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33rd NORTH CAROLINA LAYER PERFORMANCE AND MANAGEMENT TEST HATCH AND SEROLOGY SUMMARY

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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. The flock is maintained at the Piedmont Research Station, Salisbury, North Carolina. Mr. Raymond Coltrain is Piedmont Research Station Superintendent; Mr. David Joyce is Resident Manager of the flock; 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.

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33rd NORTH CAROLINA LAYER PERFORMANCE AND MANAGEMENT TEST HATCH AND SEROLOGY SUMMARY

Entries:

Fourteen entries were accepted or acquired in accordance with the rules and regulations of the test. Eight white egg strains and five brown egg strains are participating in the current test.

33rd North Carolina Layer Performance and Management Test
Hatch and Serology Summary

Strain Letter	Computer Code	Strain Name
A	1	Bovans (White)
B	2	Bovans Experimental
C	3	Bovans Brown
D	4	Bovans Goldline
E	5	Hy-Line (W-98)
F	6	Hy-Line (CV-21 Exp)
G	7	Hy-Line Brown
H	8	Hy-Line (W-36)

Dates of Importance:

The eggs were set on June 10, 1998 and hatched on July 1, 1998. The chicks were all sexed according to their genetics (feather, color or vent), vaccinated for Marek's disease, and wingbanded for identification before transfer to the brood/grow houses 8 at the Piedmont Research Station.

Data Collection:

The analysis of fertility and embryonic mortality was conducted on all eggs remaining in the hatch tray and on eggs removed at time of transfer. Tables 1 and 2 provides the various calculations for the hatch based on percentages 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 report was obtained by collecting a blood sample from randomly selected male chicks obtained from each strain. The chicks were brought to the laboratory where serum samples were centrifuged and packaged for delivery to the North Carolina Department of Agriculture, Veterinary Division, Rollins Animal Diagnostic Laboratory. The Table 1, provides the strain

identification for the data contained in this report.

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Hatch Comments:

All of the hatching eggs from 6 strains were shipped via truck and 2 strains arrived via air freight (Charlotte Airport) to the station and the eggs arrived at the Research Station in good condition. There were very few broken and/or dirty eggs for any of the represented strains. The eggs from each of the strains were lacking uniformity, resulting in small chicks at the time of hatch in some of the strains.

New incubators (Nature Form, Model I-40) and hatch units (Nature Form, Model I-10) were utilized for this hatch. The temperature (99.5° F dry bulb) and humidity (85° F wet bulb), settings were kept consistent with previous hatches. However, as the residue breakout indicates there were problems associated with this hatch, including a high level of infertility in most of the strains over what has been recorded inthe past. The chicks hatching were also delayed by approximately 14 hours from the time they were scheduled. This probably contributed to the increases in live and dead pips.

The residue breakout indicates that the problems associated with this hatch and that the various strains were affects differently. It appears that humidity levels may have been in excess due to the high percentage of chicks which died prior to piping the air cell. The increase in mid-dead and pre-air cell dead embryos is thought to be the result of elevated temperature during that time of development. However, the temperature recordings for the incubators did not show that the temperatures were out of line.

Serology Comments:

We were able to get adequate serum from each of the 8 strains. Adequate IBD titers were present in all the strains and the titer levels for the individual samples appeared to have a normal distribution, indicating most strains had good breeder vaccination programs. Those strains with high variation may want to reevaluate breeder vaccination programs. All strains were negative for *M. gallisepticum* and *M. synoviae*.

Table 1. Analysis of hatch by percent usable chicks and eggs in residue from total eggs set

Strain	Usable Chicks	Female Chicks[1]	Cull Chicks	Eggs in Residue
	%			
Bovans (White)	74.4	34.3	0.1	25.5
Bovans Experimental	84.4	42.7	0.2	15.4
Bovans Brown	91.0	45.0	0.1	8.9
Bovans Goldline	77.4	37.7	0.2	22.4
Hy-Line (W-98)	32.9	17.4	2.4	64.7
Hy-Line (CV-21 Exp)	52.3	26.6	0.5	47.2
Hy-Line Brown	71.3	35.8	0.1	28.6
Hy-Line (W-36)	90.8	41.0	0.2	9.0

[1]Calculated as a percentage of usable chicks.

Table 2. Analysis of breakout on eggs set to determine cause of embryo mortality as percent of residue

Strain Letter	Infertile Eggs	Early Dead Membrane	Early Dead Blood	Mid Dead	Pre Air Cell	Air Cell Broken	Pip Live	Pip Dead	Contam.[1]	Egg Placed Small End Up	Cracked Egg
	%										
A	10.4	6.5	2.7	1.2	1.8	0.6	0.9	0.4	0.3		<0.1
B	8.1	1.3	1.4	1.7	1.7	0.2	0.1	0.1	0.1	0.1	0.4
C	2.6	1.4	1.0	0.9	1.6	0.3	0.5	0.6	0.1	0.1	
D	7.7	1.0	2.1	2.3	6.3	0.7	0.2	1.0	0.3	<0.1	0.3
E	6.4	1.0	4.0	15.6	14.7	0.6	6.2	2.7	0.1	0.7	0.1
F	19.6	3.9	4.8	3.6	8.8	0.7	2.4	1.4	0.7	0.4	0.3
G	8.9	2.7	3.1	2.5	4.7	0.3	3.4	0.9	0.7		0.3
H	2.7	0.4	0.5	0.7	1.1	0.1	0.3	0.1	0.1		<0.1

[1]Contaminated eggs