	219.1	1.4	64.6	3.07	2.76	7	1	7	7	7	4	1	4	4	4			
Hubbard Golden Comet	236.6	15.7	76.2	2.76	3.75	6	7	5	4	5	3	4	3	1	3			
Tatum T-173	240.3	3.6	70.8	2.87	3.44	5	3	6	6	6	2	1	4	2	3			
DeKalb Amber Link	255.5	5.0	81.9	2.84	4.08	2	5	3	5	3	1	2	2	2	2			
Test Average	241.2	6.4	78.1	2.83	3.71													
Shaver Exp.	259.6	3.6	76.9	2.69	4.76	1	3	4	1	1	1	1	3	1	1			

TABLE 5 - Causes of Mortality 140 - 490 days inclusive

Breeder	Avian Leukosis complex Marek's	Repro- ductive disorder	Liver- kidney disorder	Tumors and cysts	Canni- balism	Hemorr- hage	Respir- atory diseases	Injury	Coccid- iosis	Others	No diag- nosis
Shaver 579	-	4	5	-	6	-	-	-	-	-	4
Babcock B380	-	5	13	-	12	-	-	-	-	3	8
Nelson 264	-	2	14	-	10	-	-	-	-	4	1
Hubbard Comet	-	8	10	1	28	-	-	1	-	8	14
Tatum T-173	1	9	13	-	19	1	-	1	-	3	10
DeKalb Amber Link	-	6	12	-	14	-	-	1	-	1	10
Average (%)	.4	13	25.6	.4	34	.4	-	1.1	-	7.2	17.9
Shaver Exp.	-	4	9	-	5	-	-	2	-	1	1
Brown Egg Layer											

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