

College of Agriculture and Life Sciences
Extension Poultry Science
Scott Hall / Campus Box 7608
Raleigh, North Carolina 27695

919.515.2621 (phone)
919.515.7070 (fax)

**HATCH AND SEROLOGY REPORT OF THE THIRTY SIXTH
NORTH CAROLINA LAYER PERFORMANCE AND MANAGEMENT TEST**

Vol. 36, No. 1
June 2005

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. The flock is maintained at the Piedmont Research Station, Salisbury, North Carolina. Mr. Joe Hampton is Piedmont Research Station Superintendent; Mr. Aaron Sellers is Resident Manager of the flock; Mrs. Pamela Jenkins is coordinator of data compilation and statistical analysis; and Dr. K. E. Anderson is Project Leader. The purpose of this program is to assist poultrymen in evaluation of commercial layer stocks and management systems.

For further information contact:



Dr. Kenneth E. Anderson
Professor
Poultry Science Department
North Carolina State University
Box 7608
Raleigh, NC 27695-7608
Tel: (919) 515-5527
Fax: (919) 515-7070
Email: ken_anderson@ncsu.edu

The use of trade names in this publication does not imply endorsement by the North Carolina Cooperative Extension Service of the products named nor criticism of similar ones not mentioned.

Employment and program opportunities are offered to all people regardless of race, color, national origin, sex, age or handicap. North Carolina State University, North Carolina A&T State University, U.S. Department of Agriculture, and local governments cooperating.

HATCH AND SEROLOGY REPORT OF THE THIRTY SIXTH NORTH CAROLINA LAYER PERFORMANCE AND MANAGEMENT TEST

Entries:

Twelve entries were accepted or acquired in accordance with the rules and regulations of the test. Nine white egg strains and three brown egg strains are participating in the current test.

**Table 1. 36th North Carolina Layer Performance and Management Test
Strain Code Assignments**

Strain No.	Strain Code	Source of Stock	Strain
1	A	Lohmann Tierzucht Inc., N.A.	LSL-Lite
2	B	Centurion Poultry Inc.	Bovans White Exp
3	C	Centurion Poultry Inc.	White
4	D	Centurion Poultry Inc.	Dekalb White Exp
5	E	Centurion Poultry Inc.	Dekalb White
6	F	Hy-Line International	W-36
7	G	Hy-Line International	W-98
8	H	Hy-Line International	CV-20
9	I	Centurion Poultry Inc.	Bovans Brown
10	J	Centurion Poultry Inc.	Bovans Goldline
11	K	Hy-Line International	Brown
12	L	ISA North America	White Exp

Dates of Importance:

The eggs were placed into trays and set on March 8, 2005 and hatched on March 30, 2005. The chicks were all sexed according to their genetics (feather, or color), vaccinated for Marek's disease, and wing banded for identification before transfer to the brood/grow houses.

Data Collection:

The analysis of fertility and embryonic mortality was conducted on the eggs remaining in the hatch tray and on eggs removed at time of transfer. Tables 1 and 2 indicate the percentage of total eggs set. Table 1 shows the percent usable chicks, cull chicks, and residue of total eggs set. Table 2 shows the distribution of the residue by each embryonic category.

The serology was obtained by collecting a blood sample from 30 male chicks obtained from each strain at the time of hatch. The blood was allowed to agglutinate and the serum to separate for collection. The serum samples were then pooled by combining the individual samples from two chicks per strain into 1 ml samples or aliquots. The pooled samples were collected and packaged and refrigerated until delivery to the NCDA & CS Rollins Diagnostic Laboratory. Table 2 gives the findings for the pooled samples provided from each strain. The

serological tests were conducted for Infectious Bursal Disease using the Agar Gel Immuno Diffusion (AGID) method and Mycoplasma gallisepticum using the ELISA test.

At housing the chick weights were recorded for each sampling replicate. The initial chick weight information will be reported in the grow report.

Hatch Comments:

The egg deliveries to the Research Station occurred from March 4 to 7 and all eggs arrived in good condition. The eggs for each of the strains were shipped ground freight. There were few broken eggs and the number of dirty eggs was minimal among all shipments for the represented strains. The eggs were set 90 eggs/tray and allowed to come to room temperature prior to placement in the incubators. At time of transfer, two egg trays were transferred to each hatching tray and were then placed into the hatchers. The infertile eggs from Strain J were removed at transfer to facilitate the hatch at the request of the breeder.

Serology Comments:

The serum pools were adequate for each of the 12 strains. The samples were tested at the NC Department of Agriculture & Consumer Services, Rollins Diagnostic Laboratory. The chicks were MG negative and the IBD antibody levels were positive, indicative of good vaccination programs in the breeder flocks of all strains. IBD titers were present in all the strains and the titer levels for the individual samples appeared to have a normal distribution, indicating a good breeder vaccination program.

Table 2. Status of the IBD parental immunity and determination of MG presence in the participating strains in the 36th NCLP&MT

Source of Stock	Strain	MG ¹	IBD ²
Lohmann Tierzucht Inc., N.A.	LSL-Lite	Neg	Positive
Centurion Poultry Inc.	Bovans White Exp	Neg	Positive
Centurion Poultry Inc.	White	Neg	Positive
Centurion Poultry Inc.	Dekalb White Exp	Neg	Positive
Centurion Poultry Inc.	Dekalb White	Neg	Positive
Hy-Line International	W-36	Neg	Positive
Hy-Line International	W-98	Neg	Positive
Hy-Line International	CV-20	Neg	Positive
Centurion Poultry Inc.	Bovans Brown	Neg	Positive
Centurion Poultry Inc.	Bovans Goldline	Neg	Positive
Hy-Line International	Brown	Neg	Positive
ISA North America	White Exp	Neg	Positive

¹MG status was determined using the ELISA method

²IBD status was determined using Agar Gel Immune Diffusion (AGID)

Table 3. Analysis of hatch by evaluating chicks pulled, female, male, and cull chicks as a percentage of the total eggs set

Strain	Chicks Pulled	Female Chicks ¹	Male Chicks	Cull Chicks	Total Egg Residue
		-----%-----			
LSL-Lite	68.38	34.22	34.16	3.89	27.74
Bovans White Exp	84.02	40.96	43.06	0.87	15.11
Bovans White	82.22	41.95	40.27	0.89	16.89
Dekalb White Exp	85.53	40.04	45.50	1.22	13.25
Dekalb White	85.36	41.72	43.64	1.86	12.78
Hy-Line W-36	87.03	37.95	49.08	0.56	12.42
Hy-Line W-98	82.61	36.93	45.69	0.87	16.51
Hy-Line CV-20	79.37	38.43	40.94	1.83	18.81
Bovans Brown	79.07	37.12	41.95	2.06	18.87
Bovans Goldline	44.99	22.84	22.15	1.06	53.95
Hy-Line Brown	70.37	34.64	35.73	1.27	28.36
ISA White Exp	80.49	40.72	39.77	1.35	18.16

¹Calculated as a percentage of total eggs set.

Table 4. Analysis of breakout on eggs set to determine cause of embryo mortality as percent of residue

Strain	Infertile	Ed Mem	Ed Blood	Mid Dead	Pre Air Cell	Post Air Cell	Pip		Pip Dead	Contam ¹	Abnormal Shells ²	Abnormal Embryo	Upside Down ³	Crack
							Live	Dead						
LSL-Lite	35.62	11.3	4.45	7.53	26.03	2.40	5.48	2.74	3.08	0.34	0	0	1.03	
Bovans White Exp	26.44	8.62	6.32	10.92	22.41	5.17	16.67	1.72	0.00	0.00	0	0	1.72	
Bovans White	41.03	7.69	2.56	4.27	28.21	0.85	8.55	4.27	0.85	0.85	0	0	0.85	
Dekalb White Exp	44.81	2.73	3.83	7.65	16.94	2.73	16.39	4.92	0.00	0.00	0	0	0.00	
Dekalb White	32.1	4.94	3.09	5.56	26.54	2.47	16.05	4.32	3.09	0.00	0	0	1.85	
Hy-Line W-36	10.71	9.52	9.52	25	19.05	11.90	7.14	2.38	2.38	0.00	0	0	2.38	
Hy-Line W-98	24.56	3.51	5.85	11.11	38.01	5.85	4.68	2.92	2.92	0.58	0	0	0.00	
Hy-Line CV-20	10.34	8.05	11.49	14.37	19.54	12.64	16.67	3.45	1.15	0.00	0	0	2.30	
Bovans Brown	7.31	8.08	5.38	11.15	34.62	14.23	11.15	6.15	0.77	1.15	0	0	0.00	
Bovans Goldline	84.67	0.00	0.3	0.61	7.13	1.82	1.67	3.49	0.15	0.00	0	0	0.15	
Hy-Line Brown	18.77	12.87	11.53	13.94	28.69	7.24	2.95	2.95	1.07	0.00	0	0	0.00	
ISA White Exp	41.85	7.07	2.72	7.61	19.02	3.80	5.98	6.52	1.63	1.63	0	0.54	1.63	

¹Contaminated eggs.

²Abnormal shell structure.

³Eggs set with the small end up.

Table 5. Entries in the 36th NCLP&MT by Breeder, Stock Suppliers, 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
	Hy-Line Brown	I-A	(Same)
	W-98	I-A	Hy-Line North America 79 Industrial Rd E-town, PA 17022
Lohmann Tierzucht Inc., N.A. 2433 Bethany Rd Sycamore, IL 60178	CV-20 Lohmann	I-A	(Same)
	LSL-Lite	I-A	Hy-Line North America 79 Industrial Rd E-town, PA 17022
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)
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
	Dekalb White Experimental	III-A	(Same)
ISA North America Box 400 Cambridge, Ontario N1R 5V9 Canada	ISA White Experimental	III-A	Cox Brothers Poultry Farm R.R. #1 Maitland, Nova Scotia B0N 1T0 Canada

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