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FINAL REPORT OF THE THIRTY FIFTH

NORTH CAROLINA LAYER PERFORMANCE

AND MANAGEMENT TEST

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The North Carolina Layer Performance and Management Test is conducted under the auspices of the Cooperative Extension Service at North Carolina State University and the North Carolina Department of Agriculture and Consumer Services. The flock is maintained at the Piedmont Research Station, Salisbury, North Carolina. Mr. Joe Hampton is the Piedmont Research Station Superintendent; Mr. Aaron Sellers is Resident Manager of the flock; Pam Jenkins is the Statistical Research Assistant; and Dr. K. E. Anderson is Project Leader. The purpose of this program is to assist poultry industry personnel in North Carolina, across the country, and internationally in the evaluation of commercial layer stocks and management systems.

The data presented herein represents the analysis of the first production cycle, molt, and second production cycle of the 35th North Carolina Layer Performance and Management Test. Performance summary tables are available for each strain, cage population, and molt treatment used as well as for the combined results.

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35th NORTH CAROLINA LAYER PERFORMANCE AND MANAGEMENT TEST
Protocol Procedures Used

DESCRIPTION OF DATA TABLE STATISTICS

Data on the first cycle performance of white and brown egg strains by cage population are provided in Tables 1 to 6. Performance and weight loss data for the molt period of the white and brown egg strains are summarized in Tables 7 to 14. The second cycle performance of strain by cage population, and strain by molt for the white and brown egg strains is summarized in Tables 15 to 26. Tables 27 to 44 summarize the performance by strain, and cage population within the molt treatment for the second cycle. Overall performance of the white and brown egg strains for cage population and molt are summarized in Tables 45 to 56. The impact of cage population and molt on white and brown egg strain body weight gain are shown in Tables 57 to 60. Figures 1-20 summarize the hen-day production curves and feed intake for each of the participating strains by cage population and molt.

Entries:

A total of seven white egg and three brown egg strains were accepted in accordance with the rules and regulations of the test.

Dates of Importance:

The eggs for the 35th NCLP&MT were set on December 18, 2002 at the North Carolina Department. of Agriculture and Consumer Services, Piedmont Research Station, Poultry Unit at Salisbury, NC. The flock was hatched on January 8, 2003, and the pullets were moved to the laying facilities on April 30 to May 1, 2003 during their 17th week of age. The age of the flock at transfer was lowered to approximately 16 weeks due to current trends in the industry and requests of the breeders into move the flock prior to onset of egg production in the rearing houses.

First cycle production records commenced on May 7, 2003 (17 weeks of age), and were kept continuously until molt was induced on April 14, 2004. The molt records commenced on April 14, 2004 (66 weeks of age), and ended on May 12, 2004 (70 weeks of age). The second cycle production records started on May 13, 2004 (i.e. at 70 weeks of age) and continued until the flock was terminated on March 9, 2005(i.e. at 113 weeks of age). This report includes production data summarized from the first laying cycle (17 to 66 weeks), from the molt period (66 to 70 weeks), and from the second laying cycle (70 to 113 weeks of age). A table showing the changes in body weights from 17 to 66 wk of age and the weight loss during the molt period is included in the molt period information and a final body weight table.

Pullet Housing:

The chicks were randomly assigned to the growing cages with white egg and brown egg replicates being intermingled throughout the house. The white egg strains occupied

approximately 70 % and the brown egg strains the other 30% of the house. All strains were assigned to be represented as equally as possible in each room, row, and cage level.

House 8--is an environmentally controlled closed brood-grow facility with 3 banks of quad-deck cages in each room. Each room was assigned a number, each side of each bank was assigned a row number, and each cage section within each row and level/row has been assigned a replicate number. For statistical analysis, pairs of rows have been designated as blocks. Thus, each block consisted of two rows containing 24 replicates (i.e. approximately 3 reps/strain) on all levels resulting in a randomized incomplete block. Each room held a total of 3,744 pullets. Only rooms 3 and 4 were used for the 35^{th} NCLP&MT resulting in a total pullet count in House 8 of 7,488. Each white and brown-egg strain was randomly assigned to three replicates within each block within each house. Entrant strains were assigned to the blocks in a restricted randomized manner with the restrictions being that all strains were approximately equally represented in all rows, levels, and rooms. All chicks were brooded in the same cage during the entire 16 wk rearing period. Paper was placed on the cage floor for the first 7 days within each replicate. Each cage within the replicate was filled with 13 white-egg or brown-egg (13 per 24" x 26" cage) pullets on the day of hatch for a rearing allowance of 48 in^2 (310 cm^2) per bird for both the white and brown egg layers. Even though room dividers were in place for this test, the environmental conditions were maintained the same in each room, so that all birds were essentially reared in a contiguous house. Pullet nutrition and husbandry practices are published in the Pullet Rearing Report (Vol. 35, No. 2).

Layer Housing:

The hens were randomly assigned to replicate cages with white egg and brown egg strains being intermingled throughout the house. The white egg strains occupied approximately 70% of the house and brown egg strains occupied the other 30%. All strains were assigned to be represented as equally as possible in all cage rows and levels.

House 5 is a standard height totally enclosed force ventilated open-sided laying house with a scraper pit manure handling system. It has two banks of triple deck cages and two banks with 4 levels of cages. The replicates are equipped with feed hoppers to monitor feed consumption for each individual replicate, and the feed is distributed by an automatic feeding system. Again, each side of a bank was designated as a row and each row was divided into nine 8-foot replicates/level. House 5 contains 252 replicates with a capacity of 6,048 hens.

Cage density is dictated by the cage size in each replicate. Cages were either 30.5 or 40.6 cm wide and 40.6 cm deep, which allowed for a constant density of 64 in^2 (413 cm^2), at 3 or 4 hens/cage, respectively. The white-egg and brown-egg strains were assigned to the replicates in a restricted randomized manner, with the restrictions being that all strains were approximately equally represented in all rows, levels and cage sizes.

Test Design:

The experimental design for the laying test involved a completely randomized design and the main effects were arranged in a factorial design. The main effects included: strain, population, and molt treatment. Following are general descriptions of the main effects:

Strain

Fertile hatching eggs were provided directly by the breeders involved. All eggs were set and hatched concurrently. A total of seven white egg strains and three brown egg strains were entered into the test. See the 35th Hatch Report (Vol. 35, No. 1) for details.

Density

All individual cages within each block contained either brown or white egg layers. Thus each replicate block contained eight 30.5 x 40.6 cm cages with 3 hens/cage or six 40.6 x 40.6 cm cages with 4 hens/cage. Cage densities were held constant at 413 cm^2 (64 in^2) for the two cage dimensions so as to closely represent the commercial animal welfare guidelines that have been adopted by the table-egg industry as closely as possible. The initial population sizes also provided for a constant feeder space allocation. Therefore density and feeder space were not factors in this test. The only real factor in this experiment was the size of the lay period cage and the number of birds involved in the two cage sizes.

Layer Management (Molting):

All strains were randomly divided into three groups such that all strains, populations, and levels were approximately equally represented, and each test group was assigned to one of the following treatments during the molt period commencing at 66 wks of age.

Randomly selected replicates from within each treatment group were then monitored for weight loss and were considered to be representative of all the hens in their strain/treatment combinations. When the weight loss target was reached, all replicates of that strain/treatment group were returned to feed.

The lighting schedule was set in accordance with the treatment groups. The light program for the non-molted control group never changed. The lighting for both molt treatments was identical and adjusted for actual conditions so as to match the requirements of both molting programs and the subsequent desired level of stimulation.

The house temperature was maintained as close to 80 ± 5^{o} F as possible. The house

environments were monitored daily for high and low temperatures throughout the test.

Full Fed Control

The replicates that were assigned to the full fed control group were maintained according to the standard management program as outlined previously. The laying house was partitioned such that the lighting program was consistent for maximum egg production. The full fed control hens were maintained throughout the laying period with no pause in egg production.

Feed Restriction

The following regimen was followed for the feed restriction molting program so that a maximum 14 day fasting period was required.

Day -7	Day length was increased to 24 hr at 65 weeks of age for the entire flock.
Day -7	A sample of birds was weighed to determine the pre-molt weight. Target weight (30% body weight loss) was calculated using the premolt weight.
Day 0	All remaining feed was removed from the feeders and the light period was reduced to 9 hours. All moribund birds were removed and euthanised before feed restriction.
Day +1	A booster vaccination for Newcastle/Bronchitis was provided.
Day +7 to 9	A sample of birds was weighed at 7 and 9 days after feed removal to determine daily body weight loss. The weight loss per day was used to calculate the days to reach the targeted 30% weight loss.
Day +13 to 14	Birds were weighed based on the target weight loss to determine actual body weight loss. Strains and/or treatment groups were put back on full feed using the Molt Diet.
Day +24	Te light period was increased to 12 hours.
Day +28	All of the randomly selected replicates that were chosen for monitoring were weighed. Birds which had been on the molt program were returned to layer diet E. Day length was increased to 14 hours.
Day +31	Lights were returned to 16.5 hours of day light

Non-anorexic molt program

The hens were fed the low protein and energy Molt Diet throughout the molting period. The Molt Diet was balanced for the amounts of vitamins and minerals required for body maintenance. The Molt Diet has been shown to maintain an an-ovulatory state during the latter stages of the molt period. The management and light program was consistent with the other molting programs.

Day -7	The light period was increased to 24 hours.
Day -7	A sample of birds was weighed to determine the premolt weight. Target weight (24% body weight loss) was calculated using the premolt weight.
Day 0	All remaining laying feed was removed from the feeders and replaced with a low protein/energy maintenance diet, and the light period was reduced to 9 hours. The low protein/energy maintenance diet was provided on an *ad libitum* basis.
Day +1	A booster vaccination for Newcastle/Bronchitis was provided.
Day +7 to 9	A sample of birds was weighed 7 and 9 days after the feed change to determine body weight loss. Weight loss per day was calculated using sample body weights over time to determine when the 24% target weight would be reached.
Day +13	All birds in the selected replicates were weighed to determine body weight loss.
Day +24	The lighting period was increased to 12 hours.
Day +28	All selected replicates were weighed. Birds which had been the molt program were returned to layer diet E. Day length was increased to 14 hours.
Day +31	Lights were returned to 16.5 hours of day light.

Layer Nutrition:

Layer diets are identified as Diets D, E, F, G, H, I, M, N, O, P, and Q which consist of a pre-lay diet and a series of layer diets formulated to assure a daily protein, mineral and amino acid intake as shown below. The diets were provided to the birds as crumbles to reduce feed wastage. Diet formulations are presented in the following section. Feed was offered ad libitum in accordance with the guidelines so that all birds received acceptable nutrient intakes at all times depending on the bird's age and production rate (see laying house feeding program). The diet fed at any given time provided the nutrient intake required for the flock's age and level of production, based on its average daily feed intake.

MINIMUM DAILY INTAKE OF NUTRIENTS PER BIRD AT VARIOUS STAGES OF PRODUCTION

Production Stage	> 87% and Pre-Peak	87-80%	80-70%	<70%
White-Egg Layers				
Protein (g/day)	19	18	17	16
Calcium (g/day)	3.8	3.8	4.0	4.0

Lysine (mg/day)	820	780	730	690
TSAA (mg/day)	700	670	630	590

Brown Egg Layers

Protein (g/day)	20	19	18	17
Calcium (g/day)	3.8	3.8	3.8	4.0
Lysine (mg/day)	830	820	780	730
TSAA (mg/day)	710	700	670	630

Cautionary Notice: During period 3 there was a rapid onset of osteo malacia in the flock. The diagnosis of osteomalacia was confirmed 2 days after it was observed in the flock. Its manifestation was a sudden increase in mortality with a concurrent depression in production. This was believed to be a result of using a finely ground limestone in the crumblized feed used to enhance the feed flow in the automated system. The form of limestone used was not retained in the gut during periods of need, when the shell is being laid down in the uterus. Treatment was immediately commenced using a vitamin supplement in the drinking water containing Vitamin D_3, in conjunction with administration of Calcium in the form of large particle limestone in the feed. This resulted in an immediate reduction in mortality to pre-onset levels and a recovery of production. This can be seen in the production curves shown in the figures for each of the strains. Therefore, for the remainder of the test, the diets were reformulated and 2% of the supplemental calcium was provided to the hens in the form of large particle limestone which was added at the station. Once the dietary change was made most strains appeared to recover to their expected levels of production.. However, specific strains responded differently to this stressor, and as a result may have negatively influenced the overall performance of one strain over another. Those strains with high HD egg Production appear to have been effected to a greater extent

LAYING HOUSE FEEDING PROGRAM

Rate of Production	Consumption Per 100 Birds/Day (kg)	Diet Fed: White Egg Strains	Diet Fed: Brown Egg Strains
Weeks 17-26	< 9.52	D	D
Pre-Peak and > 87%	< 9.52	F	E
	9.57-10.39	G	F
	10.43-11.29	I	H
	11.34-12.20	N	M
	12.25-13.11	P	O
	>13.15	Q	Q

80-87%	< 9.52 9.57-10.39 10.43-11.29 11.34-12.20 12.25-13.11 >13.15	G H M O Q Q	F G I N P Q
70-80%	< 9.52 9.57-10.39 10.43-11.29 11.34-12.20 12.25-13.11 >13.15	H I N P Q Q	G H M O Q Q
< 70%	< 9.52 9.57-10.39 10.43-11.29 11.34-12.20 12.25-13.11 >13.15	I M O Q Q Q	H I N O Q Q
Post-Molt < 70%	< 9.52 9.57-10.39 10.43-11.29 11.34-12.20 12.25-13.11 >13.15	G H M O Q Q	F G I N P Q

The ration provided during the molt consisted of a low protein/energy diet. These are described in the tables which follow. The molt diet was formulated to provide the layer with the nutrients needed to maintain a static body weight with no egg production.

LAYING PERIOD DIETS

Diet Identification[1]					
	----------Layer Diets----------				
Ingredient	D	E	F	G	H
	----------Pounds Per Ton----------				
Corn	952.30	985.50	1067.90	1097.10	1153.50
Corn Gluten Meal	100.00	100.00	128.00	82.00	24.00
Soybean Meal 48%	618.00	592.00	500.00	512.00	525.00

Calcium Carb	188.00	188.00	188.00	188.00	180.00
Phosphate Mono/D	29.50	30.00	30.00	30.00	30.00
Sodium Bi-Carb	3.00	2.50	2.50	3.00	3.00
Salt	6.00	6.00	6.00	6.00	6.50
Methionine	2.50	2.60	2.80	3.70	4.00
Choline Chloride	7.70	6.40	6.80	5.20	4.00
Vitamin premix	1.00	1.00	1.00	1.00	1.00
Min. premix	1.00	1.00	1.00	1.00	1.00
T - Premix	1.00	1.00	2.00	2.00	2.00
Fat	88.00	82.00	63.00	68.00	64.00
MYC-OUT 65	1.00	1.00	1.00	1.00	2.00
.06 Sel Premix	1.00	1.00	1.00	1.00	1.00
Total	2000	2000	2000	2000	2000
Calculated Analysis					
Protein %	21.49	21.03	20.00	18.99	17.75
ME kcal/kg	2925	2925	2925	2925	2925
Calcium %	4.00	4.00	3.99	3.99	3.84
T. Phos %	0.63	0.63	0.62	0.61	0.61
Lysine %	1.16	1.06	0.94	0.94	0.94
TSAA %	0.89	0.84	0.84	0.83	0.79

LAYING PERIOD DIETS

Diet Identification[1]						
	----------Layer Diets----------					
Ingredient	I	M	N	O	P	Q
	----------Pounds Per Ton----------					
Corn	1214.80	1285.50	1353.50	1407.10	1420.50	1427.70
Corn Gluten Meal	5.00					
Soybean Meal 48%	500.00	451.00	398.00	360.00	286.00	226.00
Wheat Midds			5.00		63.00	117.00
Calcium Carb	184.00	180.00	182.50	184.00	185.00	186.50
Phosphate Mono/D	23.00	26.00	22.50	21.00	18.50	16.50
Sodium Bi-Carb	3.00	3.00	3.00	3.00	4.00	4.00
Salt	6.00	6.00	6.00	6.00	5.00	5.00
Methionine	3.20	2.75	2.50	2.20	2.00	1.30
Lysine		0.75	0.50	0.20		
Choline Chloride	3.00	2.00	0.50	0.50		
Vit. premix	1.00	1.00	1.00	1.00	1.00	1.00
Min. premix	1.00	1.00	1.00	1.00	1.00	1.00
T - Premix	1.00	1.00	1.00	1.00	1.00	1.00
Fat	52.00	37.00	20.00	10.00	10.00	10.00
MYC-OUT 65	2.00	2.00	2.00	2.00	2.00	2.00
.06% Sel Premix	1.00	1.00	1.00	1.00	1.00	1.00
Total	2000	2000	2000	2000	2000	2000
Calculated Analysis						
Protein %	16.79	15.75	14.75	13.99	12.75	11.75
Me kcal/kg	2925	2925	2925	2882	2875	2859
Calcium %	3.85	3.79	3.80	3.81	3.80	3.80
T. Phos %	0.53	0.55	0.51	0.48	0.46	0.44
Lysine %	0.90	0.86	0.78	0.72	0.62	0.55
TSAA %	0.71	0.66	0.62	0.59	0.55	0.49

MOLT PERIOD DIET

Diet Identification[1]

	----------Molt Diet----------
Ingredient	Low Protein/Energy Diet
	----------Pounds Per Ton----------
Corn	694.94
Soybean Hulls	1158.08
Soybean Meal	
Wheat Midds	34.84
Calcium Carb	25.68
Phosphate Mono/D	53.04
Sodium Bi-Carb	
Salt	9.15
Methionine	2.67
Lysine	
Choline Cl 60%	1.00
Vet premix	1.00
Min. premix	1.00
Fat	9.99
Mold Inhibitor	1.00
.06% Sel Premix	1.00
Iron Sulfate	
Manganese Sulfate	
EXT/EXP Soy	
Total	2000
Calculated Analysis	
Protein %	9.8
Me kcal/kg	1650

Calcium %	1.33
T. Phos %	0.70
Lysine %	0.42
TSAA %	0.35

Data Collection Schedule and Procedures:

Egg Production--All eggs that had the potential of being marketed were credited toward the test unit's (replicate) egg production, regardless of the shell condition at the time of collection. All eggs were collected and recorded daily. Egg production was summarized at twenty-eight day intervals, and was calculated and reported on a hen-day basis.

Egg Weight--At twenty-eight day intervals, all eggs produced in the previous 24-hour period were weighed and sorted by size (See egg size distribution). Percentages of eggs within each size category, average egg weight (g), and egg mass (g) were calculated and reported.

Egg Quality--At twenty-eight day intervals, all eggs produced within the previous 24 hours were examined by candling light and graded according to current USDA standards for egg quality. Eggs were graded in the pilot processing facility and handled as they would be in a commercial off-line facility.

Egg Price--Egg income was calculated using three-year regional average prices for farm value of eggs based on egg production and quality evaluation.

Feed Consumption--All feed offered for consumption was recorded for each replicate. At twenty-eight day intervals, feed not consumed was weighed back and feed consumption was calculated. Daily feed intake (kg/100 hens/day) was calculated and reported for each strain. Feed costs were based on the actual feed prices for each feed delivery which were calculated and summarized for the complete production cycle.

Mortality--All mortalities were recorded daily, and obvious accidents were not included in reported mortalities.

Statistical Analyses and Separation of Means:

Analyses of variance were performed on all data. Separate analyses were conducted for white and brown egg strains. Significant differences ($P < 0.01$) within white and brown egg strains are noted by differing letters among columns of means. The blocking effect for the layer house was not significant. All data were subjected to ANOVA utilizing the GLM procedure of SAS, with main effects of strain, poopulation, and molt. First and second order interactions were tested for significance. Mean differences were separated via the PDIFF option of the GLM

procedure.

Breeder (Strain):

Short identification codes of the breeder and strain of the stock were developed. See more complete information following data Table 61.

Population and Density Allocations:

White and Brown Hens per Cage	Cage Size Width Depth	Floor Space per Bird	Feeder Space per Bird	Water Nipples per Cage
3	30.5 cm x 40.7 cm	413 cm^2 (64 in^2)	10.2 cm 4.0 in	1
4	40.7 cm x 40.7 cm	413 cm^2 (64 in^2)	10.2 cm 4.0 in	1

Hen Housed Eggs per Bird:

The total number of eggs produced divided by the number of birds housed at 119 days.

Hen Day Egg Production:

The average daily number of eggs produced per 100 hens per day.

Egg Mass:

The average daily production of egg mass in grams per hen day.

Mortality:

The percentage of birds that died between 119 and 791 days of age. Mortalities which occurred during the molt period are reported separately.

Feed Consumption:

The kilograms of feed consumed daily per 100 hens (housed or hen days).

Feed Conversion:

The grams of egg produced per gram of feed consumed.

Egg Weight:

The average egg weight (gm) for each period sampled. Weight of all eggs collected from previous 24 hours divided by the number of eggs collected.

Egg Income:

The calculated income per hen housed at 119 days, from egg production using three-year regional average egg prices 2001 to 2003 as follows:

Grade	Size	Cents/Dozen
A	Extra Large	84.5
A	Large	82.0
A	Medium	67.2
A	Small	50.4
A	Pee Wee	25.2
B	All	25.2
Checks	All	43.5

Feed Cost:

The calculated feed cost per hen housed at 119 days, using the pounds/diet consumed and the average price of each diet per ton.

Diets	Price Per Ton 1^{ST} Cycle	Price Per Ton 2^{nd} Cycle
D	203.30	
E	233.10	244.20
F	219.80	193.20
G	224.00	181.60
H	218.80	190.00
I		181.50
N		156.20
Molt Diet LP/LE	161.80	

Grade Information:

The average grade of all eggs sampled according to USDA grading standards over all sampling periods. Egg grades are established by personnel trained in USDA grading standards.

Egg Size Distribution:

Following are the size classifications used for establishing the USDA egg size grading. There has been blending of egg size in this test with the weight cutoff between medium and large being 23.5. This maximizes the number of USDA large eggs just as would occur in a commercial plant. The proportion of the eggs falling into the following size categories are reported in the tables.

Size Category	Ounces/Dozen
Pee Wee	< 18
Small	18 - 21
Medium	21 - 23.5
Large	23.5 - 27
Extra Large	> 27

Metric Conversions:

1 lb = 453.6 g 1 g = .03527 oz

1 lb = .4536 kg

1 kg = 2.204 lb

1 oz = 28.35 g

1 g = 1000 mg

1 kg = 1000 g

TABLE 1. EFFECT OF WHITE EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (119-462 DAYS)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)	Age at 50% Pro-duction (Days)
Dekalb	3	9.8^{def}	0.50^{ab}	262.6	83.8	49.3	15.8	138
White	4	10.3^{abc}	0.50^{ab}	269.6	86.1	51.5	16.3	138
	Average	10.1	0.50	266.1^{C}	85.0^{BC}	50.4^{BC}	16.0^{A}	138^{A}
Hy-Line	3	9.3^{g}	0.49^{ab}	271.9	80.6	46.3	1.7	139
W-36	4	9.4^{fg}	0.49^{ab}	276.0	81.9	47.0	2.9	137
	Average	9.4	0.49	274.0^{BC}	81.2^{E}	46.7^{E}	2.3^{D}	138^{A}
Hy-Line	3	10.6^{ab}	0.49^{ab}	273.1	83.8	51.4	8.4	129
W-98	4	10.2^{bcd}	0.50^{ab}	274.4	83.7	51.2	6.9	130
	Average	10.4	0.49	273.8^{BC}	83.7^{CD}	51.3^{AB}	7.7^{C}	130^{D}

Hy-Line	3	9.3^{g}	0.51^{a}	272.2	81.9	47.7	5.1	137
CV-20	4	9.6^{efg}	0.50^{ab}	274.7	82.8	48.2	4.4	138
	Average	9.4	0.51	273.4^{BC}	82.4^{DE}	48.0^{D}	4.7^{CD}	137^{AB}
Bovans	3	10.0^{cde}	0.50^{ab}	286.4	86.4	50.5	5.8	135
White Exp	4	10.2^{bcd}	0.48^{b}	282.4	85.5	49.5	6.0	135
	Average	10.1	0.49	284.4^{A}	85.9^{B}	50.0^{C}	5.9^{CD}	135^{C}
Bovans	3	10.0^{cd}	0.51^{a}	281.4	88.3	51.3	15.3	135
White	4	10.8^{a}	0.48^{b}	280.1	88.5	52.0	13.3	134
	Average	10.4	0.49	280.8^{AB}	88.4^{A}	51.6^{A}	14.3^{AB}	135^{C}
Lohmann	3	10.1^{cd}	0.50^{ab}	281.4	87.2	51.1	9.6	137
LSL-Lite	4	10.3^{abcd}	0.50^{ab}	288.0	88.6	51.9	9.5	135
	Average	10.2	0.50	284.7^{A}	87.9^{A}	51.5^{AB}	9.5^{BC}	136^{BC}
All Strains	3	9.9	0.50	275.6	84.6	49.7	8.8	136
	4	10.1	0.49	277.9	85.3	50.2	8.5	135
	Average	10.0	0.50	276.9	84.9	49.9	8.6	136

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C,D,E - Different letters denote significant differences (P<.01), comparisons made among strain average values.
a,b,c,d,e,f,g - Different letters denote significant strain*population interactions (P<.01).

TABLE 2. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (119-462 DAYS)

Breeder (Strain)	Population[1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	3	58.3	1.2	7.3	22.2	51.8	17.6
White	4	59.3	1.4	5.8	18.6	52.8	21.5
	Average	58.8^{B}	1.3^{BC}	6.5^{C}	20.4^{A}	52.3^{AB}	19.5^{B}
Hy-Line	3	57.2	2.0	10.6	22.8	48.3	16.2
W-36	4	57.1	2 2	11.2	22.4	51.1	13.0
	Average	57.1^{D}	2.1^{A}	10.9^{A}	22.6^{A}	49.7^{B}	14.6^{C}
Hy-Line	3	61.3	0.3	4.7	16.3	44.2	34.4
W-98	4	61.2	0.2	4.9	16.8	42.7	35.3
	Average	61.2^{A}	0.2^{D}	4.8^{D}	16.6^{B}	43.4^{C}	34.8^{A}
Hy-Line	3	58.0	1.5	9.5	22.0	47.7	19.1
CV-20	4	57.9	2.0	7.8	21.1	50.8	18.1
	Average	57.9^{CD}	1.8^{AB}	8.7^{B}	21.6^{A}	49.3^{B}	18.6^{BC}
Bovans	3	58.2	1.0	6. 9	22.4	52.4	17.2
White Exp	4	57.6	1.1	7.8	23.2	52.9	14.9
	Average	57.9^{CD}	1.1^{C}	7.3^{BC}	22.8^{A}	52.6^{AB}	16.0^{BC}
Bovans	3	57.8	0.8	7.2	22.8	55.8	13.2
White	4	58.3	0.9	7.2	23.3	49.3	19.1
	Average	58.1^{BC}	0.8^{CD}	7.2^{BC}	23.0^{A}	52.5^{AB}	16.2^{BC}
Lohmann	3	58.1	1.1	7.1	21.0	53.9	16.8
LSL-Lite	4	58.1	1.5	5.9	22.0	53.8	16.7
	Average	58.1^{BC}	1.3^{BC}	6.5^{C}	21.5^{A}	53.8^{A}	16.7^{BC}
All Strains	3	58.4	1.1	7.6	21.4	50.6	19.2
	4	58.5	1.3	7.2	21.1	50.5	19.8
	Average	58.4	1.2	7.4	21.2	50.5	19.5

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .

A,B,C,D - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 3. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (119-462 DAYS)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	3	96.9	1.8	1.1	0.3	14.65	7.16
White	4	97.5	1.1	1.1	0.3	15.31	7.50
	Average	97.2	1.4^{AB}	1.1	0.3	14.98^{C}	7.33^{BC}
Hy-Line	3	97.8	0.8	1.3	0.1	14.92	7.37
W-36	4	97.6	1.1	1.3	0.1	15.08	7.43
	Average	97.7	0.9^{BC}	1.3	0.1	15.00^{C}	7.40^{BC}
Hy-Line	3	97.1	1.3	1.6	0.0	15.80	7.99
W-98	4	97.4	1.3	1.1	0.2	15.85	7.81
	Average	97.2	1.3^{ABC}	1.3	0.1	15.83^{A}	7.90^{A}
Hy-Line	3	97.7	0.6	1.6	0.1	15.09	7.22
CV-20	4	98.4	0.8	0.7	0.1	15.37	7.40
	Average	98.0	0.7^{C}	1.1	0.1	15.23^{BC}	7.31^{C}
Bovans	3	97.0	1.4	1.5	0.1	16.04	7.70
White Exp	4	97.8	1.0	1.1	0.1	15.77	7.83
	Average	97.4	1.2^{ABC}	1.3	0.1	15.90^{A}	7.77^{A}
Bovans	3	96.7	2.2	1.1	0.1	15.66	7.41
White	4	97.4	1.5	1.1	0.1	15.69	7.90
	Average	97.1	1.8^{A}	1.1	0.1	15.67^{AB}	7.66^{AB}
Lohmann	3	97.5	1.2	1.2	0.0	15.84	7.55
LSL-Lite	4	98.0	1.0	0.8	0.1	16.23	7.76
	Average	97.8	1.1^{BC}	1.0	0.1	16.03^{A}	7.65^{AB}
All Strains	3	97.2	1.3	1.4	0.1	15.43	7.48
	4	97.7	1.1	1.0	0.1	15.61	7.66
	Average	97.5	1.2	1.2	0.1	15.52	7.57

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 4. EFFECT OF BROWN EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (119-462 DAYS)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)	Age at 50% Pro-duction (Days)
Hy-Line	3	10.3	0.50	284.4	85.4	50.9	5.8	132
Brown	4	10.6	0.49	282.1	86.4	51.7	7.5	131
	Average	10.4^{B}	0.49^{A}	283.2	85.9	51.3^{B}	6.6	132
Bovans	3	11.1	0.47	278.2	85.4	52.3	9.7	131
Brown	4	11.3	0.47	275.0	85.8	52.5	11.8	130
	Average	11.2^{A}	0.47^{B}	276.6	85.6	52.4^{AB}	10.8	131
Bovans	3	10.8	0.49	285.4	87.5	53.3	10.2	132
Goldline	4	11.0	0.48	285.3	86.8	53.1	7.3	133
	Average	10.9^{A}	0.49^{A}	285.3	87.2	53.2^{A}	8.8	132
All Strains	3	10.7	0.49	282.6	86.1	52.2	8.6	132
	4	10.9	0.48	280.8	86.3	52.4	8.9	131
	Average	10.8	0.48	281.7	86.2	52.3	8.7	131

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 5. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (119-462 DAYS)

Breeder (Strain)	Population [1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	3	59.4	0.2	4.5	21.9	50.2	23.1
Brown	4	59.6	0.4	3.6	20.3	52.3	23.2
	Average	59.5^{B}	0.3	4.1	21.1^{A}	51.3	23.1^{B}
Bovans	3	61.0	0.2	3.2	16.2	49.3	30.6
Brown	4	61.0	0.2	2.5	16.8	48.4	31.9
	Average	61.0^{A}	0.2	2.9	16.5^{B}	48.8	31.2^{A}
Bovans	3	60.6	0.3	4.2	16.8	48.2	29.9
Goldline	4	61.0	0.1	3.1	17.8	47.0	31.9
	Average	60.8^{A}	0.2	3.6	17.3^{B}	47.6	30.9^{A}
All Strains	3	60.4	0.3	4.0	18.3	49.2	27.8
	4	60.5	0.2	3.1	18.3	49.2	29.0
	Average	60.5	0.2	3.5	18.3	49.2	28.4

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 6. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (119-462 DAYS)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	3	97.7	1.4	0.9	0.0	16.28	7.88
Brown	4	97.6	1.1	1.1	0.2	16.22	7.94
	Average	97.6	1.2	1.0	0.1	16.25	7.91[B]
Bovans	3	96.8	1.7	1.5	0.0	16.10	8.29
Brown	4	97.1	1.1	1.7	0.0	16.02	8.30
	Average	97.0	1.4	1.6	0.0	16.06	8.30[A]
Bovans	3	96.8	2.2	0.9	0.1	16.37	8.13
Goldline	4	96.9	1.7	1.4	0.0	16.56	8.33
	Average	96.9	1.9	1.1	0.0	16.46	8.23[A]
All Strains	3	97.1	1.7	1.1	0.0	16.25	8.10
	4	97.2	1.3	1.4	0.1	16.27	8.19
	Average	97.2	1.5	1.3	0.0	16.26	8.14

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 7. EFFECT OF WHITE EGG STRAIN, POPULATION, AND SYNCHRONIZED MOLT ON HENS IN THE 35th NCLP&MT (462-490 DAYS)

Breeder (Strain)	Population[1]	17 Wk Body Wt (kg)	66 Wk Body Wt (kg)	1st Cycle Wt Gain (%)	Lowest Body Weight (kg)	Molt Weight Loss (%)	70 Wk Body Wt (kg)
Dekalb	3	1.16	1.65	43.9	1.34	18.7	1.40
White	4	1.22	1.70	41.1	1.39	18.7	1.46
	Average	1.19^{D}	1.68^{B}	42.5	1.37^{B}	18.7	1.43
Hy-Line	3	1.29	1.76	38.8	1.41	19.3	1.47
W-36	4	1.26	1.72	37.6	1.42	17.3	1.47
	Average	1.27^{B}	1.74^{B}	38.2	1.42^{B}	18.3	1.47
Hy-Line	3	1.36	1.99	48.1	1.64	17.0	1.67
W-98	4	1.34	1.95	46.9	1.50	22.9	1.54
	Average	1.35^{A}	1.97^{A}	47.5	1.57^{A}	20.0	1.61
Hy-Line	3	1.25	1.69	33.7	1.37	19.0	1.43
CV-20	4	1.25	1.70	39.7	1.35	20.0	1.40
	Average	1.25^{BC}	1.70^{B}	36.7	1.36^{B}	19.5	1.41
Bovans	3	1.29	1.75	35.7	1.47	15.7	1.49
White Exp	4	1.26	1.69	35.0	1.39	17.9	1.44
	Average	1.28^{B}	1.72^{B}	35.3	1.43^{B}	16.8	1.46
Bovans	3	1.22	1.75	41.6	1.39	20.6	1.41
White	4	1.25	1.72	38.2	1.38	19.8	1.43
	Average	1.24^{BCD}	1.74^{B}	39.9	1.38^{B}	20.2	1.42
Lohmann	3	1.22	1.72	41.6	1.40	18.3	1.43
LSL-Lite	4	1.22	1.68	38.6	1.38	17.8	1.39
	Average	1.22^{CD}	1.70^{B}	40.1	1.39^{B}	18.0	1.41
Average	3	1.25	1.76	40.5	1.43	18.4	1.47
	4	1.26	1.74	39.6	1.40	19.2	1.45
	Average	1.26	1.75	40.0	1.42	18.8	1.46

[1]All strains were housed at a constant density of; 413 cm^2 equals 64 in^2 .
A,B,C,D Different letters denote significant differences ($P < .01$), comparisons made among strain average values.

TABLE 8. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON HENS IN THE 35th NCLP&MT (462-490 DAYS)

Breeder (Strain)	Molt Program	17 Wk Body Wt (kg)	66 Wk Body Wt (kg)	1st Cycle Wt Gain (%)	Lowest Body Weight (kg)	Molt Weight Loss (%)	70 Wk Body Wt (kg)
Dekalb	NM	1.23	1.72	41.9	1.64	4.4	1.65
White	NF	1.18	1.66	41.0	1.36	17.8	1.37
	FR	1.16	1.65	44.7	1.09	33.8	1.27
Hy-Line	NM	1.26	1.72	39.0	1.69	1.5	1.70
W-36	NF	1.26	1.75	39.8	1.35	22.6	1.35
	FR	1.30	1.75	35.8	1.21	30.9	1.37
Hy-Line	NM	1.34	1.92	45.8	1.76	7.9	1.75
W-98	NF	1.36	1.98	48.6	1.55	21.5	1.55
	FR	1.35	2.01	48.1	1.40	30.5	1.51
Hy-Line	NM	1.23	1.65	36.8	1.60	2.6	1.60
CV-20	NF	1.27	1.71	35.4	1.30	23.8	1.30
	FR	1.25	1.73	37.9	1.18	32.1	1.34
Bovans	NM	1.28	1.74	36.2	1.76	-1.0	1.70
White Exp	NF	1.26	1.68	33.3	1.35	19.5	1.35
	FR	1.28	1.74	36.4	1.18	32.0	1.34
Bovans	NM	1.23	1.73	41.3	1.66	4.0	1.66
White	NF	1.26	1.74	37.2	1.34	22.8	1.33
	FR	1.23	1.74	41.2	1.15	33.8	1.28
Lohmann	NM	1.19	1.68	42.4	1.65	1.9	1.67
LSL-Lite	NF	1.23	1.71	43.0	1.37	20.0	1.31
	FR	1.24	1.69	35.0	1.15	32.2	1.25
All Strains	NM	1.25	1.74	40.5	1.68^{X}	3.0^{Z}	1.68^{Y}
	NF	1.26	1.75	39.8	1.38^{Y}	21.1^{Y}	1.36^{Z}
	FR	1.26	1.76	39.9	1.19^{Z}	32.2^{X}	1.34^{Z}

X,Y,Z - Different letters denote significant differences ($P < .01$), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 9. EFFECT OF BROWN EGG STRAIN, POPULATION, AND SYNCHRONIZED MOLT ON HENS IN THE 35th NCLP&MT (462-490 DAYS)

Breeder (Strain)	Population[1]	17 Wk Body Wt (kg)	66 Wk Body Wt (kg)	1st Cycle Wt Gain (%)	Lowest Body Weight (kg)	Molt Weight Loss (%)	70 Wk Body Wt (kg)
Hy-Line	3	1.48	2.07	40.7	1.73	16.3	1.80
Brown	4	1.43	2.10	46.3	1.76	15.4	1.84
	Average	1.46[B]	2.08	43.5	1.75	15.9	1.82
Bovans	3	1.56	2.02	31.0	1.72	14.9	1.83
Brown	4	1.56	2.04	32.2	1.70	16.8	1.79
	Average	1.56[A]	2.03	31.6	1.71	15.9	1.81
Bovans	3	1.48	2.06	42.8	1.70	17.5	1.78
Goldline	4	1.52	2.04	36.4	1.69	17.2	1.76
	Average	1.50[AB]	2.05	39.6	1.69	17.4	1.77
All Strains	3	1.50	2.05	38.2	1.72	16.3	1.80
	4	1.50	2.06	38.3	1.72	16.5	1.79
	Average	1.50	2.06	38.2	1.72	16.4	1.80

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences ($P < .01$), comparisons made among strain average values.

TABLE 10. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON HENS IN THE 35th NCLP&MT (462-490 DAYS)

Breeder (Strain)	Molt Program	17 Wk Body Wt (kg)	66 Wk Body Wt (kg)	1st Cycle Wt Gain (%)	Lowest Body Weight (kg)	Molt Weight Loss (%)	70 Wk Body Wt (kg)
Hy-Line	NM	1.41	2.07	47.8	1.99	3.8	1.99
Brown	NF	1.49	2.02	37.4	1.70	15.9	1.71
	FR	1.47	2.16	45.3	1.56	27.9	1.75
Bovans	NM	1.53	2.08	36.0	1.97	5.3	1.97
Brown	NF	1.55	2.07	34.8	1.72	16.7	1.77
	FR	1.59	1.95	24.0	1.43	25.6	1.69
Bovans	NM	1.53	2.05	38.3	2.00	2.4	2.02
Goldline	NF	1.47	2.03	40.1	1.63	19.5	1.63
	FR	1.51	2.08	40.3	1.45	30.3	1.66
All Strains	NM	1.49	2.07	40.7	1.99^{X}	3.8^{Z}	1.99^{Y}
	NF	1.50	2.04	37.4	1.68^{Y}	17.4^{Y}	1.70^{Z}
	FR	1.52	2.06	36.6	1.48^{Z}	27.9^{X}	1.70^{Z}

X,Y,Z - Different letters denote significant differences ($P < .01$), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 11. EFFECT OF WHITE EGG STRAIN AND MOLT ON PERFORMANCE OF HENS IN THE 35th NCLP&MT DURING THE MOLT PERIOD (462-490 DAYS)*

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Eggs Per Bird Housed	Egg Production (HD%)	Mortality (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	3	7.7	8.2	37.3	4.4	0.48	0.30
White	4	7.4	8.1	37.1	5.6	0.47	0.29
	Average	7.5^{AB}	8.1	37.2	5.0^{A}	0.47	0.29^{B}
Hy-Line	3	6.8	8.7	32.2	0.8	0.54	0.35
W-36	4	7.3	9.5	35.5	0.9	0.57	0.36
	Average	7.1^{BC}	9.1	33.8	0.9^{B}	0.56	0.36^{A}
Hy-Line	3	7.9	9.0	35.9	2.1	0.55	0.36
W-98	4	7.6	9.0	35.2	1.5	0.54	0.37
	Average	7.7^{AB}	9.0	35.5	1.8^{B}	0.55	0.37^{A}
Hy-Line	3	6.8	9.4	35.1	1.3	0.56	0.33
CV-20	4	6.8	9.2	35.2	0.2	0.56	0.33
	Average	6.8^{C}	9.3	35.1	0.8^{B}	0.56	0.33^{AB}
Bovans	3	7.4	9.6	37.0	0.9	0.58	0.36
White Exp	4	7.7	9.2	35.1	0.7	0.55	0.38
	Average	7.6^{AB}	9.4	36.1	0.8^{B}	0.57	0.37^{A}
Bovans	3	7.6	9.1	40.0	3.4	0.54	0.30
White	4	8.3	8.9	37.7	4.7	0.52	0.35
	Average	7.9^{A}	9.0	38.9	4.1^{A}	0.53	0.33^{AB}
Lohmann	3	7.5	10.0	39.0	0.8	0.61	0.34
LSL-Lite	4	7.7	9.3	37.6	3.4	0.55	0.34
	Average	7.6^{AB}	9.6	38.3	2.1^{B}	0.58	0.34^{A}
Average	3	7.4	9.1	36.6	1.9	0.55	0.34
	4	7.5	9.0	36.2	2.4	0.54	0.35
	Average	7.5	9.1	36.4	2.2	0.54	0.34

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.
*There was insufficient egg size and quality data for the molt period. This information will be included in the second cycle tables.

TABLE 12. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT PROGRAM ON PERFORMANCE OF HENS IN THE 35th NCLP&MT DURING THE MOLT PERIOD (462-490 DAYS)*

Breeder (Strain)	Molt Program	Feed Cons (kg/100 hens/d)	Eggs Per Bird Housed	Egg Production (HD%)	Mortality (%)	Egg Income ($/hen)	Feed Costs ($/Hen)
Dekalb	NM	10.9	17.6^{c}	80.9^{ab}	2.4	1.01^{c}	0.52
White	NF	7.2	3.8^{de}	16.9^{ef}	6.0	0.23^{de}	0.24
	FR	4.5	3.0^{e}	13.9^{efgh}	6.5	0.18^{e}	0.12
Hy-Line	NM	10.0	19.4^{b}	72.4^{d}	0.9	1.18^{b}	0.60
W-36	NF	6.9	4.5^{de}	16.6^{efg}	0.9	0.28^{de}	0.30
	FR	4.3	3.5^{de}	12.5^{gh}	0.8	0.21^{de}	0.17
Hy-Line	NM	10.9	19.2^{bc}	75.7^{cd}	1.4	1.16^{b}	0.64
W-98	NF	8.2	4.6^{d}	17.9^{e}	1.6	0.28^{d}	0.33
	FR	4.2	3.2^{de}	13.1^{fgh}	2.4	0.20^{de}	0.13
Hy-Line	NM	10.3	20.2^{ab}	76.7^{bcd}	1.1	1.22^{ab}	0.61
CV-20	NF	6.2	4.6^{de}	16.9^{ef}	0.8	0.28^{de}	0.25
	FR	3.8	3.1^{e}	11.8^{h}	0.4	0.19^{e}	0.14
Bovans	NM	10.7	20.4^{ab}	78.2^{bc}	0.5	1.23^{ab}	0.63
White Exp	NF	8.0	4.6^{d}	17.6^{e}	0.5	0.28^{d}	0.33
	FR	4.1	3.2^{de}	12.4^{gh}	1.4	0.20^{de}	0.15
Bovans	NM	10.8	19.9^{b}	85.3^{a}	3.0	1.17^{b}	0.57
White	NF	7.6	3.9^{de}	18.1^{e}	5.0	0.24^{de}	0.23
	FR	5.5	3.1^{e}	13.2^{fgh}	4.2	0.19^{e}	0.17
Lohmann	NM	10.9	21.7^{a}	85.4^{a}	2.4	1.31^{a}	0.62
LSL-Lite	NF	7.7	4.1^{de}	17.1^{ef}	2.8	0.25^{de}	0.27
	FR	4.4	3.0^{e}	12.4^{gh}	1.0	0.18^{e}	0.14
Average	NM	10.6^{X}	19.8	79.2	1.7	1.18	0.60^{X}
	NF	7.4^{Y}	4.3	17.3	2.5	0.26	0.28^{Y}
	FR	4.4^{Z}	3.2	12.8	2.4	0.19	0.15^{Z}

X,Y,Z - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
a,b,c,d,e,f,g,h - Different letters denote significant strain*population interactions (P<.01).
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.
*There was insufficient egg size and quality data for the molt period. This information will be included in the second cycle tables.

TABLE 13. EFFECT OF BROWN EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT DURING THE MOLT PERIOD (462-490 DAYS)*

Breeder (Strain)	Population [1]	Feed Cons (kg/100 hens/d)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Mortality (%)	Egg Income ($/hen)	Feed Costs ($/Hen)
Hy-Line	3	7.5	9.7	37.3	1.0	0.58	0.36
Brown	4	8.2	10.3	39.4	1.4	0.60	0.39
	Average	7.8^{B}	10.0^{A}	38.4	1.2	0.59	0.37
Bovans	3	8.2	8.7	35.4	3.7	0.54	0.37
Brown	4	8.8	8.6	36.9	2.2	0.53	0.39
	Average	8.5^{A}	8.6^{B}	36.1	2.9	0.53	0.38
Bovans	3	8.4	9.8	39.4	2.2	0.59	0.39
Goldline	4	8.8	9.6	36.7	3.1	0.58	0.43
	Average	8.6^{A}	9.7^{A}	38.1	2.6	0.58	0.41
All Strains	3	8.0^{Z}	9.4	37.4	2.3	0.57	0.37
	4	8.6^{Y}	9.5	37.7	2.2	0.57	0.40
	Average	8.3	9.4	37.5	2.2	0.57	0.39

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .

A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

Y,Z - Different letters denote significant differences (P<.01), comparisons made among molt program average values.

*There was insufficient egg size and quality data for the molt period. This information will be included in the second cycle tables.

TABLE 14. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT PROGRAM ON PERFORMANCE OF HENS IN THE 35th NCLP&MT DURING THE MOLT PERIOD (462-490 DAYS)*

Breeder (Strain)	Molt Program	Feed Cons (kg/100 hens/d)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Mortality (%)	Egg Income ($/hen)	Feed Costs ($/Hen)
Hy-Line	NM	10.5	20.8	79.0	0.7	1.22	0.62
Brown	NF	8.2	5.9	23.8	1.5	0.37	0.31
	FR	4.8	3.2	12.3	1.4	0.19	0.18
Bovans	NM	11.5	17.6	73.8	0.9	1.08	0.61
Brown	NF	8.9	5.6	22.9	4.3	0.34	0.36
	FR	5.3	2.8	11.7	3.6	0.17	0.18
Bovans	NM	11.4	20.4	78.5	1.1	1.23	0.69
Goldline	NF	9.2	5.9	23.9	3.8	0.36	0.37
	FR	5.2	2.8	11.9	2.9	0.17	0.17
All Strains	NM	11.1^{X}	19.6^{X}	77.1^{X}	0.9^{Z}	1.18^{X}	0.64^{X}
	NF	8.8^{Y}	5.8^{Y}	23.5^{Y}	3.2^{Y}	0.36^{Y}	0.35^{Y}
	FR	5.1^{Z}	3.0^{Z}	12.0^{Z}	2.6^{YZ}	0.18^{Z}	0.18^{Z}

X,Y,Z - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.
*There was insufficient egg size and quality data for the molt period. This information will be included in the second cycle tables.

TABLE 15. EFFECT OF WHITE EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Dekalb	3	10.5	0.43	143.3	68.6	44.9	18.7
White	4	10.8	0.41	141.2	66.9	44.2	17.3
	Average	10.6^{A}	0.42^{B}	142.2^{C}	67.7	44.5	18.0^{A}
Hy-Line	3	9.8	0.45	186.3	67.1	43.9	10.4
W-36	4	10.1	0.43	181.4	67.6	43.8	12.6
	Average	10.0^{B}	0.44^{A}	183.9^{A}	67.4	43.8	11.5^{BC}
Hy-Line	3	11.1	0.40	165.6	64.6	44.5	9.4
W-98	4	10.8	0.42	170.2	65.6	45.2	12.0
	Average	10.9^{A}	0.41^{C}	167.9^{B}	65.1	44.9	10.7^{BC}
Hy-Line	3	9.8	0.46	181.7	68.5	44.7	10.6
CV-20	4	10.0	0.45	189.9	67.9	44.6	6.4
	Average	9.9^{B}	0.45^{A}	185.8^{A}	68.2	44.6	8.5^{C}
Bovans	3	10.4	0.42	170.7	65.8	43.9	16.1
White Exp	4	10.7	0.41	178.5	67.2	43.8	12.5
	Average	10.6^{A}	0.42^{C}	174.6^{AB}	66.5	43.9	14.3^{AB}
Bovans	3	10.7	0.43	154.8	69.9	45.7	19.4
White	4	10.9	0.40	144.0	66.1	43.9	19.6
	Average	10.8^{A}	0.42^{B}	149.4^{C}	68.0	44.8	19.5^{A}
Lohmann	3	10.7	0.43	176.7	69.3	45.3	12.1
LSL-Lite	4	10.5	0.43	166.0	67.5	44.4	11.8
	Average	10.6^{A}	0.43^{A}	171.3^{AB}	68.4	44.9	12.0^{BC}
All Strains	3	10.4	0.43	168.4	67.7	44.7	13.8
	4	10.5	0.42	167.3	67.0	44.3	13.2
	Average	10.5	0.43	167.9	67.3	44.5	13.5

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 16. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population[1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	3	65.6	0.2	0.0	1.7	31.7	66.1
White	4	66.0	0.0	0.2	2.0	29.1	68.2
	Average	65.8^{B}	0.1	0.1	1.8^{A}	30.4^{A}	67.2^{B}
Hy-Line	3	65.5	0.0	0.0	0.6	29.4	69.9
W-36	4	64.8	0.0	0.0	0.9	30.0	68.9
	Average	65.1^{B}	0.0	0.0	0.7^{B}	29.7^{A}	69.4^{B}
Hy-Line	3	69.0	0.0	0.0	0.0	10.9	88.9
W-98	4	69.2	0.0	0.0	0.2	10.0	89.3
	Average	69.1^{A}	0.0	0.0	0.1^{B}	10.5^{B}	89.1^{A}
Hy-Line	3	65.3	0.0	0.0	1.0	30.7	68.1
CV-20	4	65.7	0.0	0.0	0.5	28.4	70.8
	Average	65.5^{B}	0.0	0.0	0.7^{B}	29.5^{A}	69.5^{B}
Bovans	3	66.7	0.0	0.0	0.3	24.7	74.9
White Exp	4	65.3	0.0	0.0	1.0	29.2	69.5
	Average	66.0^{B}	0.0	0.0	0.7^{B}	26.9^{A}	72.2^{B}
Bovans	3	65.6	0.0	0.0	0.8	32.2	66.6
White	4	66.4	0.0	0.1	1.6	26.0	71.7
	Average	66.0^{B}	0.0	0.1	1.2^{AB}	29.1^{A}	69.1^{B}
Lohmann	3	65.5	0.0	0.1	1.3	29.1	68.8
LSL-Lite	4	66.0	0.0	0.1	0.6	30.1	68.9
	Average	65.7^{B}	0.0	0.1	1.0^{AB}	29.6^{A}	68.9^{B}
All Strains	3	66.2	0.0	0.0	0.8	27.0	71.9
	4	66.2	0.0	0.1	1.0	26.1	72.5
	Average	66.2	0.0	0.0	0.9	26.5	72.2

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .

A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 17. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	3	87.1	6.9	4.3	1.7	8.14	4.86
White	4	85.4	7.5	5.6	1.4	7.95	5.02
	Average	86.3^{C}	7.2^{A}	4.9	1.6	8.04^{C}	4.94^{B}
Hy-Line	3	89.9	4.9	3.6	1.5	10.87	6.06
W-36	4	90.6	4.8	3.1	1.6	10.62	6.02
	Average	90.3^{AB}	4.8^{B}	3.3	1.5	10.74^{A}	6.04^{A}
Hy-Line	3	88.3	5.9	4.1	1.7	9.59	6.30
W-98	4	86.8	7.6	4.3	1.4	9.76	6.16

	Average	87.5^{BC}	6.7^{AB}	4.2	1.5	9.68^{B}	6.23^{A}
Hy-Line	3	89.8	4.9	4.3	1.1	10.58	5.75
CV-20	4	91.9	4.2	3.1	0.8	11.23	6.14
	Average	90.8^{A}	4.5^{B}	3.7	1.0	10.90^{A}	5.95^{A}
Bovans	3	90.1	5.7	3.7	0.6	10.01	5.98
White Exp	4	91.9	4.1	3.0	1.0	10.55	6.23
	Average	91.0^{A}	4.9^{B}	3.3	0.8	10.28^{AB}	6.11^{A}
Bovans	3	89.7	5.8	3.5	1.0	8.97	5.20
White	4	89.8	6.1	3.5	0.6	8.37	5.27
	Average	89.7^{AB}	6.0^{AB}	3.5	0.8	8.67^{C}	5.24^{B}
Lohmann	3	87.4	6.5	5.2	1.0	10.09	5.97
LSL-Lite	4	88.0	6.5	4.5	1.0	9.55	5.70
	Average	87.7^{BC}	6.5^{AB}	4.8	1.0	9.82^{B}	5.83^{A}
All Strains	3	88.9	5.8	4.1	1.2	9.75	5.73
	4	89.2	5.8	3.9	1.1	9.72	5.79
	Average	89.1	5.8	4.0	1.2	9.73	5.76

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 18. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Dekalb	NM	11.0	0.36	124.9	60.0	39.1	23.5
White	NF	10.3	0.46	157.3	71.3	47.2	13.1
	FR	10.7	0.44	144.5	71.8	47.4	17.3
Hy-Line	NM	9.7	0.41	158.6	60.0	39.3	16.1
W-36	NF	10.4	0.43	186.2	69.3	45.1	12.1
	FR	9.8	0.48	206.7	72.8	47.0	6.3
Hy-Line	NM	10.5	0.36	137.3	53.9	36.9	17.0
W-98	NF	11.3	0.42	181.8	67.3	46.9	6.5
	FR	11.1	0.46	184.6	74.3	50.7	8.5
Hy-Line	NM	9.8	0.41	164.7	61.3	40.1	13.3
CV-20	NF	9.8	0.47	197.1	70.9	46.4	5.9
	FR	10.0	0.47	195.7	72.3	47.4	6.4
Bovans	NM	10.4	0.37	156.0	59.0	38.4	21.1
White Exp	NF	10.8	0.44	186.8	71.5	47.4	10.9
	FR	10.5	0.44	181.0	69.2	45.8	10.9
Bovans	NM	10.7	0.37	140.4	61.1	39.3	23.2
White	NF	11.0	0.44	144.3	71.6	47.8	17.8
	FR	10.7	0.44	163.5	71.3	47.4	17.4
Lohmann	NM	10.4	0.38	149.6	58.7	38.3	17.6
LSL-Lite	NF	11.2	0.43	176.6	72.6	47.8	9.5
	FR	10.3	0.47	187.9	74.0	48.4	8.8
All Strains	NM	10.3^{B}	0.38^{C}	147.3^{B}	59.1^{B}	38.8^{B}	18.8^{A}
	NF	10.7^{A}	0.44^{B}	175.7^{A}	70.7^{A}	47.0^{A}	10.8^{B}
	FR	10.4^{AB}	0.46^{A}	180.6^{A}	72.2^{A}	47.7^{A}	10.8^{B}

A,B - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 19. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	NM	65.1	0.3^{A}	0.1	3.1	32.7	63.5
White	NF	66.3	0.0^{B}	0.0	1.4	28.5	69.4
	FR	66.0	0.0^{B}	0.2	0.9	29.9	68.6
Hy-Line	NM	65.7	0.0^{B}	0.0	0.9	28.6	70.0
W-36	NF	65.2	0.0^{B}	0.0	0.6	30.2	69.2
	FR	64.6	0.0^{B}	0.0	0.7	30.3	69.0
Hy-Line	NM	68.9	0.0^{B}	0.0	0.3	11.0	88.8
W-98	NF	69.8	0.0^{B}	0.0	0.0	8.5	91.0
	FR	68.5	0.0^{B}	0.0	0.1	12.0	87.5
Hy-Line	NM	65.5	0.0^{B}	0.0	0.7	31.0	67.8
CV-20	NF	65.4	0.0^{B}	0.0	0.8	29.1	69.8
	FR	65.5	0.0^{B}	0.0	0.7	28.4	70.8
Bovans	NM	65.4	0.0^{B}	0.0	0.8	30.3	68.7
White Exp	NF	66.4	0.0^{B}	0.0	0.3	25.0	74.2
	FR	66.2	0.0^{B}	0.0	0.8	25.5	73.7
Bovans	NM	64.7	0.0^{B}	0.2	2.2	36.6	60.5
White	NF	66.8	0.0^{B}	0.0	0.5	24.4	74.4
	FR	66.6	0.0^{B}	0.0	1.0	26.3	72.5
Lohmann	NM	65.7	0.0^{B}	0.2	1.1	28.1	69.8
LSL-Lite	NF	65.8	0.0^{B}	0.0	1.1	28.0	70.6
	FR	65.7	0.0^{B}	0.0	0.7	32.8	66.2
All Strains	NM	65.9	0.0	0.1	1.3	28.3	69.9
	NF	66.5	0.0	0.0	0.7	24.8	74.1
	FR	66.1	0.0	0.0	0.7	26.5	72.6

A,B - Different letters denote significant differences (P<.01), comparisons made among strain by molt program interactions.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 20. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	NM	82.4	9.3	6.4	2.0	6.84	4.60
White	NF	88.7	5.8	4.1	1.4	9.03	5.24
	FR	87.7	6.6	4.4	1.3	8.26	4.98
Hy-Line	NM	88.2	6.1	4.1	1.8	9.08	5.28
W-36	NF	91.1	4.3	3.2	1.4	10.96	6.44
	FR	91.6	4.2	2.8	1.5	12.19	6.40
Hy-Line	NM	82.5	9.8	5.9	1.8	7.62	5.42
W-98	NF	88.6	6.4	3.5	1.5	10.50	6.96
	FR	91.6	4.0	3.2	1.2	10.91	6.30
Hy-Line	NM	89.9	5.0	4.4	0.7	9.58	5.38
CV-20	NF	90.4	5.0	3.7	1.0	11.54	6.23
	FR	92.2	3.7	2.9	1.3	11.60	6.23
Bovans	NM	90.0	5.1	4.0	0.9	9.13	5.52
White Exp	NF	90.7	5.0	3.4	0.9	10.96	6.50
	FR	92.3	4.5	2.5	0.7	10.75	6.30
Bovans	NM	90.6	6.7	2.5	0.2	8.17	4.97
White	NF	88.2	6.1	4.8	0.9	8.29	5.10
	FR	90.4	5.1	3.3	1.3	9.54	5.64
Lohmann	NM	85.8	6.6	6.0	1.6	8.41	5.32
LSL-Lite	NF	88.2	6.0	5.1	0.7	10.19	6.21
	FR	89.0	6.8	3.4	0.7	10.86	5.97
All Strains	NM	87.1^{B}	6.9^{A}	4.8^{A}	1.3	8.40^{B}	5.21^{B}
	NF	89.4^{A}	5.5^{AB}	4.0^{AB}	1.1	10.21^{A}	6.10^{A}
	FR	90.7^{A}	5.0^{B}	3.2^{B}	1.1	10.59^{A}	5.97^{A}

A,B - Different letters denote significant differences (P<.01), comparisons made among molt program average values.

NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 21. EFFECT OF BROWN EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Hy-Line	3	10.5	0.41	173.1	65.1	43.1	9.9
Brown	4	11.0	0.39	173.1	65.0	43.2	7.8
	Average	10.8	0.40^{A}	173.1^{A}	65.1^{A}	43.1	8.8
Bovans	3	11.1	0.36	140.9	58.9	39.5	13.6
Brown	4	11.7	0.35	145.9	59.4	40.3	12.8
	Average	11.4	0.35^{B}	143.4^{B}	59.2^{B}	39.9	13.2
Bovans	3	11.0	0.39	159.9	63.2	42.4	10.4
Goldline	4	11.4	0.37	156.7	62.7	42.5	14.6
	Average	11.2	0.38^{A}	158.3^{AB}	62.9^{AB}	42.5	12.5
All Strains	3	10.9	0.38	158.0	62.4	41.7	11.3
	4	11.4	0.37	158.6	62.4	42.0	11.7
	Average	11.1	0.38	158.3	62.4	41.8	11.5

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 22. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population [1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	3	66.3	0.0	0.0	1.6	27.9	70.1
Brown	4	66.7	0.0	0.1	0.5	25.7	73.6
	Average	66.5	0.0	0.0	1.1	26.8^{A}	71.9
Bovans	3	67.3	0.0	0.1	1.0	21.7	76.9
Brown	4	68.2	0.0	0.0	0.4	17.7	81.1
	Average	67.7	0.0	0.0	0.7	19.7^{B}	79.0
Bovans	3	67.3	0.1	0.0	1.4	23.0	75.5
Goldline	4	68.3	0.0	0.1	0.5	18.6	80.0
	Average	67.8	0.0	0.0	1.0	20.8^{AB}	77.8
All Strains	3	66.9	0.0	0.0	1.4^{Y}	24.2	74.1
	4	67.7	0.0	0.0	0.5^{Z}	20.7	78.3
	Average	67.3	0.0	0.0	0.9	22.4	76.2

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.
Y,Z - Different letters denote significant differences (P<.01), comparisons made among population average values.

TABLE 23. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	3	87.2	8.4	4.0	0.5	9.92	6.26
Brown	4	90.1	6.3	3.4	0.2	10.15	6.51
	Average	88.6	7.4	3.7	0.4	10.03^{A}	6.39
Bovans	3	88.1	8.2	3.0	0.7	8.11	5.92
Brown	4	87.3	8.0	4.0	0.8	8.41	6.29
	Average	87.7	8.1	3.5	0.8	8.26^{B}	6.11
Bovans	3	88.9	7.0	2.8	0.4	9.26	6.19
Goldline	4	87.8	8.7	3.0	0.4	8.97	6.32
	Average	88.3	7.9	2.9	0.4	9.11^{AB}	6.26
All Strains	3	88.0	7.9	3.3	0.5	9.09	6.13
	4	88.4	7.7	3.5	0.5	9.18	6.38
	Average	88.2	7.8	3.4	0.5	9.14	6.25

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 24. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Hy-Line	NM	10.5	0.37	157.7	58.3	38.4	11.9
Brown	NF	10.9	0.41	167.8	65.5	43.9	8.6
	FR	10.9	0.43	193.8	71.5	47.0	6.1
Bovans	NM	11.1	0.29	109.2	47.8	32.1	19.8
Brown	NF	11.6	0.36	156.6	62.3	42.2	11.6
	FR	11.5	0.39	164.5	67.5	45.3	8.3
Bovans	NM	10.9	0.33	129.6	51.5	35.0	22.7
Goldline	NF	11.5	0.39	167.4	65.8	44.1	10.7
	FR	11.2	0.43	178.0	71.5	48.4	4.1
All Strains	NM	10.8	0.33^{C}	132.2^{C}	52.5^{C}	35.2^{C}	18.1^{A}
	NF	11.3	0.39^{B}	164.0^{B}	64.5^{B}	43.4^{B}	10.3^{B}
	FR	11.2	0.42^{A}	178.7^{A}	70.1^{A}	46.9^{A}	6.1^{B}

A,B,C - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 25. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	NM	66.2	0.0	0.1	1.5	26.3	72.0
Brown	NF	67.3	0.0	0.0	0.4	23.9	75.5
	FR	65.9	0.0	0.0	1.3	30.2	68.2
Bovans	NM	67.8	0.0	0.0	0.4	20.3	78.2
Brown	NF	68.0	0.0	0.0	0.5	16.9	82.5
	FR	67.3	0.1	0.1	1.3	21.9	76.3
Bovans	NM	68.6	0.0	0.0	1.1	20.1	78.4
Goldline	NF	67.2	0.1	0.1	1.6	20.0	78.0
	FR	67.7	0.0	0.0	0.3	22.3	76.9
All Strains	NM	67.5	0.0	0.0	1.0	22.2	76.2
	NF	67.5	0.0	0.0	0.8	20.3	78.6
	FR	66.9	0.0	0.0	1.0	24.8	73.8

There are no significant differences among these average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 26. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	NM	86.9	9.1	3.7	0.3	9.03	5.81
Brown	NF	88.8	7.6	3.4	0.2	9.73	6.47
	FR	90.2	5.4	3.9	0.5	11.34	6.88
Bovans	NM	84.3	9.7	5.4	0.6	6.13	5.00
Brown	NF	87.5	8.8	3.0	0.7	9.01	6.77
	FR	91.3	5.7	2.1	1.0	9.64	6.55
Bovans	NM	86.5	8.8	3.1	0.2	7.33	5.49
Goldline	NF	88.6	8.2	2.6	0.7	9.64	6.76
	FR	89.9	6.6	3.1	0.4	10.37	6.52
All Strains	NM	85.9^{B}	9.2^{A}	4.1	0.3	7.50^{C}	5.43^{B}
	NF	88.3^{AB}	8.2^{AB}	3.0	0.5	9.46^{B}	6.67^{A}
	FR	90.5^{A}	5.9^{B}	3.0	0.6	10.45^{A}	6.65^{A}

A,B,C - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 27. EFFECT OF WHITE EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-MOLTED

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Dekalb	3	10.9	0.39	132.6	63.7	41.6	25.3
White	4	11.0	0.33	117.7	56.3	36.6	21.7
	Average	11.0[A]	0.36	124.9	60.0	39.1	23.5
Hy-Line	3	9.4	0.41	155.3	58.6	38.9	15.5
W-36	4	9.9	0.40	161.9	61.4	39.7	16.7
	Average	9.7[C]	0.41	158.6	60.0	39.3	16.1
Hy-Line	3	10.4	0.34	133.3	51.5	35.1	12.5
W-98	4	10.5	0.37	141.3	56.3	38.8	21.5
	Average	10.5[ABC]	0.36	137.3	53.9	36.9	17.0

Hy-Line	3	9.5	0.43	171.0	62.4	40.8	14.4
CV-20	4	10.0	0.40	158.3	60.1	39.3	12.1
	Average	9.8^{BC}	0.41	164.7	61.3	40.1	13.3
Bovans	3	10.2	0.37	147.3	57.7	37.8	23.5
White Exp	4	10.5	0.37	164.6	60.2	38.9	18.7
	Average	10.4^{ABC}	0.37	156.0	59.0	38.4	21.1
Bovans	3	10.7	0.41	143.6	67.9	43.5	29.4
White	4	10.6	0.33	137.1	54.3	35.1	17.1
	Average	10.7^{AB}	0.37	140.4	61.1	39.3	23.2
Lohmann	3	10.4	0.39	167.1	62.7	40.6	13.3
LSL-Lite	4	10.3	0.36	132.0	54.6	36.1	21.9
	Average	10.4^{ABC}	0.38	149.6	58.7	38.3	17.6
All Strains	3	10.2	0.39	150.0	60.7	39.7	19.1
	4	10.4	0.37	144.6	57.6	37.8	18.5
	Average	10.3	0.38	147.3	59.1	38.8	18.8

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 28. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-MOLTED

Breeder (Strain)	Population[1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	3	65.7	0.5	0.0	1.1	34.0	64.4
White	4	64.6	0.0	0.3	5.1	31.5	62.6
	Average	65.1^{B}	0.3	0.1	3.1	32.7^{A}	63.5^{B}
Hy-Line	3	66.5	0.0	0.0	0.3	25.9	73.6
W-36	4	64.8	0.0	0.0	1.5	31.4	66.5
	Average	65.7^{B}	0.0	0.0	0.9	28.6^{A}	70.0^{B}
Hy-Line	3	68.4	0.0	0.0	0.0	13.3	86.7
W-98	4	69.4	0.0	0.0	0.6	8.6	90.8
	Average	68.9^{A}	0.0	0.0	0.3	11.0^{B}	88.8^{A}
Hy-Line	3	65.4	0.0	0.0	0.9	29.3	69.1
CV-20	4	65.6	0.0	0.0	0.5	32.8	66.4
	Average	65.5^{B}	0.0	0.0	0.7	31.0^{A}	67.8^{B}
Bovans	3	65.8	0.0	0.0	0.5	33.1	66.3
White Exp	4	65.0	0.0	0.0	1.1	27.5	71.1
	Average	65.4^{B}	0.0	0.0	0.8	30.3^{A}	68.7^{B}
Bovans	3	64.3	0.0	0.0	1.0	42.0	56.8
White	4	65.1	0.0	0.3	3.3	31.3	64.2
	Average	64.7^{B}	0.0	0.2	2.2	36.6^{A}	60.5^{B}
Lohmann	3	65.0	0.0	0.2	1.3	28.9	68.1
LSL-Lite	4	66.4	0.0	0.2	1.0	27.3	71.5
	Average	65.7^{B}	0.0	0.2	1.1	28.1^{A}	69.8^{B}
All Strains	3	65.9	0.1	0.0	0.7	29.5	69.3
	4	65.8	0.0	0.1	1.9	27.2	70.5
	Average	65.9	0.0	0.1	1.3	28.4	69.9

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .

A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 29. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-MOLTED

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	3	83.1	10.0	5.1	1.9	7.32	4.55
White	4	81.7	8.6	7.7	2.0	6.35	4.64
	Average	82.4	9.3	6.4	2.0	6.84[C]	4.60
Hy-Line	3	89.1	5.4	4.0	1.5	9.00	5.15
W-36	4	87.2	6.7	4.1	2.0	9.16	5.41
	Average	88.2	6.1	4.1	1.8	9.08[AB]	5.28
Hy-Line	3	84.9	8.9	4.9	1.3	7.55	5.48
W-98	4	80.1	10.8	6.8	2.4	7.69	5.36

	Average	82.5	9.8	5.9	1.8	7.62^{BC}	5.42
Hy-Line	3	87.4	6.0	5.9	0.8	9.76	5.38
CV-20	4	92.5	4.1	3.0	0.5	9.40	5.38
	Average	89.9	5.0	4.4	0.7	9.58^{A}	5.38
Bovans	3	88.3	6.7	4.9	0.2	8.55	5.30
White Exp	4	91.7	3.6	3.1	1.6	9.71	5.73
	Average	90.0	5.1	4.0	0.9	9.13^{AB}	5.52
Bovans	3	93.2	4.5	2.1	0.2	8.53	4.55
White	4	88.8	8.9	2.9	0.2	7.81	5.39
	Average	90.6	6.7	2.5	0.2	8.17^{ABC}	4.97
Lohmann	3	83.9	7.7	6.6	1.7	9.23	5.63
LSL-Lite	4	87.7	5.4	5.5	1.4	7.59	5.00
	Average	85.8	6.6	6.0	1.6	8.41^{ABC}	5.32
All Strains	3	87.1	7.0	4.8	1.1	8.56	5.15
	4	87.0	6.9	4.7	1.4	8.25	5.27
	Average	87.1	7.0	4.8	1.3	8.40	5.21

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 30. EFFECT OF BROWN EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-MOLTED

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Hy-Line	3	10.4	0.37	151.2	58.2	38.1	13.3
Brown	4	10.7	0.36	164.2	58.3	38.7	10.5
	Average	10.5	0.37	157.7[A]	58.3	38.4	11.9
Bovans	3	10.7	0.31	117.5	47.9	32.3	20.2
Brown	4	11.4	0.28	100.9	47.6	31.9	19.3
	Average	11.1	0.29	109.2[B]	47.8	32.1	19.8
Bovans	3	10.7	0.33	129.4	52.4	35.1	18.6
Goldline	4	11.0	0.32	129.8	50.7	34.9	26.7
	Average	10.9	0.33	129.6[AB]	51.5	35.0	22.7
All Strains	3	10.6	0.34	132.7	52.8	35.2	17.4
	4	11.0	0.32	131.6	52.2	35.2	18.8
	Average	10.8	0.33	132.2	52.5	35.2	18.1

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 31. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-MOLTED

Breeder (Strain)	Population [1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	3	65.7	0.0	0.0	2.0	28.7	69.0
Brown	4	66.7	0.0	0.2	1.0	23.9	74.9
	Average	66.2	0.0	0.1	1.5	26.3	72.0
Bovans	3	67.7	0.0	0.0	0.5	21.7	77.8
Brown	4	68.0	0.0	0.0	0.3	19.0	78.5
	Average	67.8	0.0	0.0	0.4	20.3	78.2
Bovans	3	67.3	0.0	0.0	2.1	23.9	74.0
Goldline	4	69.9	0.0	0.0	0.0	16.3	82.9
	Average	68.6	0.0	0.0	1.1	20.1	78.4
All Strains	3	66.9	0.0	0.0	1.6	24.8	73.6
	4	68.2	0.0	0.1	0.4	19.7	78.7
	Average	67.5	0.0	0.0	1.0	22.2	76.2

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
There are no significant differences among these average values.

TABLE 32. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-MOLTED

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	3	84.9	10.6	4.2	0.3	8.53	5.51
Brown	4	89.0	7.6	3.2	0.3	9.53	6.12
	Average	86.9	9.1	3.7	0.3	9.03^{A}	5.81
Bovans	3	86.2	10.6	2.6	0.6	6.67	5.27
Brown	4	82.4	8.8	8.2	0.6	5.59	4.72
	Average	84.3	9.7	5.4	0.6	6.13^{B}	5.00
Bovans	3	87.1	6.3	3.5	0.3	7.34	5.31
Goldline	4	86.0	11.3	2.7	0.0	7.32	5.67
	Average	86.5	8.8	3.1	0.2	7.33^{AB}	5.49
All Strains	3	86.0	9.2	3.4	0.4	7.51	5.37
	4	85.8	9.2	4.7	0.3	7.48	5.50
	Average	85.9	9.2	4.1	0.3	7.50	5.43

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 33. EFFECT OF WHITE EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-FASTED MOLT

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Dekalb	3	10.3	0.46	157.8	71.8	47.3	11.0
White	4	10.4	0.46	156.9	70.9	47.1	15.2
	Average	10.3^{CD}	0.46	157.3^{BC}	71.3	47.2	13.1^{AB}
Hy-Line	3	10.2	0.45	197.5	70.4	45.7	9.7
W-36	4	10.6	0.42	177.0	68.7	44.8	14.2
	Average	10.4^{BCD}	0.44	187.3^{A}	69.6	45.2	12.0^{AB}
Hy-Line	3	11.5	0.41	183.3	66.8	46.8	7.3
W-98	4	11.1	0.43	180.3	67.7	47.0	5.8
	Average	11.3^{A}	0.42	181.8^{AB}	67.3	46.9	6.5^{B}

Hy-Line	3	9.8	0.47	193.9	70.8	46.2	7.2
CV-20	4	9.9	0.47	200.4	71.1	46.7	4.3
	Average	9.8^{D}	0.47	197.1^{A}	70.9	46.4	5.8^{B}
Bovans	3	10.5	0.46	180.9	71.3	48.0	12.8
White Exp	4	11.2	0.42	192.8	71.7	46.9	9.0
	Average	10.8^{ABC}	0.44	186.8^{A}	71.5	47.4	10.9^{AB}
Bovans	3	10.8	0.44	154.9	71.1	47.2	17.5
White	4	11.4	0.43	132.2	72.8	48.8	18.3
	Average	11.1^{AB}	0.44	143.5^{C}	72.0	48.0	17.9^{A}
Lohmann	3	11.0	0.43	172.0	71.9	47.5	13.3
LSL-Lite	4	11.3	0.43	181.3	73.4	48.2	5.6
	Average	11.2^{A}	0.43	176.6^{AB}	72.6	47.8	9.5^{B}
All Strains	3	10.6	0.45	177.2	70.6	47.0	11.3
	4	10.8	0.44	174.4	70.9	47.0	10.3
	Average	10.7	0.44	175.8	70.7	47.0	10.8

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C,D - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 34. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-FASTED MOLT

Breeder (Strain)	Population[1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	3	65.9	0.0	0.0	2.3	29.4	67.3
White	4	66.6	0.0	0.0	0.6	27.6	71.5
	Average	66.3^{B}	0.0	0.0	1.4	28.5^{A}	69.4^{B}
Hy-Line	3	64.9	0.0	0.0	0.7	30.8	68.4
W-36	4	65.3	0.0	0.0	0.5	30.1	69.4
	Average	65.1^{B}	0.0	0.0	0.6	30.5^{A}	68.9^{B}
Hy-Line	3	70.1	0.0	0.0	0.0	7.1	92.7
W-98	4	69.5	0.0	0.0	0.0	10.0	89.4
	Average	69.8^{A}	0.0	0.0	0.0	8.5^{B}	91.0^{A}
Hy-Line	3	65.2	0.0	0.0	1.4	30.0	68.6
CV-20	4	65.6	0.0	0.0	0.3	28.5	71.0
	Average	65.4^{B}	0.0	0.0	0.8	29.2^{A}	69.8^{B}
Bovans	3	67.2	0.0	0.0	0.1	20.8	78.8
White Exp	4	65.6	0.0	0.0	0.5	29.3	69.6
	Average	66.4^{B}	0.0	0.0	0.3	25.0^{A}	74.2^{B}
Bovans	3	66.6	0.0	0.0	0.7	26.4	72.1
White	4	66.9	0.0	0.0	0.2	22.4	76.8
	Average	66.8^{B}	0.0	0.0	0.4	24.4^{A}	74.4^{B}
Lohmann	3	66.1	0.0	0.0	1.8	26.0	72.1
LSL-Lite	4	65.5	0.0	0.0	0.5	30.0	69.2
	Average	65.8^{B}	0.0	0.0	1.1	28.0^{A}	70.6^{B}
All Strains	3	66.6	0.0	0.0	1.0	24.3	74.3
	4	66.4	0.0	0.0	0.4	25.4	73.8
	Average	66.5	0.0	0.0	0.7	24.9	74.1

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .

A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 35. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-FASTED MOLT

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	3	89.0	5.3	4.1	1.8	9.03	5.21
White	4	88.5	6.4	4.1	1.0	9.04	5.26
	Average	88.7	5.8	4.1	1.4	9.03^{BC}	5.24^{B}
Hy-Line	3	91.7	3.6	3.7	1.0	11.69	6.58
W-36	4	90.8	4.9	2.8	1.7	10.37	6.32
	Average	91.2	4.2	3.2	1.3	11.03^{A}	6.45^{A}
Hy-Line	3	88.5	6.1	3.4	2.1	10.57	7.21
W-98	4	88.6	6.7	3.6	1.0	10.43	6.72
	Average	88.6	6.4	3.5	1.5	10.50^{AB}	6.96^{A}
Hy-Line	3	90.2	4.5	3.5	1.8	11.30	6.16
CV-20	4	90.8	5.2	3.7	0.3	11.79	6.33
	Average	90.5	4.9	3.6	1.1	11.54^{A}	6.24^{A}
Bovans	3	90.5	4.9	3.5	1.1	10.61	6.13
White Exp	4	90.9	5.1	3.3	0.6	11.30	6.87
	Average	90.7	5.0	3.4	0.9	10.96^{A}	6.50^{A}
Bovans	3	86.9	7.5	4.4	1.3	8.79	5.31
White	4	89.8	4.3	5.3	0.7	7.72	4.81
	Average	88.3	5.9	4.8	1.0	8.25^{C}	5.06^{B}
Lohmann	3	87.5	5.9	6.2	0.5	9.90	6.02
LSL-Lite	4	89.0	6.2	3.9	1.0	10.49	6.40
	Average	88.2	6.0	5.1	0.7	10.19^{AB}	6.21^{A}
All Strains	3	89.2	5.4	4.1	1.3	10.27	6.09
	4	89.8	5.5	3.8	0.9	10.16	6.10
	Average	89.5	5.5	4.0	1.1	10.22	6.09

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 36. EFFECT OF BROWN EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-FASTED MOLT

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Hy-Line	3	10.6	0.42	171.3	65.7	44.3	10.8
Brown	4	11.2	0.39	165.4	65.3	43.7	6.3
	Average	10.9	0.41	168.3	65.5	44.0	8.5
Bovans	3	11.4	0.37	151.1	62.0	41.9	13.5
Brown	4	11.8	0.36	163.0	62.6	42.5	9.6
	Average	11.6	0.37	157.0	62.3	42.2	11.6
Bovans	3	11.2	0.39	167.7	65.2	43.3	9.7
Goldline	4	11.9	0.38	167.1	66.3	44.9	11.7
	Average	11.5	0.39	167.4	65.8	44.1	10.7
All Strains	3	11.1	0.39	163.4	64.3	43.2	11.3
	4	11.6	0.38	165.2	64.7	43.7	9.2
	Average	11.3	0.39	164.3	64.5	43.4	10.3

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
There are no significant differences among these average values.

TABLE 37. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-FASTED MOLT

Breeder (Strain)	Population [1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	3	67.7	0.0	0.0	0.8	23.9	74.8
Brown	4	67.1	0.0	0.0	0.0	23.7	76.3
	Average	67.4	0.0	0.0	0.4	23.8	75.5
Bovans	3	67.8	0.0	0.0	0.4	15.4	84.0
Brown	4	68.3	0.0	0.0	0.5	19.6	79.9
	Average	68.0	0.0	0.0	0.5	17.5	81.9
Bovans	3	66.6	0.2	0.0	2.0	25.6	72.3
Goldline	4	67.8	0.0	0.2	1.3	14.5	83.6
	Average	67.2	0.1	0.1	1.6	20.0	78.0
All Strains	3	67.3	0.1	0.0	1.1	21.6	77.0
	4	67.7	0.0	0.1	0.6	19.3	79.9
	Average	67.5	0.0	0.0	0.8	20.4	78.5

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
There are no significant differences among these average values.

TABLE 38. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS), NON-FASTED MOLT

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	3	86.2	9.0	4.3	0.5	9.70	6.43
Brown	4	91.2	6.2	2.6	0.0	9.79	6.54
	Average	88.7	7.6	3.5	0.3	9.75	6.49
Bovans	3	87.0	8.9	3.1	1.1	8.64	6.45
Brown	4	88.1	8.9	2.7	0.3	9.42	7.14
	Average	87.6	8.9	2.9	0.7	9.03	6.79
Bovans	3	89.8	7.7	2.1	0.4	9.75	6.67
Goldline	4	87.4	8.6	3.1	0.9	9.53	6.85
	Average	88.6	8.2	2.6	0.7	9.64	6.76
All Strains	3	87.6	8.5	3.2	0.7	9.37	6.52
	4	88.9	7.9	2.8	0.4	9.58	6.84
	Average	88.3	8.2	3.0	0.5	9.50	6.70

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
There are no significant differences among these average values.

TABLE 39. EFFECT OF WHITE EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS), RESTRICTED FEED (13 DAY FAST)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Dekalb	3	10.4	0.44	139.8	70.1	45.8	20.7
White	4	10.9	0.45	148.6	73.1	48.7	14.6
	Average	10.6	0.44	144.2[D]	71.6	47.2	17.7[A]
Hy-Line	3	9.9	0.48	206.2	72.2	46.9	5.7
W-36	4	9.8	0.48	207.3	73.4	47.2	6.8
	Average	9.8	0.48	206.7[A]	72.8	47.0	6.3[B]
Hy-Line	3	11.3	0.45	179.1	75.4	51.4	7.7
W-98	4	10.8	0.47	190.1	73.7	50.5	9.5
	Average	11.1	0.46	184.6[ABC]	74.6	50.9	8.6[B]

Hy-Line	3	10.0	0.47	182.5	72.1	47.0	9.6
CV-20	4	10.1	0.47	208.9	72.6	47.8	3.1
	Average	10.0	0.47	195.7^{AB}	72.3	47.4	6.4^{B}
Bovans	3	10.6	0.43	184.7	68.2	45.8	11.9
White Exp	4	10.4	0.45	179.9	70.4	46.0	9.8
	Average	10.5	0.44	182.3^{BC}	69.3	45.9	10.8^{AB}
Bovans	3	10.7	0.45	164.8	71.7	47.2	12.8
White	4	10.7	0.44	162.1	70.9	47.6	22.0
	Average	10.7	0.44	163.5^{CD}	71.3	47.4	17.4^{A}
Lohmann	3	10.6	0.46	193.5	73.9	48.2	8.5
LSL-Lite	4	9.9	0.49	181.2	74.2	48.8	9.2
	Average	10.3	0.48	187.4^{ABC}	74.0	48.5	8.9^{B}
All Strains	3	10.5	0.45	178.6	71.9	47.5	11.0
	4	10.4	0.46	182.6	72.6	48.1	10.7
	Average	10.4	0.46	180.6	72.3	47.8	10.9

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C,D - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 40. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS), RESTRICTED FEED (13 DAY FAST)

Breeder (Strain)	Population[1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	3	65.2	0.0	0.0	1.4	31.5	67.1
White	4	66.6	0.0	0.4	0.6	28.3	70.0
	Average	65.9^{B}	0.0	0.2	1.0	29.9^{A}	68.5^{B}
Hy-Line	3	64.9	0.0	0.0	0.7	31.2	68.1
W-36	4	64.2	0.0	0.0	0.7	29.5	69.9
	Average	64.6^{B}	0.0	0.0	0.7	30.3^{A}	69.0^{B}
Hy-Line	3	68.3	0.0	0.0	0.2	12.8	86.9
W-98	4	68.6	0.0	0.0	0.0	11.3	88.1
	Average	68.5^{A}	0.0	0.0	0.1	12.0^{B}	87.5^{A}
Hy-Line	3	65.3	0.0	0.0	0.7	32.0	67.4
CV-20	4	65.7	0.0	0.0	0.7	24.9	74.3
	Average	65.5^{B}	0.0	0.0	0.7	28.4^{A}	70.8^{B}
Bovans	3	67.2	0.0	0.0	0.4	20.6	79.1
White Exp	4	65.4	0.0	0.0	1.3	29.7	69.1
	Average	66.3^{AB}	0.0	0.0	0.8	25.1^{AB}	74.1^{AB}
Bovans	3	66.0	0.0	0.0	0.6	28.5	70.6
White	4	67.2	0.0	0.0	1.4	24.1	74.4
	Average	66.6^{AB}	0.0	0.0	1.0	26.3^{A}	72.5^{B}
Lohmann	3	65.3	0.0	0.0	1.0	32.7	66.0
LSL-Lite	4	66.1	0.0	0.0	0.5	32.8	66.3
	Average	65.7^{B}	0.0	0.0	0.7	32.8^{A}	66.2^{B}
All Strains	3	66.0	0.0	0.0	0.7	27.0	72.2
	4	66.3	0.0	0.1	0.7	25.8	73.2
	Average	66.1	0.0	0.0	0.7	26.4	72.7

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .

A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 41. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS), RESTRICTED FEED (13 DAY FAST)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	3	89.4	5.7	3.6	1.4	8.10	4.80
White	4	86.2	7.4	5.2	1.3	8.40	5.14
	Average	87.8	6.5	4.4	1.3	8.25[C]	4.97[B]
Hy-Line	3	89.6	5.4	3.2	1.9	11.97	6.45
W-36	4	93.6	2.9	2.4	1.1	12.40	6.36
	Average	91.6	4.2	2.8	1.5	12.19[A]	6.40[A]
Hy-Line	3	91.7	2.5	4.1	1.7	10.62	6.15
W-98	4	91.3	5.3	2.6	0.8	11.18	6.40

	Average	91.5	3.9	3.3	1.3	10.90^{AB}	6.27^{A}
Hy-Line	3	91.6	4.2	3.4	0.9	10.79	5.79
CV-20	4	92.9	3.1	2.4	1.6	12.41	6.67
	Average	92.2	3.7	2.9	1.3	11.60^{A}	6.23^{A}
Bovans	3	91.1	5.9	2.8	0.3	10.92	6.60
White Exp	4	93.4	3.3	2.3	1.0	10.74	6.10
	Average	92.2	4.6	2.5	0.6	10.83^{AB}	6.35^{A}
Bovans	3	89.5	4.9	4.0	1.7	9.56	5.64
White	4	91.2	5.3	2.6	0.9	9.53	5.63
	Average	90.4	5.1	3.3	1.3	9.54^{BC}	5.64^{AB}
Lohmann	3	90.3	6.1	2.8	0.9	11.25	6.30
LSL-Lite	4	87.3	7.9	4.4	0.5	10.38	5.59
	Average	88.8	7.0	3.6	0.7	10.82^{AB}	5.94^{A}
All Strains	3	90.4	4.9	3.4	1.2	10.46	5.96
	4	90.8	5.0	3.1	1.0	10.72	5.98
	Average	90.6	5.0	3.3	1.1	10.59	5.97

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 42. EFFECT OF BROWN EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (491-791 DAYS), RESTRICTED FEED (13 DAY FAST)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Hy-Line	3	10.6	0.44	195.9	71.4	46.8	5.8
Brown	4	11.2	0.43	191.6	71.5	47.3	6.3
	Average	10.9	0.43	193.8	71.5	47.0	6.1
Bovans	3	11.3	0.39	156.7	66.9	44.3	7.3
Brown	4	11.8	0.40	172.3	68.0	46.3	9.3
	Average	11.5	0.39	164.5	67.5	45.3	8.3
Bovans	3	11.2	0.44	182.1	72.2	49.0	2.5
Goldline	4	11.3	0.42	173.0	70.8	47.5	5.4
	Average	11.2	0.43	177.5	71.5	48.2	3.9
All Strains	3	11.0	0.42	178.2	70.2	46.7	5.2
	4	11.4	0.41	179.0	70.1	47.0	7.0
	Average	11.2	0.42	178.6	70.1	46.9	6.1

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
There are no significant differences among these average values.

TABLE 43. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (491-791 DAYS), RESTRICTED FEED (13 DAY FAST)

Breeder (Strain)	Population [1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	3	65.6	0.0	0.0	2.1	31.2	66.6
Brown	4	66.2	0.0	0.0	0.5	29.3	69.8
	Average	65.9	0.0	0.0	1.3	30.2	68.2
Bovans	3	66.5	0.0	0.2	2.1	27.8	69.3
Brown	4	68.1	0.1	0.0	0.6	16.0	83.3
	Average	67.3	0.1	0.1	1.3	21.9	76.3
Bovans	3	67.9	0.0	0.0	0.3	19.8	79.7
Goldline	4	67.2	0.0	0.0	0.4	26.3	72.4
	Average	67.6	0.0	0.0	0.4	23.1	76.0
All Strains	3	66.7	0.0	0.1	1.5	26.2	71.9
	4	67.2	0.0	0.0	0.5	23.9	75.2
	Average	66.9	0.0	0.0	1.0	25.1	73.5

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
There are no significant differences among these average values.

TABLE 44. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (491-791 DAYS), RESTRICTED FEED (13 DAY FAST)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	3	90.0	5.7	3.7	0.6	11.44	6.82
Brown	4	90.3	5.2	4.1	0.5	11.23	6.94
	Average	90.2	5.4	3.9	0.5	11.34	6.88
Bovans	3	91.3	5.4	2.8	0.6	9.16	6.15
Brown	4	91.3	6.1	1.4	1.4	10.12	6.95
	Average	91.3	5.7	2.1	1.0	9.64	6.55
Bovans	3	89.7	6.6	3.2	0.5	10.63	6.55
Goldline	4	90.3	6.3	3.1	0.2	10.08	6.46
	Average	90.0	6.5	3.1	0.4	10.35	6.51
All Strains	3	90.4	5.9	3.2	0.6	10.41	6.51
	4	90.6	5.8	2.8	0.7	10.48	6.78
	Average	90.5	5.9	3.0	0.6	10.44	6.65

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
There are no significant differences among these average values.

TABLE 45. EFFECT OF WHITE EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Dekalb	3	10.1	0.46	413.6	74.9	46.2	39.2
White	4	10.4	0.45	418.7	75.3	47.0	39.5
	Average	10.2^{A}	0.45^{B}	416.2^{C}	75.1^{AB}	46.6^{AB}	39.4^{A}
Hy-Line	3	9.5	0.46	466.7	72.4	44.1	13.0
W-36	4	9.7	0.46	466.8	73.4	44.5	16.6
	Average	9.6^{B}	0.46^{AB}	466.8^{A}	72.9^{C}	44.3^{C}	14.8^{C}
Hy-Line	3	10.7	0.44	447.5	73.0	47.1	20.1
W-98	4	10.4	0.45	453.6	73.4	47.3	20.4
	Average	10.5^{A}	0.45^{B}	450.6^{AB}	73.2^{BC}	47.2^{A}	20.2^{BC}
Hy-Line	3	9.4	0.48	463.5	73.8	45.3	16.7
CV-20	4	9.6	0.47	473.9	74.0	45.5	11.0
	Average	9.5^{B}	0.47^{A}	468.7^{A}	73.9^{BC}	45.4^{BC}	13.9^{C}
Bovans	3	10.1	0.46	466.8	75.0	46.4	22.9
White Exp	4	10.3	0.44	470.4	75.0	45.8	19.4
	Average	10.2^{A}	0.45^{B}	468.6^{A}	75.0^{AB}	46.1^{AB}	21.1^{BC}
Bovans	3	10.2	0.46	445.3	78.0	47.7	38.4
White	4	10.7	0.44	432.1	76.1	47.2	37.9
	Average	10.5^{A}	0.45^{B}	438.7^{B}	77.0^{A}	47.5^{A}	38.1^{A}
Lohmann	3	10.2	0.46	468.2	77.0	47.3	22.1
LSL-Lite	4	10.3	0.46	463.5	76.8	47.2	24.5
	Average	10.3^{A}	0.46^{AB}	465.9^{A}	76.9^{A}	47.3^{A}	23.3^{B}
All Strains	3	10.0	0.46	453.1	74.9	46.3	24.6
	4	10.2	0.45	454.2	74.9	46.4	24.2
	Average	10.1	0.46	453.6	74.9	46.3	24.4

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 46. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Population[1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	3	61.8	0.7	3.6	12.1	42.8	40.7
White	4	62.5	0.7	3.0	10.4	42.0	43.8
	Average	62.2^{B}	0.7^{BC}	3.3^{C}	11.2^{A}	42.4^{A}	42.2^{B}
Hy-Line	3	61.2	1.0	5.3	11.8	40.2	41.7
W-36	4	60.9	1.1	5.6	11.7	41.9	39.5
	Average	61.1^{C}	1.1^{A}	5.4^{A}	11.8^{A}	41.0^{A}	40.6^{B}
Hy-Line	3	65.0	0.2	2.4	8.3	28.6	60.5
W-98	4	65.1	0.1	2.5	8.5	27.2	61.4
	Average	65.0^{A}	0.1^{D}	2.4^{D}	8.4^{B}	27.9^{B}	61.0^{A}
Hy-Line	3	61.6	0.8	4.8	11.7	40.0	42.6
CV-20	4	61.7	1.0	3.9	11.0	40.7	43.2
	Average	61.6^{BC}	0.9^{AB}	4.3^{B}	11.3^{A}	40.4^{A}	42.9^{B}
Bovans	3	62.3	0.5	3.4	11.6	40.1	44.3
White Exp	4	61.4	0.6	3.9	12.2	42.4	40.8
	Average	61.8^{BC}	0.5^{C}	3.7^{BC}	11.9^{A}	41.3^{A}	42.5^{B}
Bovans	3	61.5	0.4	3.6	12.0	45.4	38.3
White	4	62.2	0.4	3.7	12.6	38.8	44.1
	Average	61.9^{BC}	0.4^{CD}	3.6^{BC}	12.3^{A}	42.1^{A}	41.2^{B}
Lohmann	3	61.7	0.6	3.7	11.4	42.8	41.2
LSL-Lite	4	61.9	0.7	3.0	11.6	42.7	41.8
	Average	61.8^{BC}	0.7^{BC}	3.3^{C}	11.5^{A}	42.8^{A}	41.5^{B}
All Strains	3	62.2	0.6	3.8	11.3	40.0	44.2
	4	62.2	0.7	3.6	11.1	39.4	44.9
	Average	62.2	0.6	3.7	11.2	39.7	44.5

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .

A,B,C,D - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 47. EFFECT OF WHITE EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	3	92.2	4.2	2.7	0.9	23.23	12.32
White	4	91.7	4.1	3.3	0.8	23.72	12.82
	Average	92.0^{D}	4.1^{A}	3.0	0.9	23.47^{C}	12.57^{D}
Hy-Line	3	94.3	2.7	2.3	0.7	26.31	13.77
W-36	4	94.3	2.8	2.1	0.8	26.25	13.79
	Average	94.3^{AB}	2.7^{BC}	2.2	0.8	26.28^{A}	13.78^{ABC}
Hy-Line	3	93.1	3.4	2.7	0.8	25.93	14.62
W-98	4	92.4	4.2	2.6	0.8	26.15	14.34

	Average	92.8^{CD}	3.8^{AB}	2.7	0.8	26.04^{AB}	14.48^{A}
Hy-Line	3	94.0	2.6	2.9	0.6	26.25	13.31
CV-20	4	95.4	2.3	1.8	0.4	27.16	13.88
	Average	94.7^{A}	2.5^{C}	2.3	0.5	26.70^{A}	13.59^{BC}
Bovans	3	93.8	3.3	2.5	0.3	26.65	14.02
White Exp	4	94.9	2.5	2.1	0.5	26.87	14.44
	Average	94.4^{AB}	2.9^{BC}	2.3	0.4	26.76^{A}	14.23^{AB}
Bovans	3	93.4	3.9	2.2	0.5	25.16	12.90
White	4	93.8	3.7	2.2	0.3	24.53	13.50
	Average	93.6^{ABC}	3.8^{AB}	2.2	0.4	24.84^{B}	13.20^{CD}
Lohmann	3	92.8	3.7	3.1	0.5	26.53	13.85
LSL-Lite	4	93.3	3.5	2.6	0.6	26.33	13.80
	Average	93.1^{BCD}	3.6^{ABC}	2.8	0.5	26.43^{A}	13.83^{ABC}
All Strains	3	93.4	3.4	2.6	0.6	25.72	13.54
	4	93.7	3.3	2.4	0.6	25.86	13.80
	Average	93.5	3.3	2.5	0.6	25.79	13.67

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B,C,D - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 48. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Molt Program	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Dekalb	NM	10.6	0.43	405.5	73.6	45.4	46.0
White	NF	9.9	0.47	430.1	75.9	47.2	32.2
	FR	10.1	0.46	412.8	75.8	47.2	39.9
Hy-Line	NM	9.4	0.46	450.1	71.2	43.3	20.7
W-36	NF	9.8	0.45	464.2	73.0	44.4	16.0
	FR	9.4	0.47	486.1	74.5	45.3	7.8
Hy-Line	NM	10.4	0.43	429.8	69.6	44.5	26.0
W-98	NF	10.8	0.44	461.2	73.3	47.8	14.0
	FR	10.4	0.47	460.8	76.7	49.2	20.7
Hy-Line	NM	9.6	0.46	459.9	72.7	44.5	19.3
CV-20	NF	9.5	0.47	475.6	74.1	45.5	9.3
	FR	9.5	0.48	470.6	74.9	46.1	13.0
Bovans	NM	10.2	0.44	463.0	73.4	44.8	27.9
White Exp	NF	10.5	0.45	473.7	76.3	47.1	17.3
	FR	10.0	0.46	469.0	75.4	46.4	18.2
Bovans	NM	10.5	0.44	440.8	75.9	45.9	40.0
White	NF	10.6	0.45	421.0	77.7	48.3	40.6
	FR	10.3	0.46	454.3	77.5	48.1	33.9
Lohmann	NM	10.2	0.45	458.1	74.2	45.4	26.7
LSL-Lite	NF	10.6	0.45	464.2	78.3	48.4	23.4
	FR	10.0	0.48	475.2	78.1	48.1	20.0
All Strains	NM	10.1^{AB}	0.44^{B}	443.9^{B}	72.9^{B}	44.8^{B}	29.5^{A}
	NF	10.3^{A}	0.45^{B}	455.7^{AB}	75.5^{A}	46.9^{A}	21.8^{B}
	FR	9.9^{B}	0.47^{A}	461.2^{A}	76.1^{A}	47.2^{A}	21.9^{B}

A,B - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 49. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Molt Program	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Dekalb	NM	62.1	0.7	3.0	11.7	42.2	42.3
White	NF	62.3	0.6	3.4	11.3	42.2	42.3
	FR	62.2	0.8	3.4	10.7	42.8	42.0
Hy-Line	NM	61.3	1.0	5.8	11.9	40.1	40.9
W-36	NF	61.0	1.0	5.2	12.0	42.3	39.5
	FR	60.9	1.2	5.4	11.4	40.7	41.4
Hy-Line	NM	64.9	0.2	2.5	8.6	28.3	60.3
W-98	NF	65.7	0.1	2.1	7.8	26.4	63.5
	FR	64.5	0.1	2.7	8.8	28.9	59.1
Hy-Line	NM	61.6	0.9	4.6	11.7	39.9	42.6
CV-20	NF	61.6	0.8	4.1	11.5	39.9	43.5
	FR	61.6	0.9	4.3	10.8	41.3	42.6
Bovans	NM	61.6	0.4	3.7	12.6	42.0	41.1
White Exp	NF	61.9	0.7	3.9	10.8	41.5	42.7
	FR	61.9	0.4	3.4	12.1	40.3	43.8
Bovans	NM	61.1	0.5	3.4	13.7	45.4	36.6
White	NF	62.4	0.3	3.9	11.3	40.6	43.5
	FR	62.1	0.5	3.5	12.0	40.3	43.4
Lohmann	NM	61.7	0.7	4.2	11.6	41.1	42.0
LSL-Lite	NF	61.9	0.6	2.9	10.7	43.8	41.8
	FR	61.7	0.7	2.9	12.1	43.5	40.7
All Strains	NM	62.0	0.6	3.9	11.7	39.9	43.7
	NF	62.4	0.6	3.6	10.8	39.5	45.2
	FR	62.2	0.7	3.7	11.2	39.7	44.7

There are no significant differences among these average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 50. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Molt Program	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Dekalb	NM	89.4	5.1	4.3	1.2	22.61	12.51
White	NF	93.7	3.3	2.2	0.7	24.47	12.75
	FR	92.8	4.0	2.5	0.7	23.34	12.45
Hy-Line	NM	93.0	3.4	2.7	0.9	25.05	13.05
W-36	NF	94.8	2.4	2.2	0.6	26.25	14.23
	FR	95.1	2.4	1.8	0.7	27.55	14.05
Hy-Line	NM	90.6	5.1	3.4	0.9	24.57	13.92
W-98	NF	92.9	3.8	2.6	0.7	26.74	15.39
	FR	94.8	2.5	2.0	0.7	26.81	14.13
Hy-Line	NM	94.1	2.9	2.7	0.3	26.03	13.32
CV-20	NF	94.6	2.6	2.3	0.5	27.13	13.91
	FR	95.4	1.9	2.0	0.7	26.95	13.55
Bovans	NM	93.4	3.0	3.1	0.5	26.29	13.80
White Exp	NF	94.4	3.1	2.1	0.4	26.98	14.74
	FR	95.4	2.6	1.6	0.3	27.00	14.14
Bovans	NM	94.0	4.4	1.6	0.1	24.94	13.08
White	NF	92.9	3.8	2.9	0.5	23.80	12.82
	FR	93.9	3.3	2.1	0.7	25.79	13.69
Lohmann	NM	92.1	3.7	3.4	0.8	25.70	13.58
LSL-Lite	NF	93.2	3.5	2.9	0.4	26.48	14.15
	FR	93.9	3.5	2.2	0.4	27.11	13.75
All Strains	NM	92.4^{B}	3.9^{A}	3.0^{A}	0.7	25.03^{B}	13.32^{B}
	NF	93.8^{A}	3.2^{AB}	2.5^{B}	0.5	25.98^{A}	14.00^{A}
	FR	94.5^{A}	2.9^{B}	2.0^{B}	0.6	26.37^{A}	13.68^{AB}

A,B - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 51. EFFECT OF BROWN EGG STRAIN AND POPULATION ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Population[1]	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Hy-Line	3	10.3	0.45	467.1	74.1	46.2	16.8
Brown	4	10.7	0.44	465.6	74.6	46.6	16.5
	Average	10.5^{B}	0.44^{A}	466.4^{A}	74.4	46.4	16.6^{B}
Bovans	3	11.0	0.41	427.1	71.2	45.2	27.3
Brown	4	11.4	0.40	429.0	71.7	45.7	26.6
	Average	11.2^{A}	0.41^{B}	428.0^{B}	71.4	45.4	26.9^{A}
Bovans	3	10.8	0.43	455.7	74.4	47.2	22.5
Goldline	4	11.1	0.42	451.7	73.6	47.0	25.0
	Average	10.9^{A}	0.43^{A}	453.7^{A}	74.0	47.1	23.8^{AB}
All Strains	3	10.7^{Z}	0.43	449.9	73.2	46.2	22.2
	4	11.0^{Y}	0.42	448.8	73.3	46.5	22.7
	Average	10.9	0.43	449.4	73.3	46.3	22.4

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.
Y,Z - Different letters denote significant differences (P<.01), comparisons made among population average values.

TABLE 52. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Population [1]	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	3	62.7	0.1	2.3	12.0	40.3	45.2
Brown	4	63.0	0.2	1.9	10.6	40.2	46.8
	Average	62.8^{B}	0.2^{A}	2.1	11.3^{A}	40.2^{A}	46.0^{B}
Bovans	3	64.1	0.1	1.7	8.6	36.5	52.6
Brown	4	64.4	0.1	1.2	8.6	34.4	55.1
	Average	64.2^{A}	0.1^{B}	1.5	8.6^{B}	35.5^{B}	53.9^{A}
Bovans	3	63.9	0.2	2.1	9.2	36.8	51.4
Goldline	4	64.6	0.0	1.6	9.3	33.6	55.0
	Average	64.2^{A}	0.1^{B}	1.8	9.2^{B}	35.2^{B}	53.2^{A}
All Strains	3	63.5	0.1	2.0	9.9	37.9	49.7
	4	64.0	0.1	1.6	9.5	36.1	52.3
	Average	63.8	0.1	1.8	9.7	37.0	51.0

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 53. EFFECT OF BROWN EGG STRAIN AND POPULATION ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Population[1]	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	3	92.8	4.6	2.3	0.2	26.77	14.49
Brown	4	94.1	3.5	2.2	0.2	26.97	14.83
	Average	93.5	4.1	2.3	0.2	26.87^{A}	14.66
Bovans	3	92.8	4.6	2.2	0.4	24.69	14.57
Brown	4	92.6	4.3	2.7	0.4	24.94	14.98
	Average	92.7	4.5	2.5	0.4	24.81^{B}	14.77
Bovans	3	93.1	4.4	1.8	0.2	26.25	14.72
Goldline	4	92.6	5.0	2.2	0.2	26.11	15.06
	Average	92.9	4.7	2.0	0.2	26.18^{AB}	14.89
All Strains	3	92.9	4.5	2.1	0.3	25.90	14.59
	4	93.1	4.3	2.4	0.2	26.01	14.96
	Average	93.0	4.4	2.2	0.3	25.95	14.77

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences (P<.01), comparisons made among strain average values.

TABLE 54. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON PERFORMANCE OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Molt Program	Feed Cons (kg/100 hens/d)	Feed Conver-sion (g egg/ g feed)	Eggs Per Bird Housed	Egg Produc-tion (HD%)	Egg Mass (g/HD)	Mortality (%)
Hy-Line	NM	10.4	0.43	463.5	73.0	45.1	17.9
Brown	NF	10.5	0.44	454.2	73.8	46.4	19.3
	FR	10.4	0.45	481.4	76.3	47.7	12.7
Bovans	NM	11.1	0.38	394.0	67.5	42.7	34.9
Brown	NF	11.3	0.41	443.5	72.3	46.3	22.3
	FR	11.1	0.42	446.6	74.5	47.4	23.5
Bovans	NM	10.9	0.42	441.0	70.5	44.9	29.9
Goldline	NF	11.1	0.42	458.8	74.6	47.3	21.7
	FR	10.8	0.45	461.3	76.9	49.2	19.8
All Strains	NM	10.8	0.41^{B}	432.8^{B}	70.3^{B}	44.2^{B}	27.6
	NF	11.0	0.42^{AB}	452.2^{AB}	73.6^{A}	$46\ 6^{A}$	21.1
	FR	10.8	0.44^{A}	463.1^{A}	75.9^{A}	48.1^{A}	18.7

A,B,C - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 55. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG WEIGHT AND EGG SIZE DISTRIBUTION OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Molt Program	Egg Weight (g/egg)	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
Hy-Line	NM	62.4	0.2	2.6	12.1	40.1	44.9
Brown	NF	63.4	0.1	1.7	10.7	39.7	47.7
	FR	62.8	0.2	2.0	11.2	40.9	45.4
Bovans	NM	64.2	0.2	1.9	9.0	33.8	54.3
Brown	NF	64.5	0.0	1.0	8.4	35.5	55.0
	FR	64.0	0.1	1.5	8.5	37.2	52.3
Bovans	NM	64.7	0.1	1.9	8.9	34.8	54.1
Goldline	NF	63.8	0.2	1.9	9.5	36.2	52.0
	FR	64.2	0.1	1.8	9.4	34.7	53.6
All Strains	NM	63.8	0.2	2.1	10.0	36.2	51.1
	NF	63.9	0.1	1.5	9.5	37.1	51.6
	FR	63.7	0.1	1.7	9.7	37.6	50.4

There are no significant differences among these average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 56. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON EGG QUALITY, INCOME AND FEED COSTS OF HENS IN THE 35th NCLP&MT (119-791 DAYS)

Breeder (Strain)	Molt Program	Grade A (%)	Grade B (%)	Cracks (%)	Loss (%)	Egg Income ($/hen)	Feed Costs ($/hen)
Hy-Line	NM	92.4	4.9	2.6	0.2	26.44	14.29
Brown	NF	93.7	4.1	2.1	0.1	26.28	14.63
	FR	94.4	3.1	2.2	0.3	27.89	15.05
Bovans	NM	91.4	5.2	3.2	0.3	22.64	13.68
Brown	NF	92.7	4.9	2.1	0.3	25.81	15.57
	FR	94.1	3.3	2.1	0.5	26.00	15.07
Bovans	NM	92.0	5.3	2.0	0.1	25.37	14.48
Goldline	NF	93.3	4.7	1.6	0.3	26.52	15.43
	FR	93.3	4.1	2.4	0.2	26.65	14.77
All Strains	NM	91.9	5.1^{A}	2.6	0.2	24.82^{B}	14.15^{B}
	NF	93.2	4.6^{AB}	1.9	0.3	26.20^{AB}	15.21^{A}
	FR	93.9	3.5^{B}	2.2	0.3	26.84^{A}	14.96^{A}

A,B,C - Different letters denote significant differences (P<.01), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 57. EFFECT OF WHITE EGG STRAIN, POPULATION, AND SYNCHRONIZED MOLT ON HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population[1]	113 Wk Body Wt (kg)	2nd Cycle Wt Gain (g)	2nd Cycle Wt Gain (%)	Total Wt Gain (g)	Total Wt Gain (%)
Dekalb	3	1.65	244	18.7	493	42.9
White	4	1.74	253	20.7	521	43.2
	Average	1.70^{C}	249^{B}	19.7	507^{B}	43.1
Hy-Line	3	1.81	318	23.5	520	40.6
W-36	4	1.78	282	21.0	517	41.0
	Average	1.79^{B}	300^{B}	22.2	518^{B}	40.8
Hy-Line	3	2.00	334	21.0	637	47.0
W-98	4	2.03	497	32.9	688	51.6
	Average	2.01^{A}	415^{A}	26.9	663^{A}	49.3
Hy-Line	3	1.78	290	22.1	523	42.0
CV-20	4	1.76	357	27.0	514	41.1
	Average	1.77^{BC}	324^{AB}	24.5	519^{B}	41.6
Bovans	3	1.82	341	25.2	535	41.6
White Exp	4	1.78	327	24.5	519	41.3
	Average	1.80^{B}	334^{AB}	24.8	527^{B}	41.4
Bovans	3	1.71	302	23.0	492	40.7
White	4	1.73	281	22.0	480	38.4
	Average	1.72^{BC}	291^{B}	22.5	486^{B}	39.5
Lohmann	3	1.68	252	20.3	464	38.6
LSL-Lite	4	1.72	268	21.8	492	40.5
	Average	1.70^{C}	260^{B}	21.0	478^{B}	39.5
Average	3	1.78	297	22.0	523	41.9
	4	1.79	324	24.3	533	42.4
	Average	1.79	310	23.1	528	42.2

[1]All strains were housed at a constant density of; 413 cm^2 equals 64 in^2 .
A,B,C - Different letters denote significant differences ($P < .01$), comparisons made among strain average values.

TABLE 58. EFFECT OF WHITE EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	113 Wk Body Wt (kg)	2nd Cycle Wt Gain (g)	2nd Cycle Wt Gain (%)	Total Wt Gain (g)	Total Wt Gain (g)
Dekalb	NM	1.59	-80	-4.6	353	28.9
White	NF	1.74	360	26.7	563	48.3
	FR	1.77	466	37.1	604	52.0
Hy-Line	NM	1.68	-20	-1.2	416	33.1
W-36	NF	1.88	500	37.1	613	48.7
	FR	1.82	421	30.8	525	40.5
Hy-Line	NM	1.96	214	12.8	622	46.5
W-98	NF	2.04	485	31.6	680	50.4
	FR	2.03	547	36.4	686	51.0
Hy-Line	NM	1.63	5	0.3	397	32.5
CV-20	NF	1.89	492	37.9	620	49.2
	FR	1.79	474	35.5	539	43.1
Bovans	NM	1.70	15	0.9	421	32.9
White Exp	NF	1.82	435	32.4	557	44.1
	FR	1.89	551	41.2	604	47.3
Bovans	NM	1.67	19	1.3	443	36.3
White	NF	1.76	412	31.5	505	40.7
	FR	1.74	443	34.7	510	41.6
Lohmann	NM	1.62	-92	-5.6	425	35.9
LSL-Lite	NF	1.74	422	32.6	506	41.4
	FR	1.74	451	36.1	503	41.3
All Strains	NM	1.69^{Z}	9^{Z}	0.6^{Z}	440^{Z}	35.1^{Z}
	NF	1.84^{Y}	444^{Y}	32.8^{Y}	578^{Y}	46.1^{Y}
	FR	1.83^{Y}	479^{Y}	36.0^{Y}	567^{Y}	45.3^{Y}

Y,Z - Different letters denote significant differences ($P < .01$), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 59. EFFECT OF BROWN EGG STRAIN, POPULATION, AND SYNCHRONIZED MOLT ON HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Population[1]	113 Wk Body Wt (kg)	2nd Cycle Wt Gain (g)	2nd Cycle Wt Gain (%)	Total Wt Gain (g)	Total Wt Gain (g)
Hy-Line	3	2.14	348	20.5	665	45.1
Brown	4	2.12	281	16.1	683	48.0
	Average	2.13	315	18.3	674	46.6[A]
Bovans	3	2.14	308	18.1	579	37.2
Brown	4	2.15	363	21.3	593	38.3
	Average	2.14	335	19.7	586	37.7[B]
Bovans	3	2.10	356	21.8	620	42.4
Goldline	4	2.03	227	13.9	508	33.9
	Average	2.06	291	17.8	564	38.1[B]
All Strains	3	2.13	337	20.1	621	41.6
	4	2.10	290	17.1	595	40.1
	Average	2.11	314	18.6	608	40.8

[1]All strains were housed at a constant density of: 413 cm^2 equals 64 in^2 .
A,B - Different letters denote significant differences ($P < .01$), comparisons made among strain average values.

TABLE 60. EFFECT OF BROWN EGG STRAIN AND SYNCHRONIZED MOLT TREATMENT ON HENS IN THE 35th NCLP&MT (491-791 DAYS)

Breeder (Strain)	Molt Program	113 Wk Body Wt (kg)	2nd Cycle Wt Gain (g)	2nd Cycle Wt Gain (%)	Total Wt Gain (g)	Total Wt Gain (g)
Hy-Line	NM	1.97	-33	-1.7	565	40.6
Brown	NF	2.18	443	25.9	695	46.9
	FR	2.24	534	30.7	763	52.2
Bovans	NM	2.02	-6	0.0	483	31.6
Brown	NF	2.22	435	24.7	664	42.9
	FR	2.20	577	34.5	611	38.7
Bovans	NM	1.98	-22	-1.1	453	30.1
Goldline	NF	2.11	497	30.5	641	43.5
	FR	2.10	399	24.1	598	40.0
All Strains	NM	1.99[Z]	-20[Z]	-0.9[Z]	500[Z]	34.1[Z]
	NF	2.17[Y]	458[Y]	27.0[Y]	667[Y]	44.7[Y]
	FR	2.18[Y]	503[Y]	29.8[Y]	657[Y]	43.6[Y]

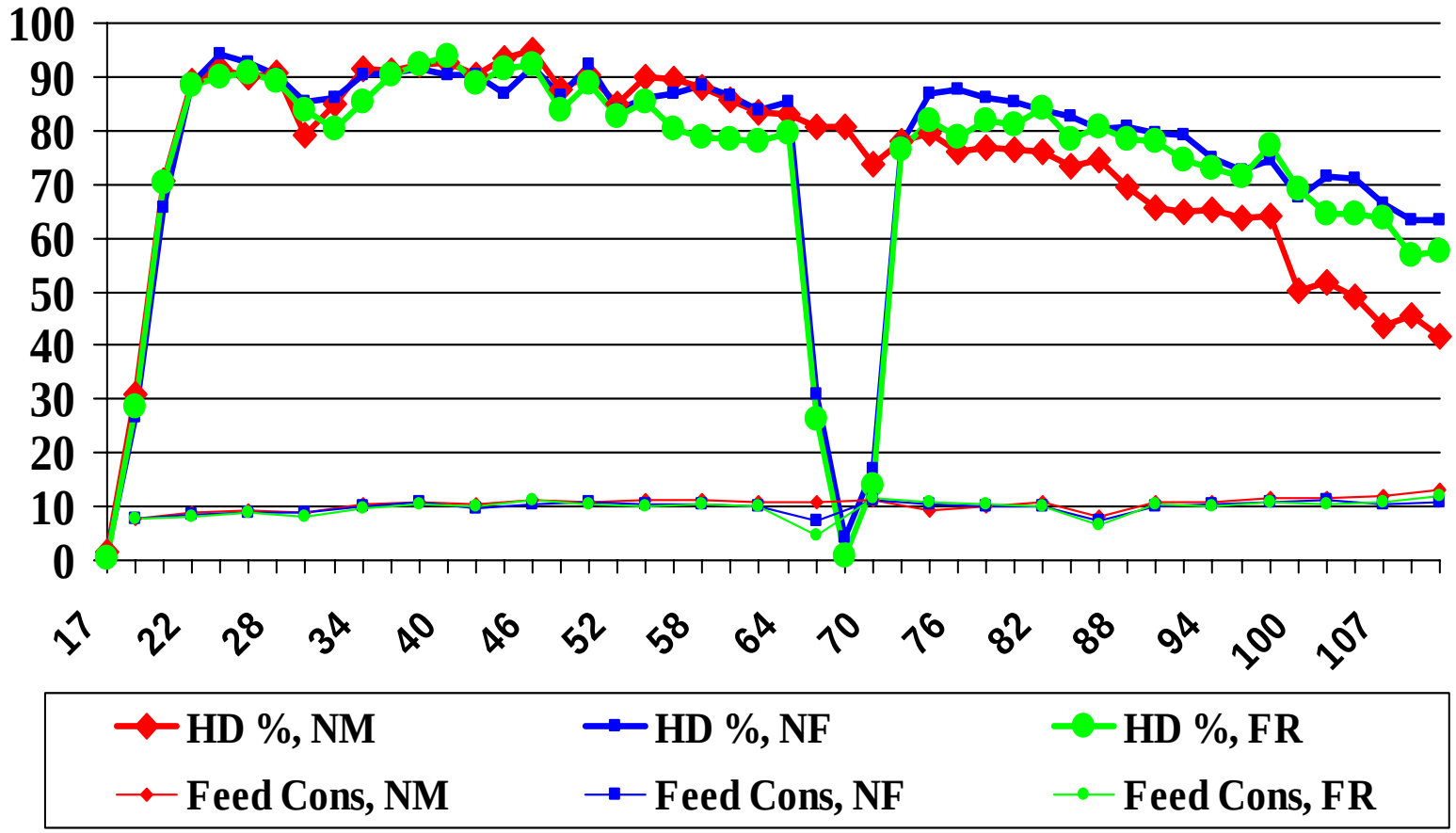
Y,Z - Different letters denote significant differences ($P < .01$), comparisons made among molt program average values.
NM = Non-molted; NF = Non-fasted molt; FR = 13-day fast.

TABLE 61. ENTRIES IN THE 35TH NCLP&MT BY BREEDER, STOCK SUPPLIER, AND CATEGORIES

Breeder	Stock	Category[1]	Source
Hy-Line International P.O. Box 310 Dallas Center, IA 50063	W-36	I-A	Hy-Line International 4432 Highway 213, Box 309 Mansfield, GA 30255
	W-98	I-A	(Same)
	CV-20	I-A	(Same)
	Hy-Line Brown	I-A	(Same)
Lohmann Tierzucht Inc., N.A. 2433 Bethany Rd Sycamore, IL 60178	Lohmann LSL-Lite	I-A	Brickland Enterprises Inc. P.O. Box 626 Blackstone, VA 2382
Centurion Poultry 1471 Lane Creek Road Bogart, GA 30622	Bovans White	I-A	Centurion Poultry Inc. P.O. Box 591 86 O'Neal Road Lexington, GA 3064822
	Bovans White Experimental	III-A	(Same)
	Bovans Brown	I-A	(Same)
	Bovans Goldline	I-A	(Same)
Centurion Poultry 1471 Lane Creek Road Bogart, GA 30622	Dekalb White	I-A	Centurion Poultry Inc. P.O. Box 591 86 O'Neal Road Lexington, GA 3064822

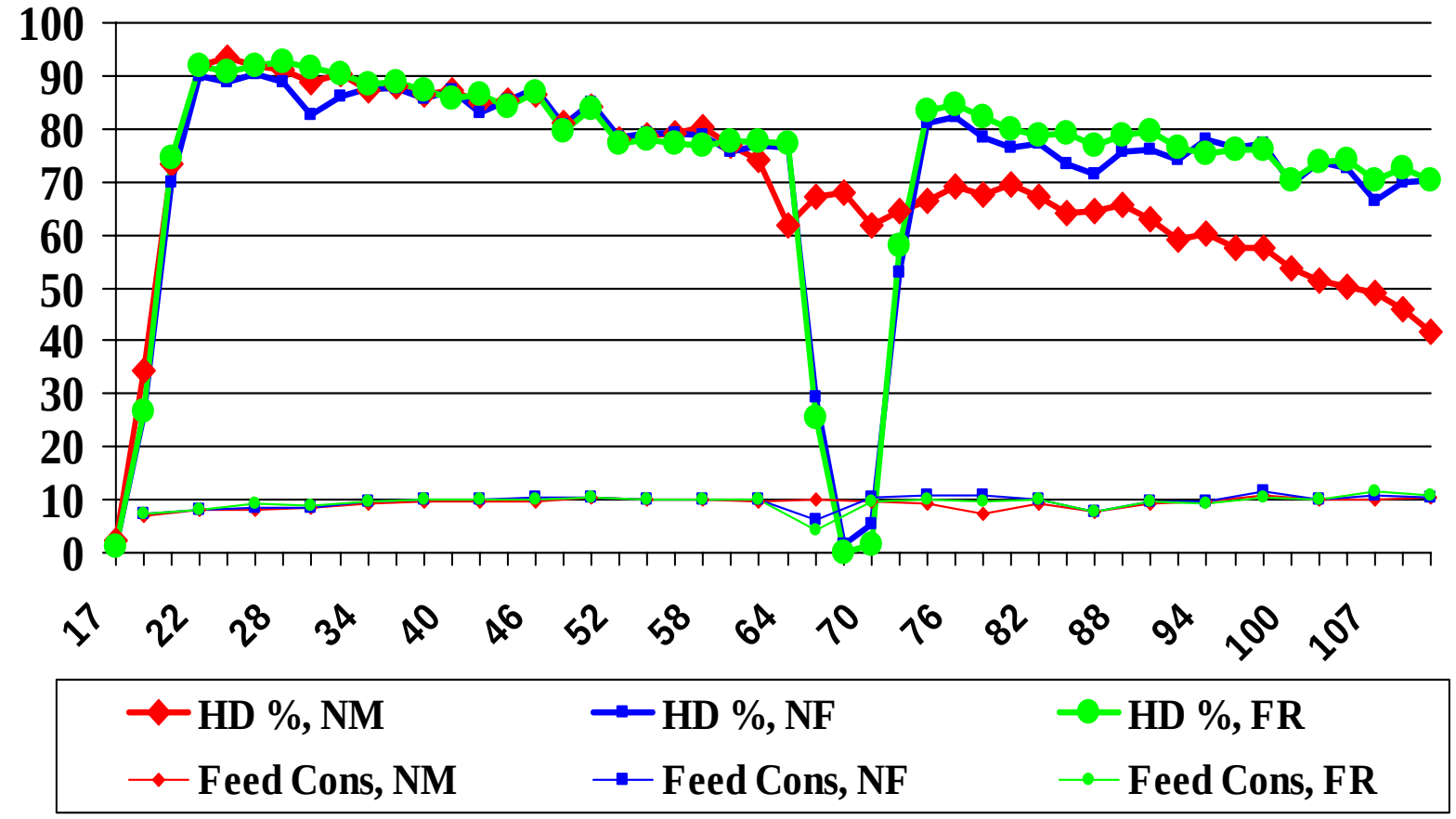
[1] I = Extensive distribution in southeast United States
II = Little or no distribution in southeast United States
III = Unavailable for commercial distribution in United States
A = Entry requested
C = Entry not requested

Figure 1. DeKalb White Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



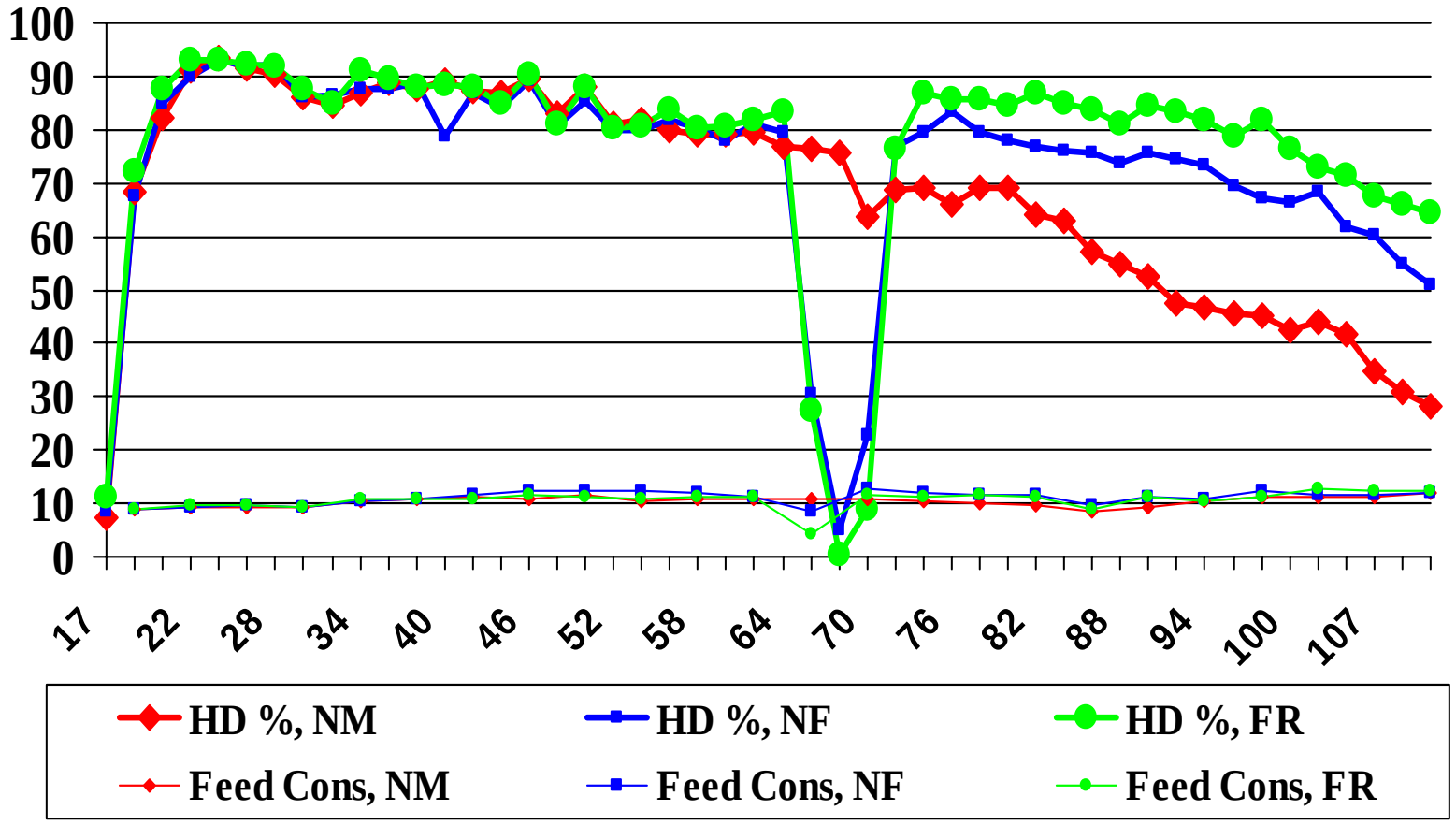
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 2. Hy-Line "W-36" Strain, Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



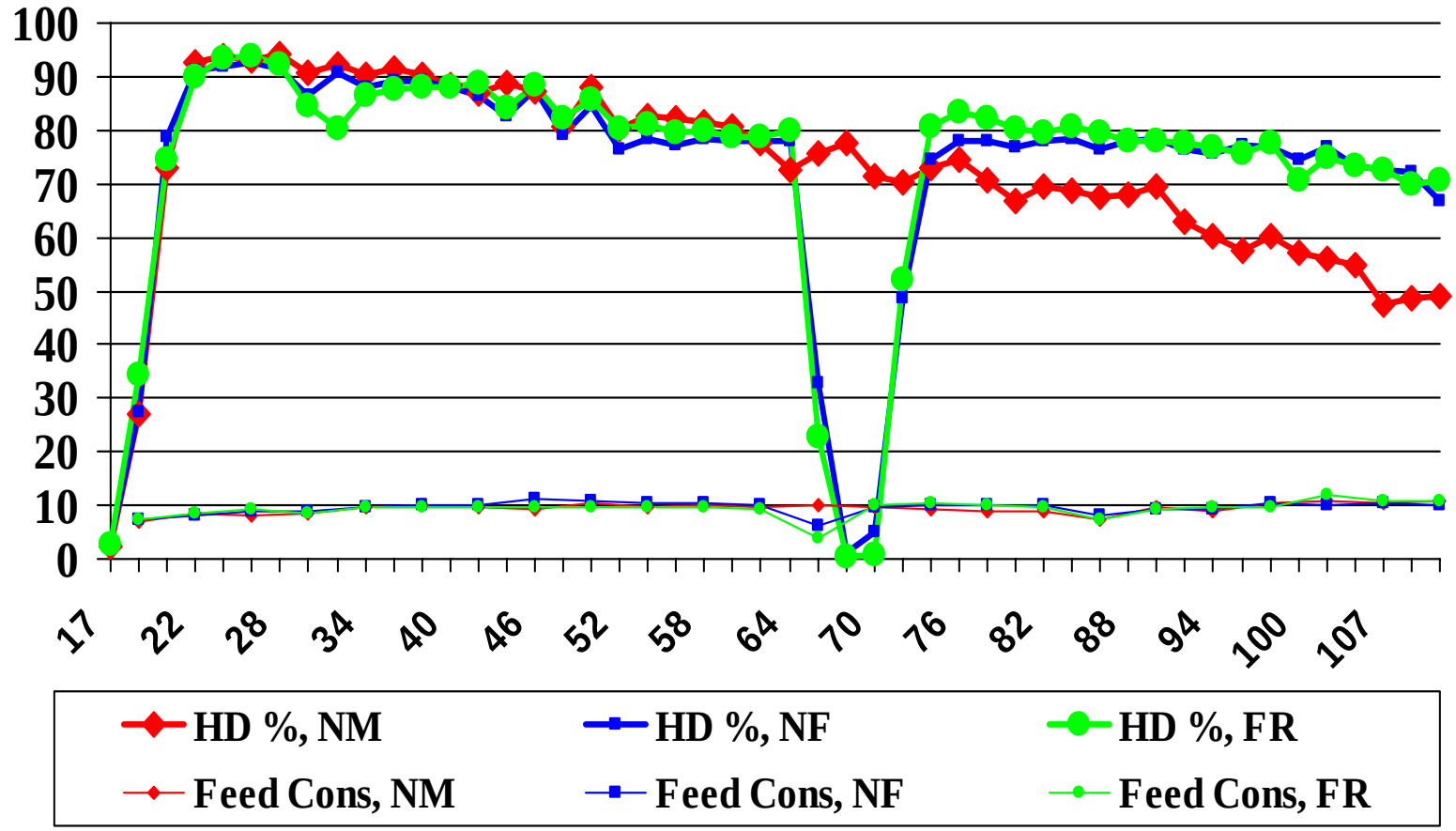
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 3. Hy-Line "W-98" Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



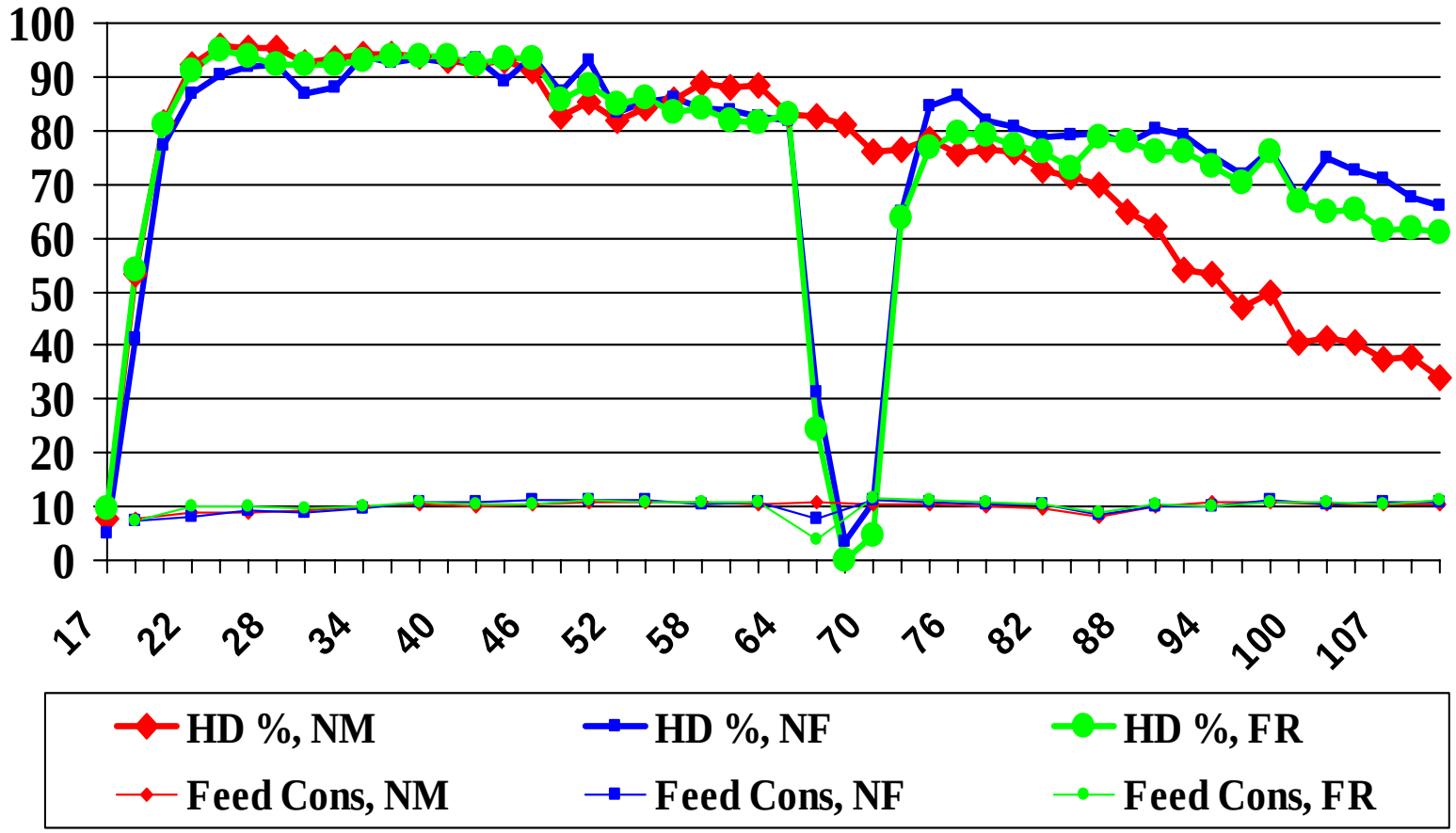
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 4. Hy-Line "CV-20" Strain, Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



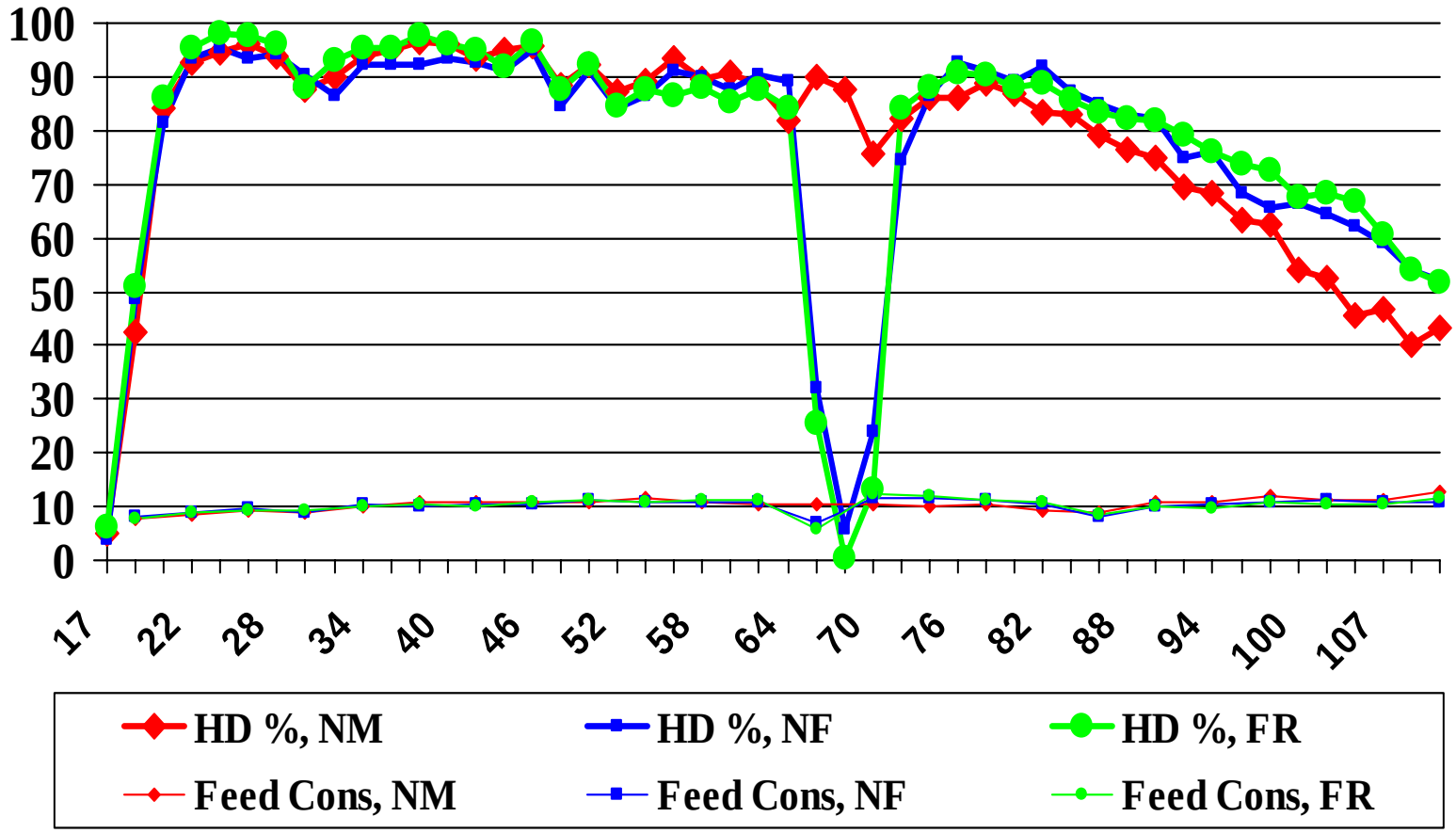
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 5. Bovans White Exp. Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



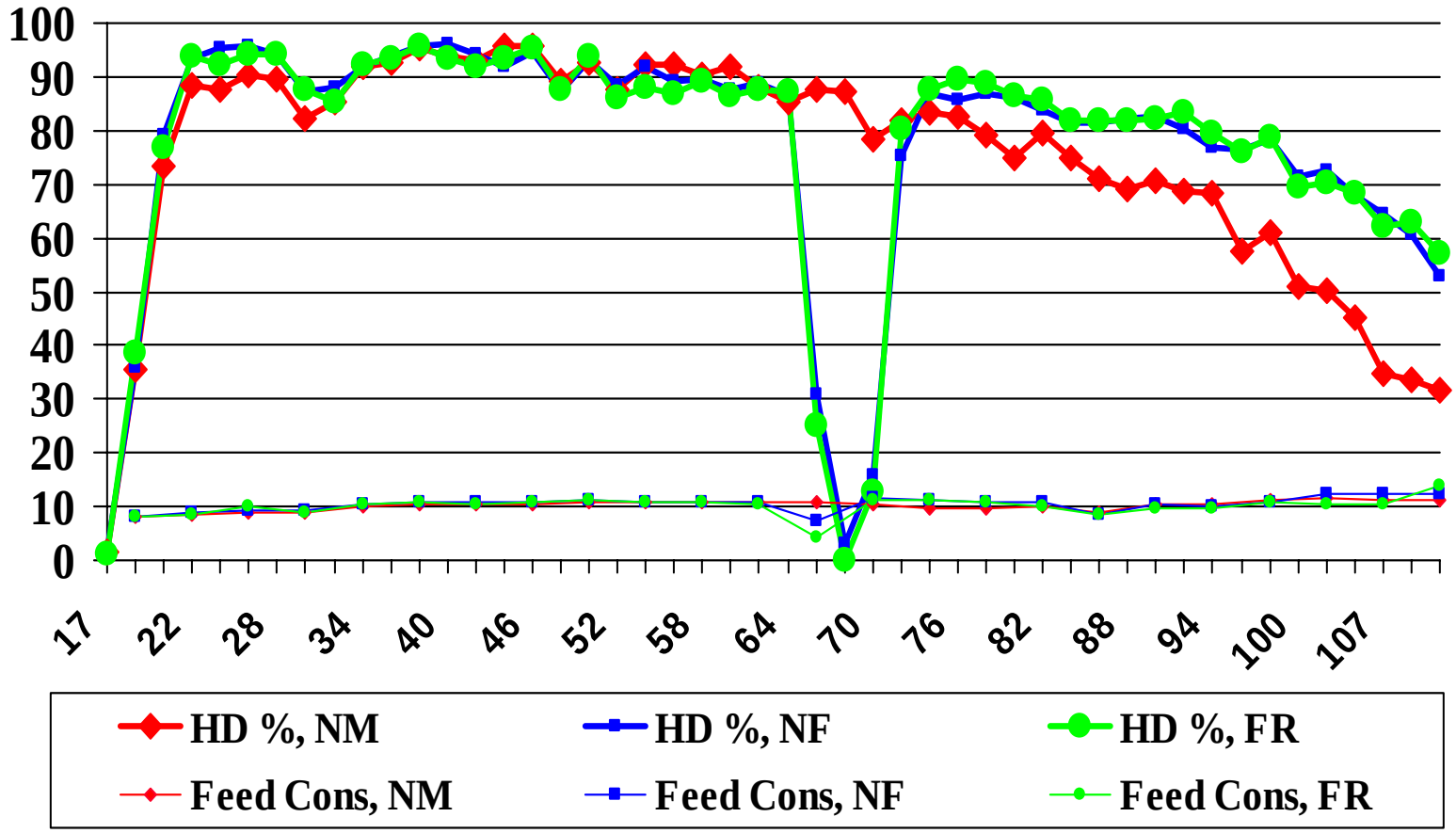
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 6. Bovans White Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



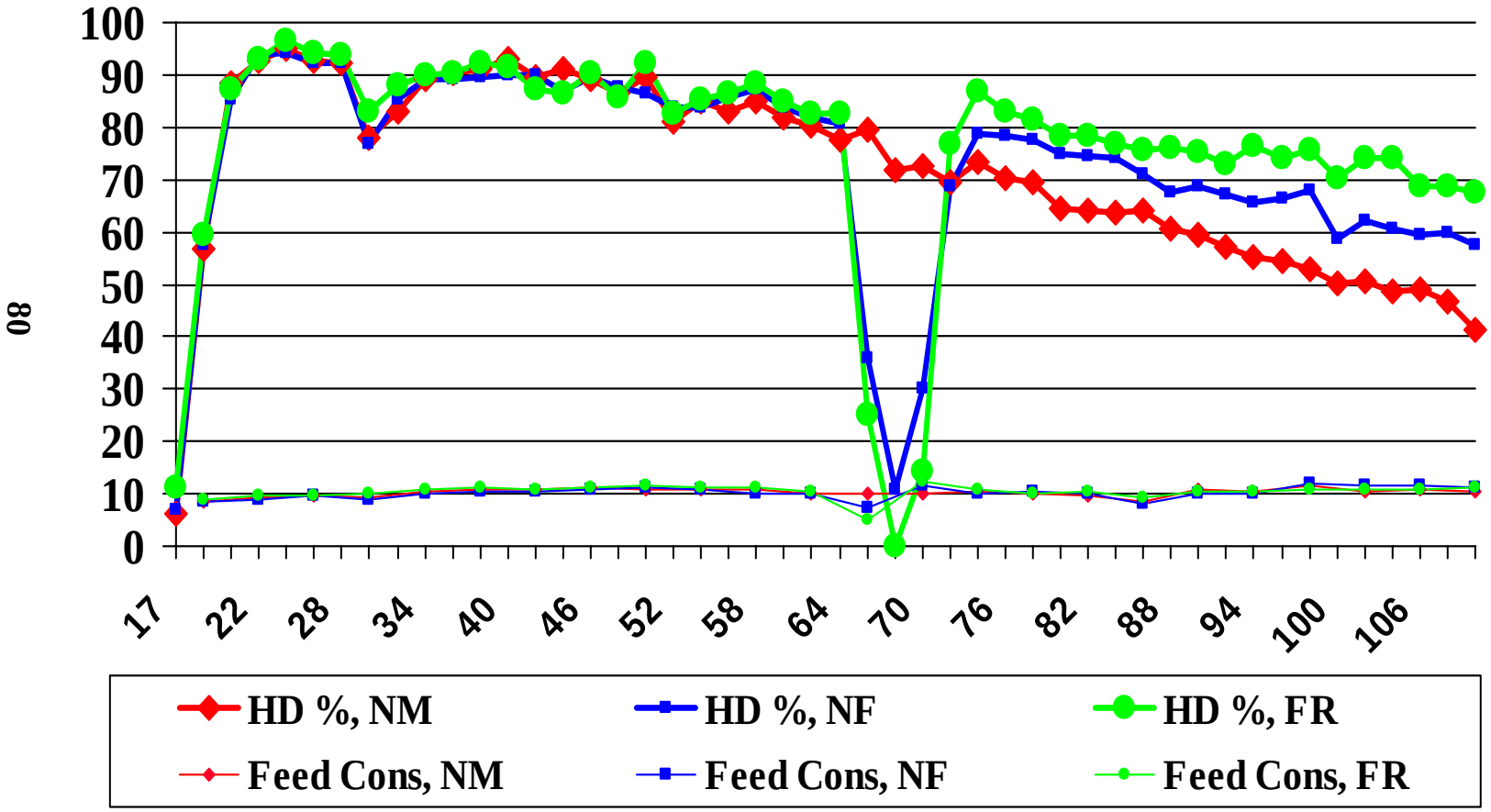
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 7. Lohmann "LSL-Lite" Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



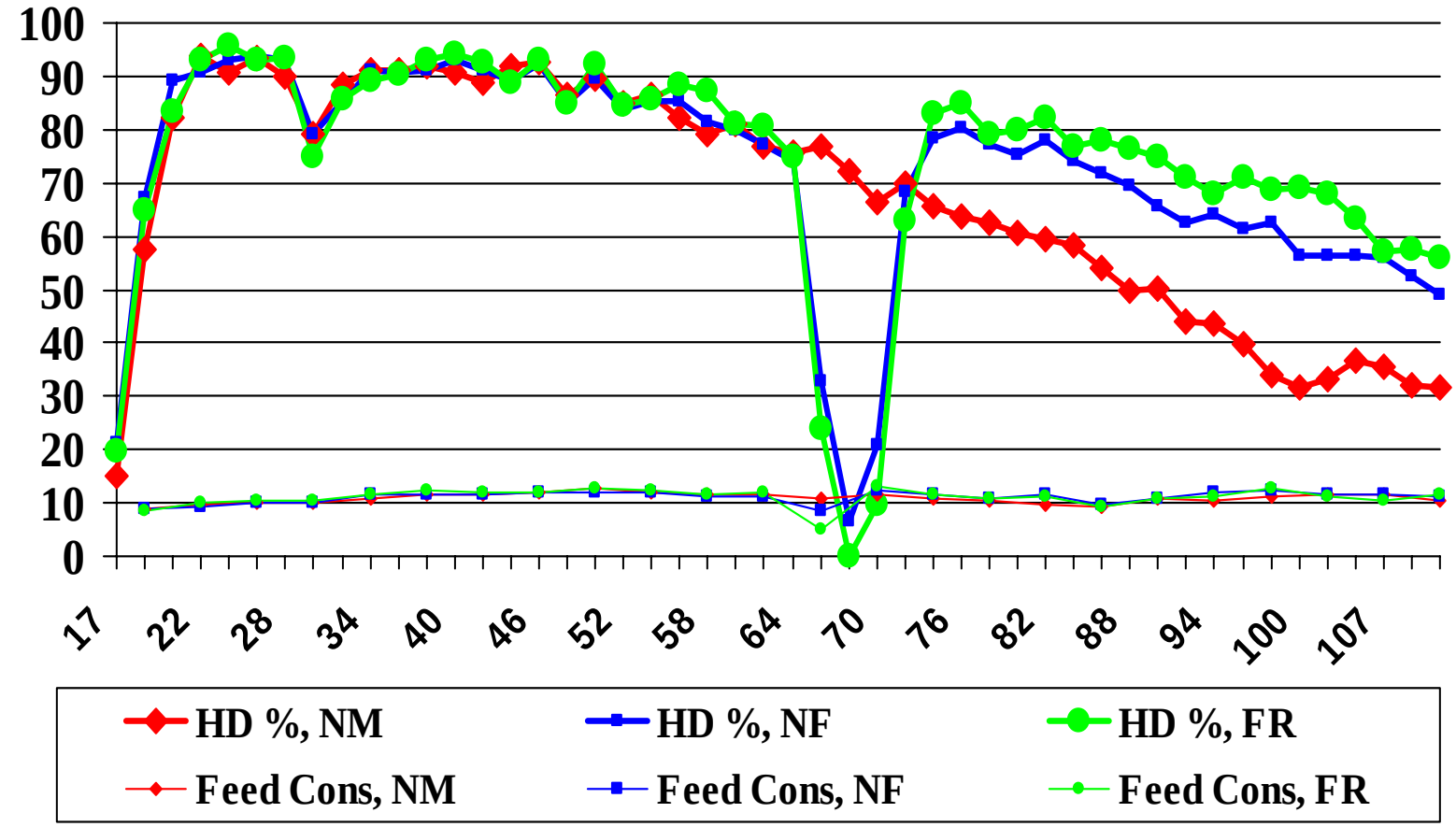
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 8. Hy-Line Brown Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



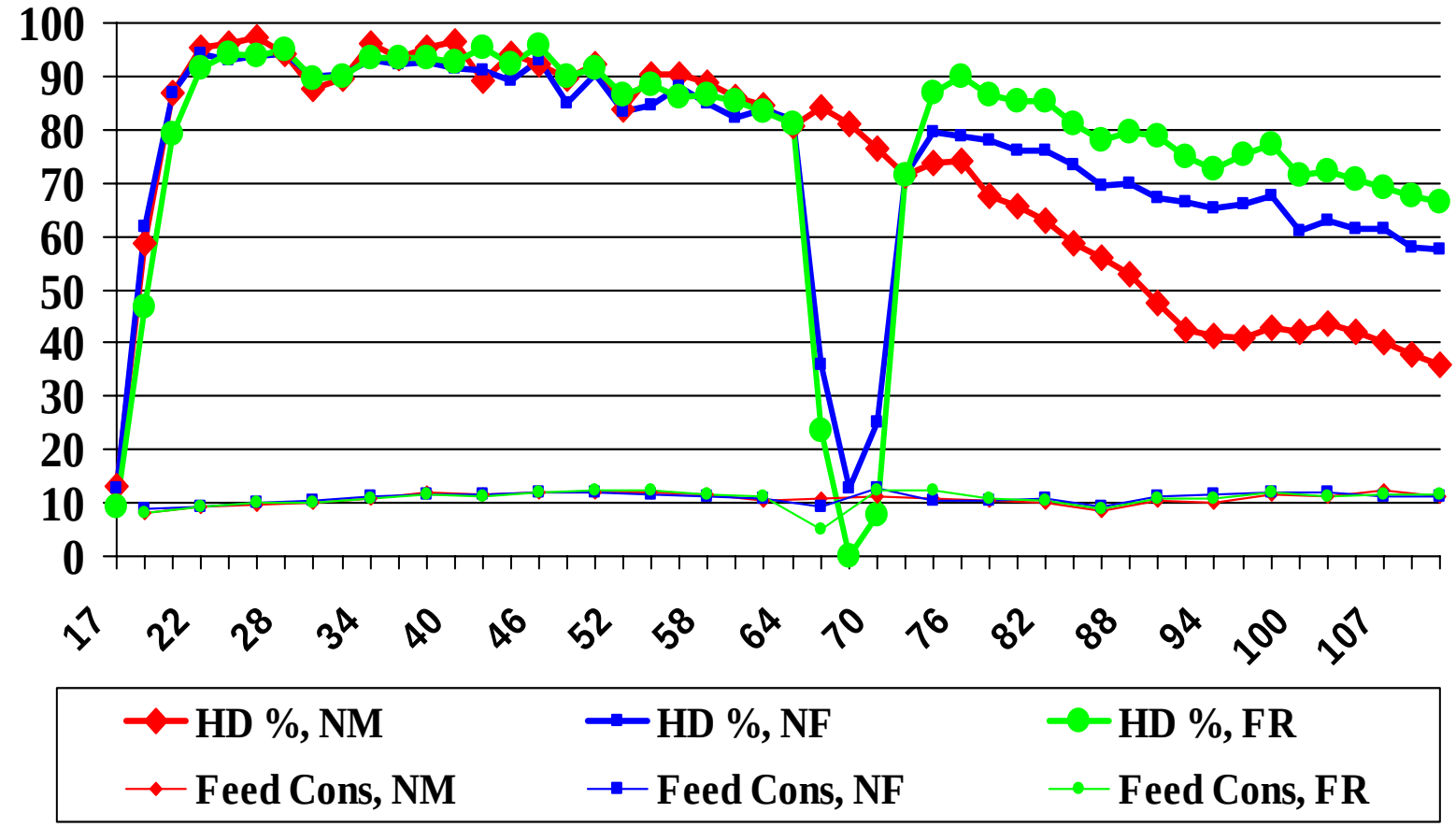
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 9. Bovans Brown Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



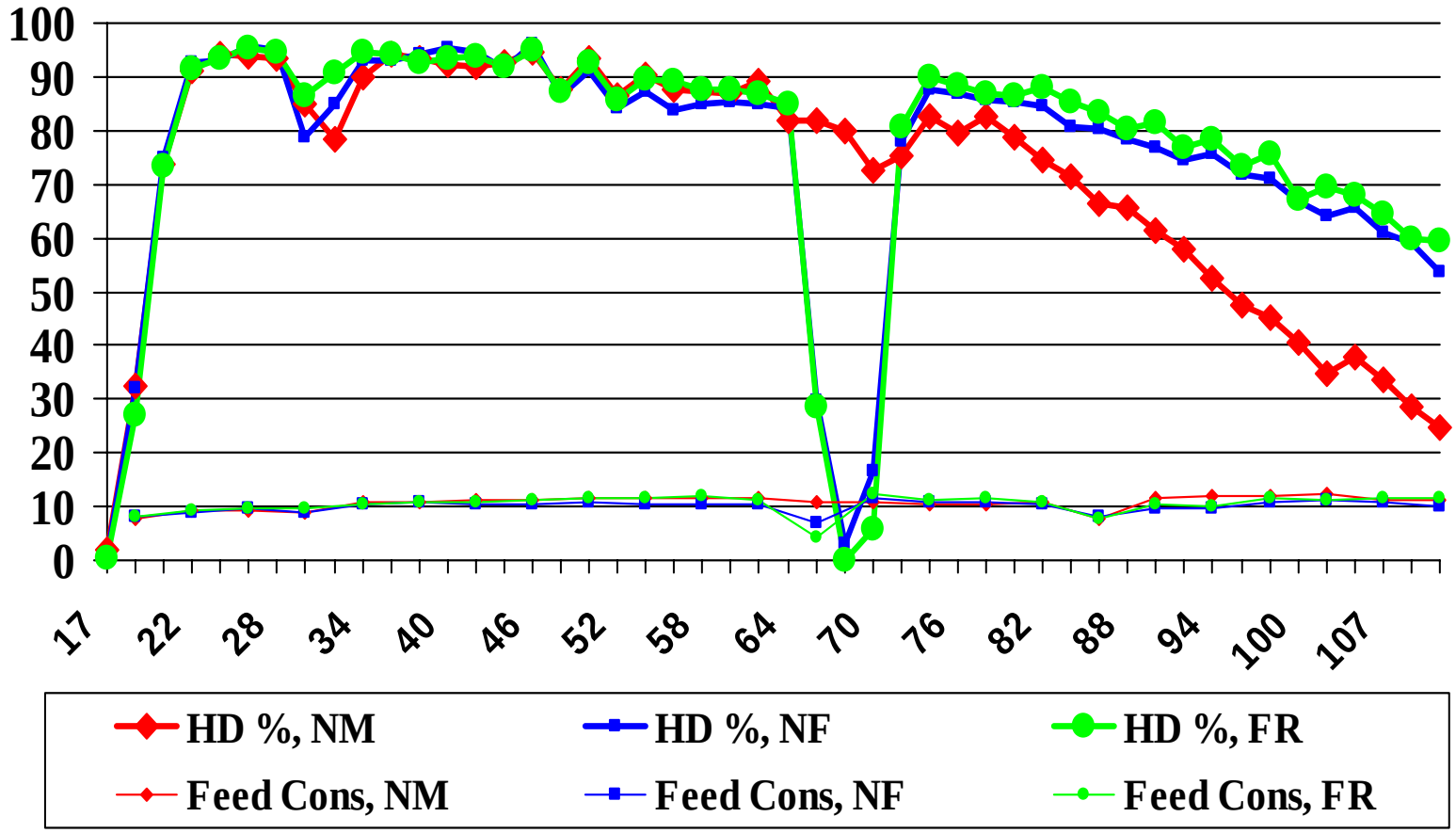
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 10. Bovans Goldline Strain , Bi-weekly Percent Egg Production at 3 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



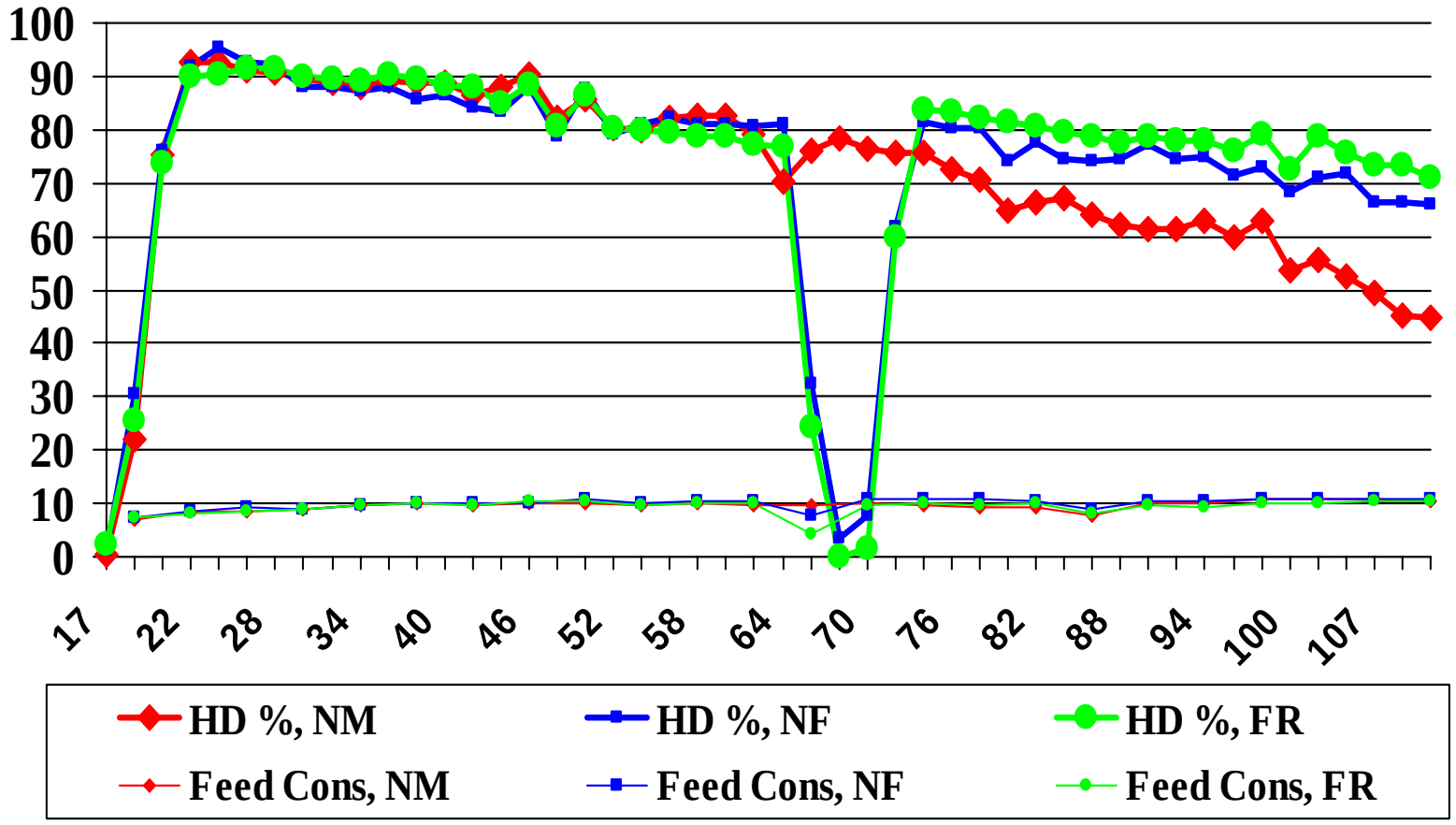
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 11. DeKalb White Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



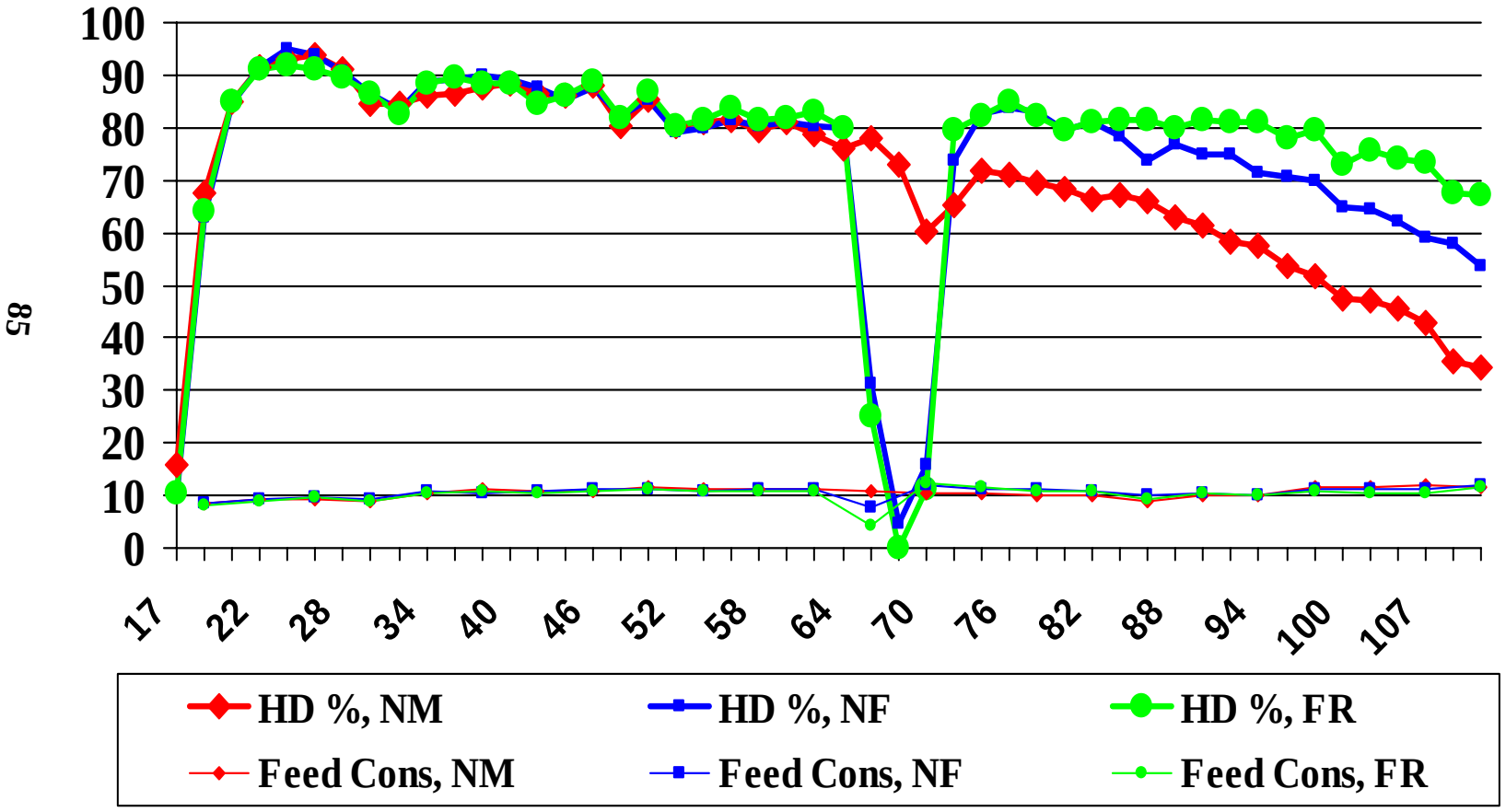
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 12. Hy-Line "W-36" Strain, Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



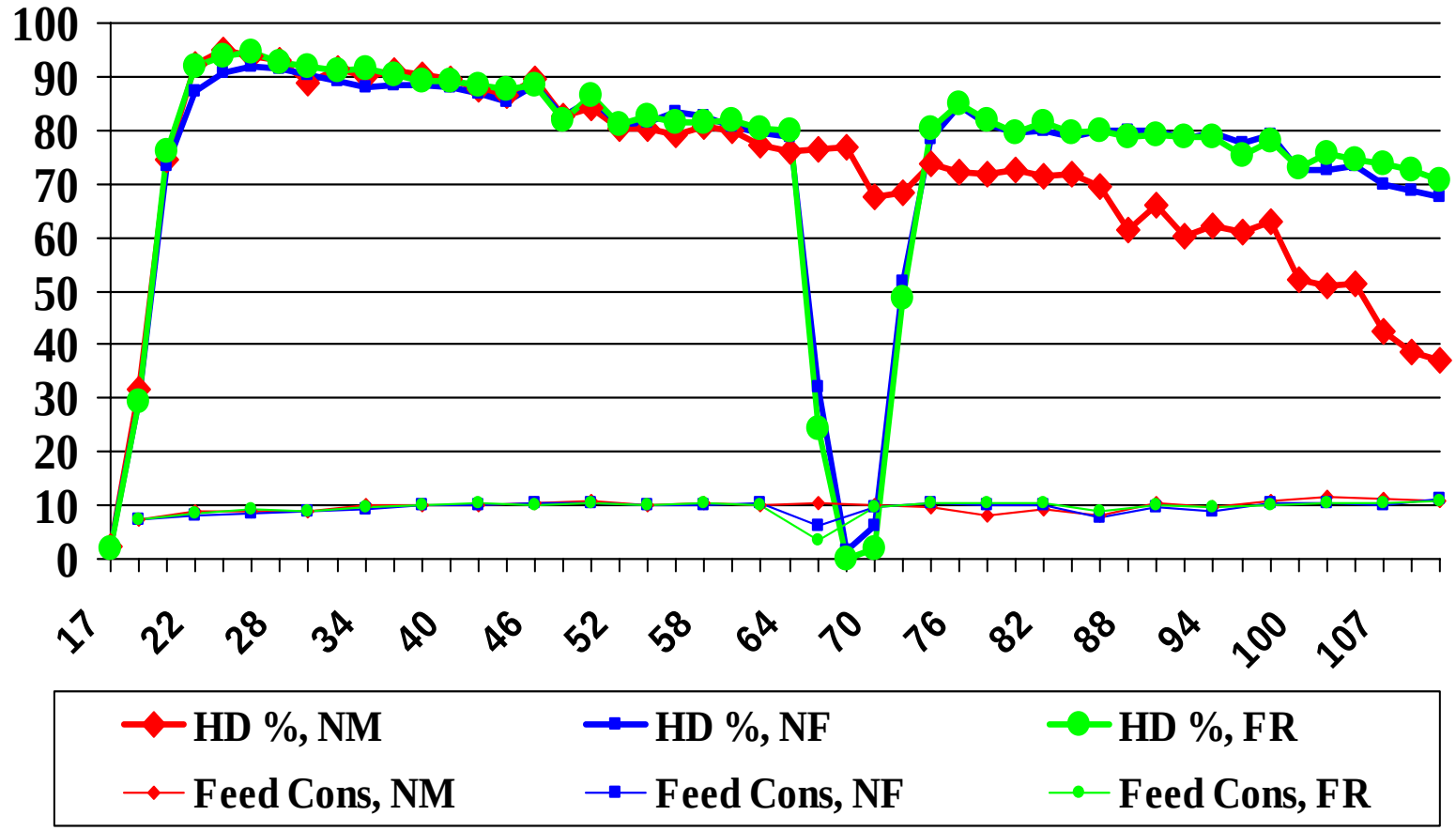
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 13. Hy-Line "W-98" Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



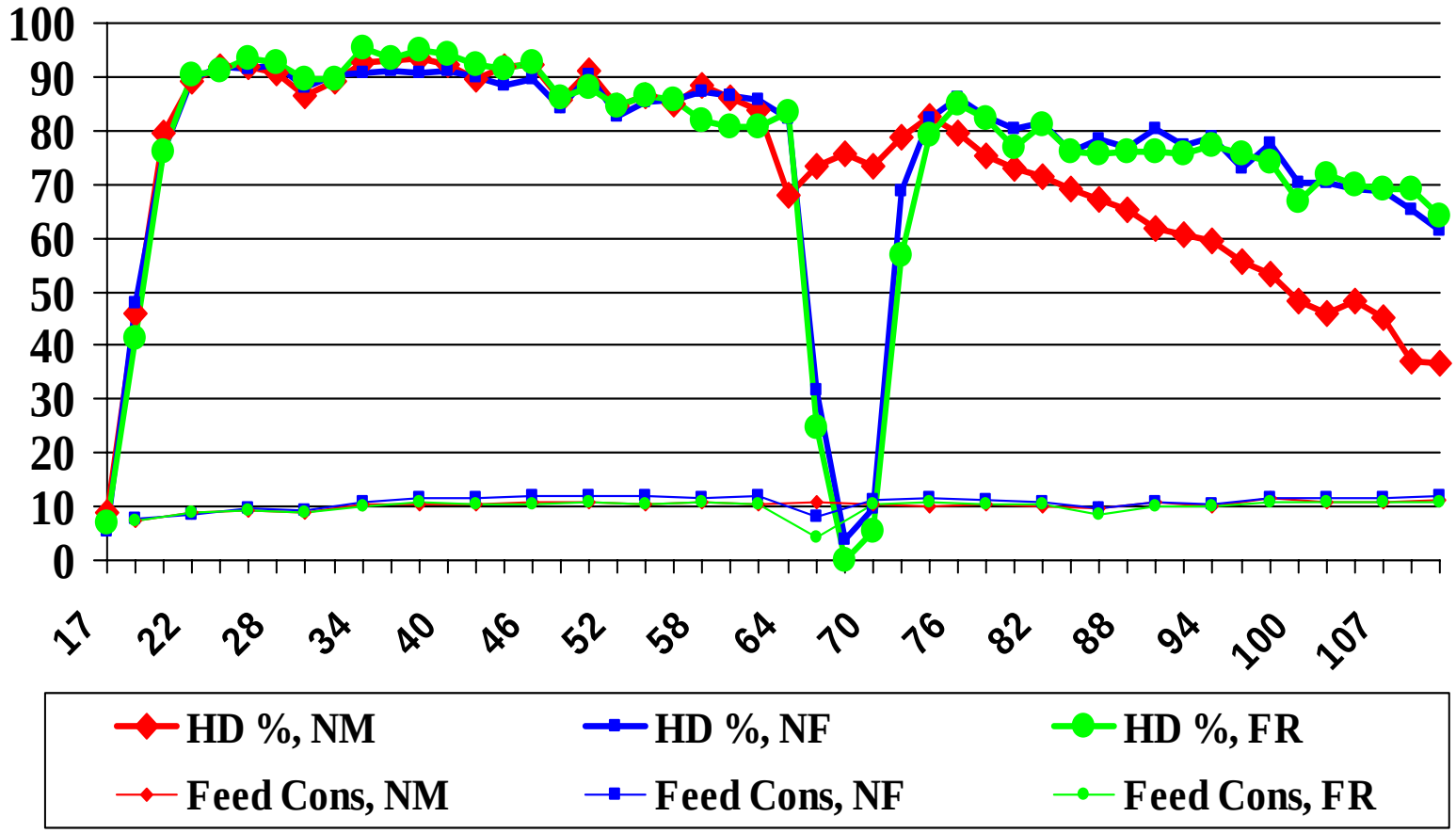
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 14. Hy-Line "CV-20" Strain, Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



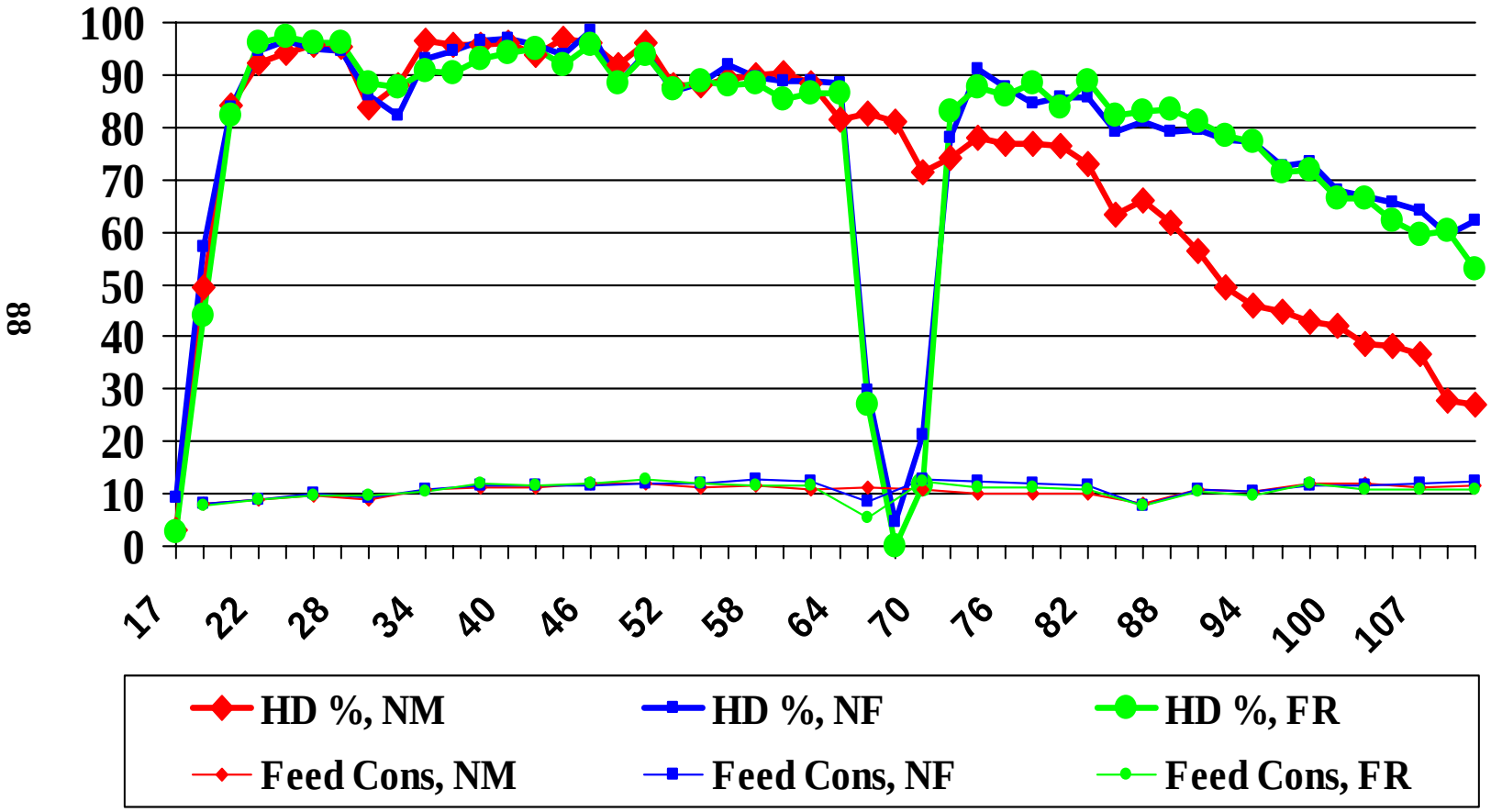
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 15. Bovans White Exp. Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



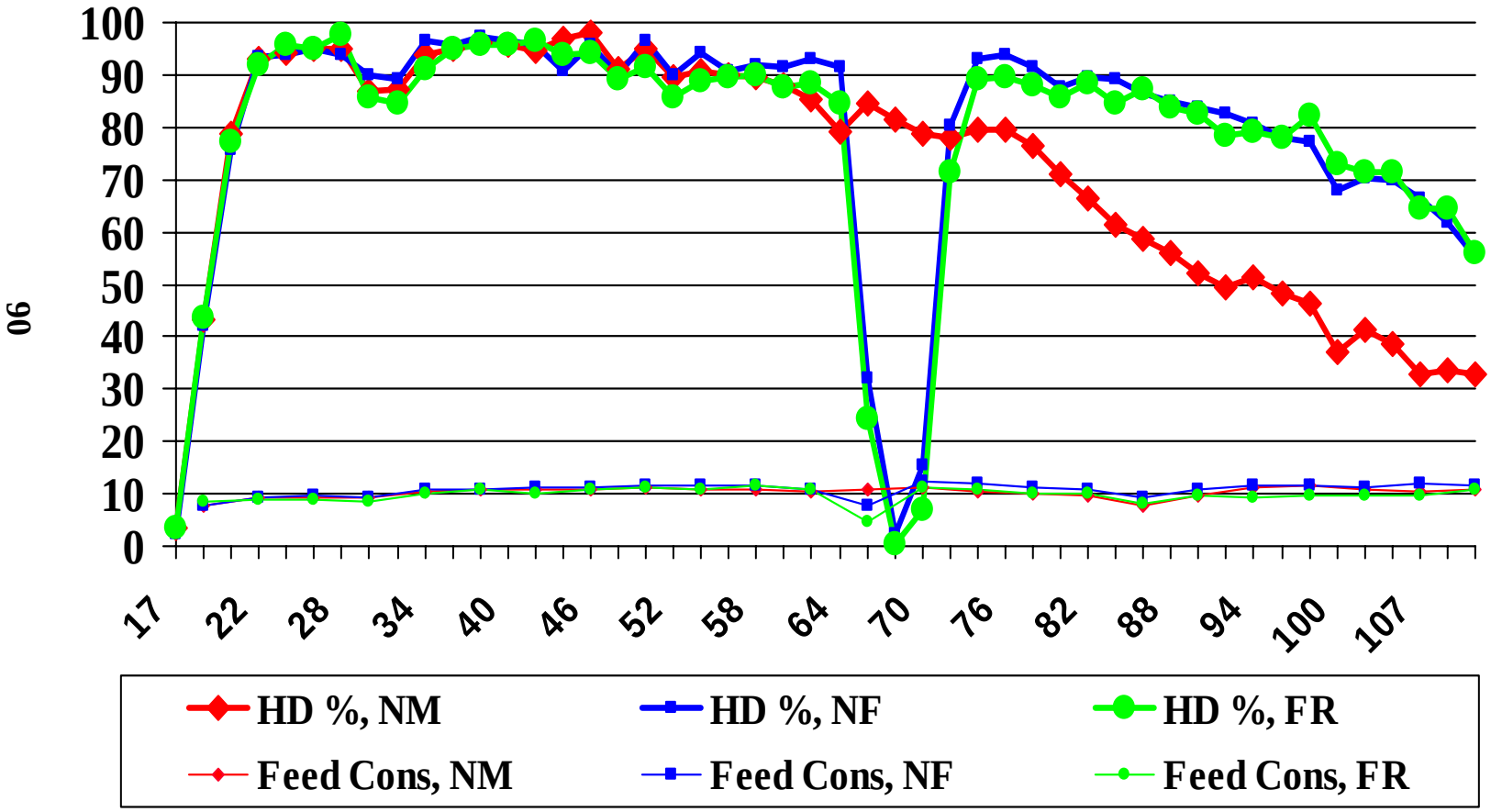
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 16. Bovans White Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



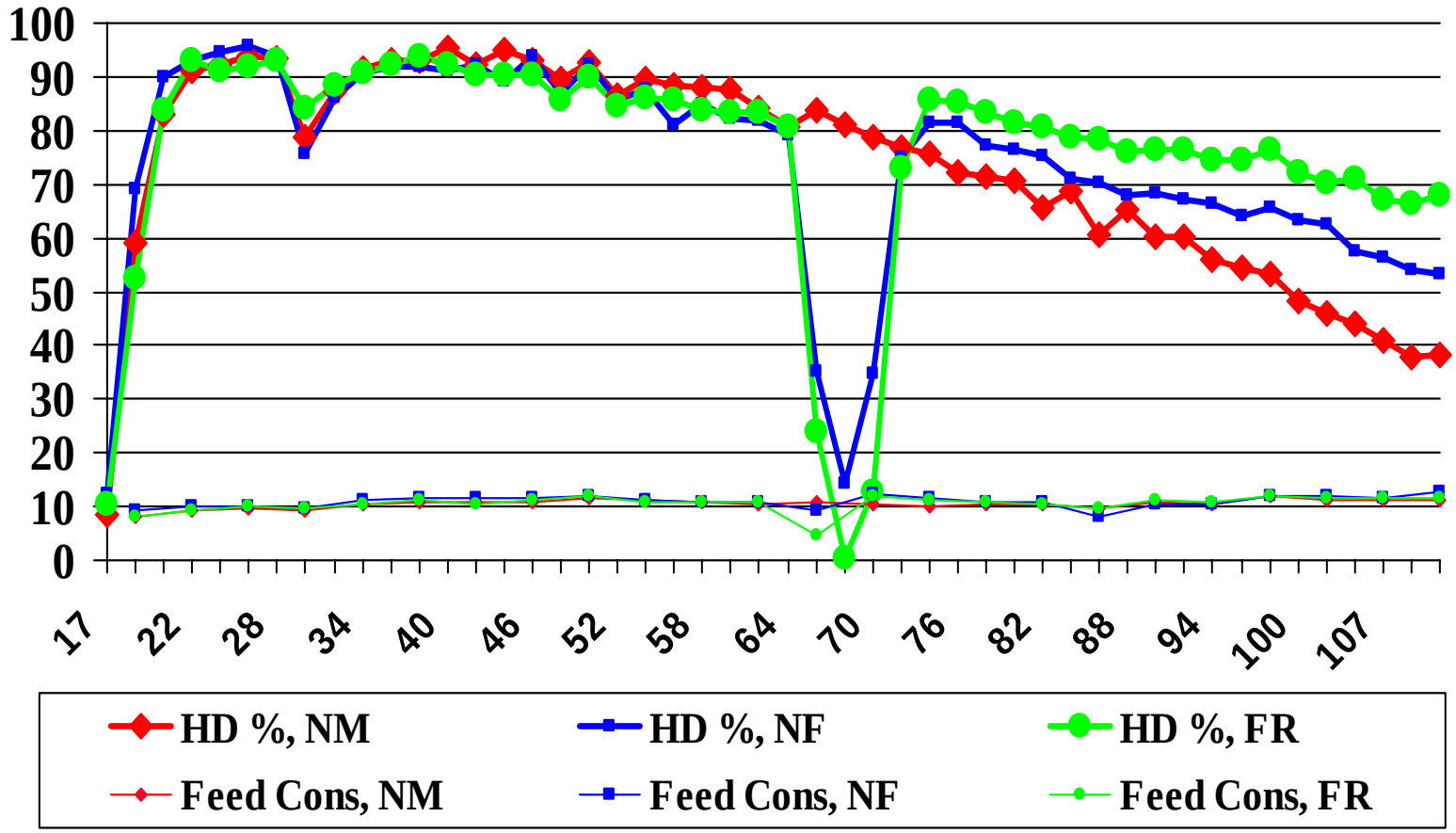
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 17. Lohmann "LSL-Lite" Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



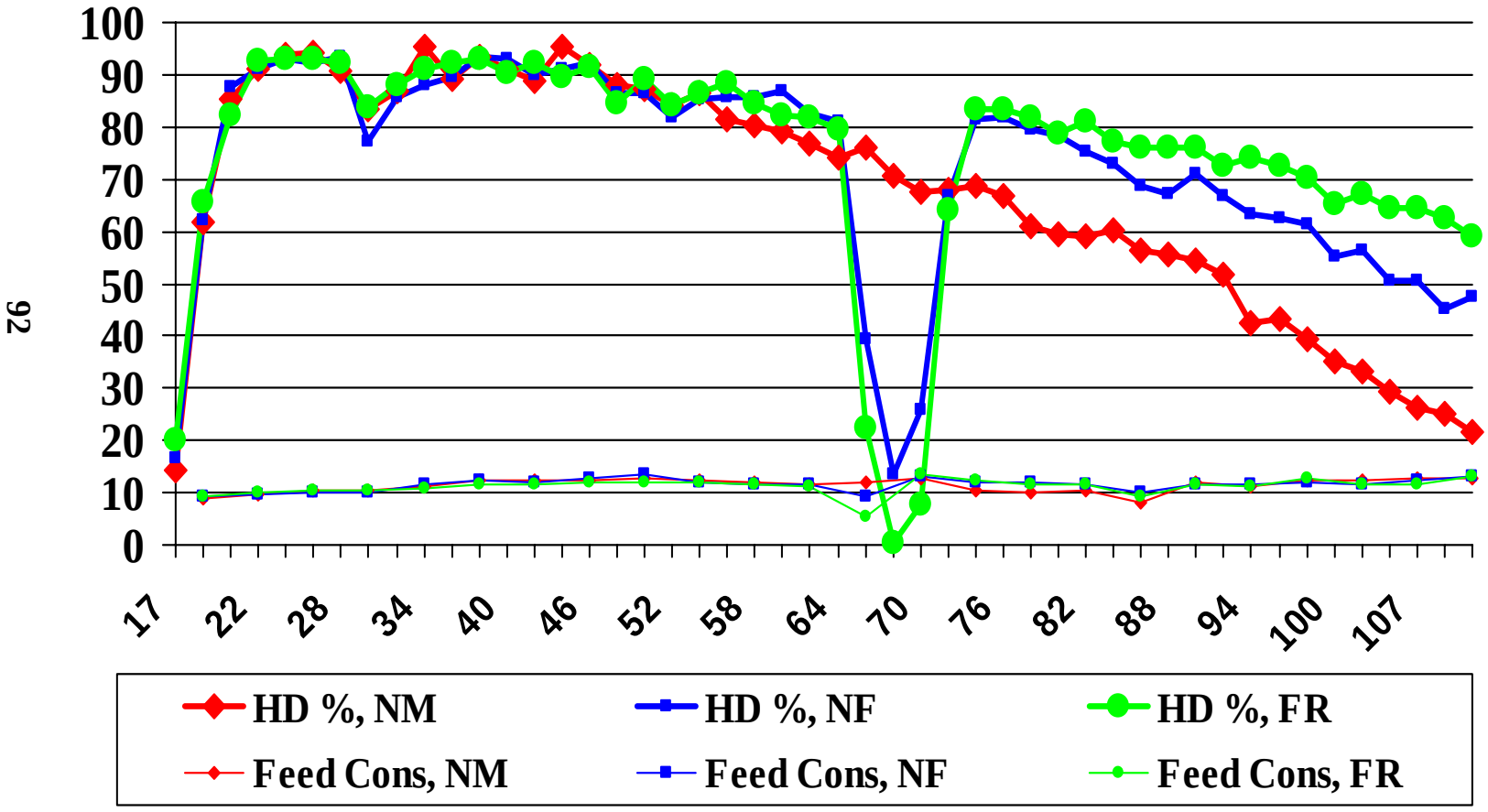
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 18. Hy-Line Brown Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



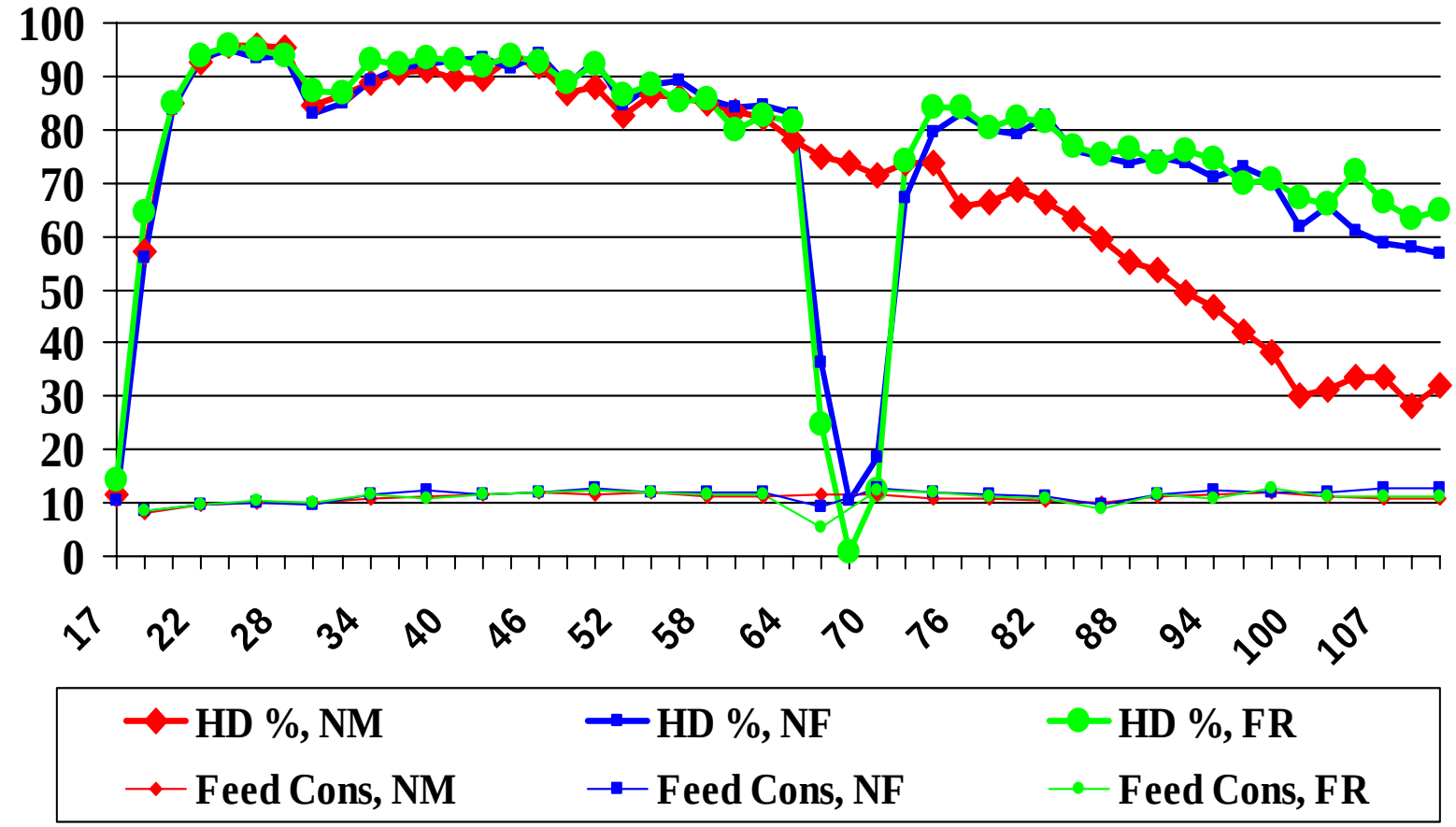
1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 19. Bovans Brown Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program

Figure 20. Bovans Goldline Strain , Bi-weekly Percent Egg Production at 4 hens/cage by molt program[1] and Period Feed Consumption (kg per 100 Hens)



1 NM = Non-molted; NF=Non-fasted Molt Program; FR=13 d Fast Molt Program