



The University of Georgia

Cooperative Extension Service

College of Agricultural and Environmental Sciences / Athens, Georgia 30602-4356

SEPTEMBER 2006

HATCHERY BREEDER TIP . . .

RESULTS FROM A STUDY OF SINGLE STAGE VS MULTISTAGE INCUBATION IN A GEORGIA HATCHERY

In cooperation with Jamesway Incubator Company and Harrison Poultry, Bethlehem, Ga, a trial was conducted at a local integrated broiler complex to compare Jamesway Platinum single stage incubators to the existing Jamesway multistage machines. Several incubation parameters were measured including hatching egg moisture weight loss at transfer, chick weights as percentages of initial egg weights, fertility, hatchability, and many variables obtained through breakout analyses. Each week 48 trays were analyzed for single stage incubators and 20 to 28 trays were analyzed for the multistage incubators. The method was used for breakout analysis, hatching egg moisture weight loss and chick weights.

There have been three distinct periods in this study. The first period, summer '05 through Dec. '05, is the beginning period. During this time it was discovered that the prototype single stage Platinum incubators had air and heat distribution problems. Comparisons of hatchability and embryo mortality revealed that the existing Jamesway multistage machines performed slightly better than the new Platins. Over the beginning period adjustments were attempted to equalize the airflow and heat in the single stage machines. However, the changes were not sufficient to affect a significant improvement. The second period, the major adjustment period (Jan. '06 through Apr. '06), was when the airflow patterns were significantly changed. During this time no comparative data were collected for single and multi stage incubation. Hatchability and embryo mortality data were collected in the single stage system only. The major changes caused an immediate improvement in the performance of the machines with regard to heat distribution, hatchability, and embryo mortality. Therefore, the third period, post adjustment, was begun in May '06. During this period comparisons of performance of the same flocks incubated in the two systems were evaluated.

An analysis of hatchability results demonstrated better performance in most categories for the single stage machines. For example, percentages for actual hatchability, estimated hatchability, and hatch of fertiles were all higher for the Platinum machines. Breakout analysis revealed that fertility was nearly identical in the average of all flocks represented

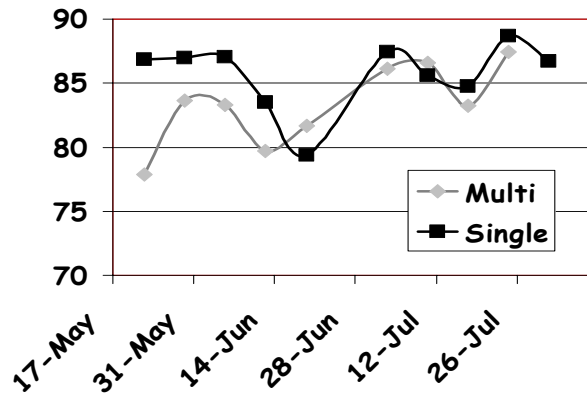
PUTTING KNOWLEDGE TO WORK

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES, COLLEGE OF FAMILY AND CONSUMER
SCIENCES
WARNELL SCHOOL OF FOREST RESOURCES, COLLEGE OF VETERINARY SCIENCES

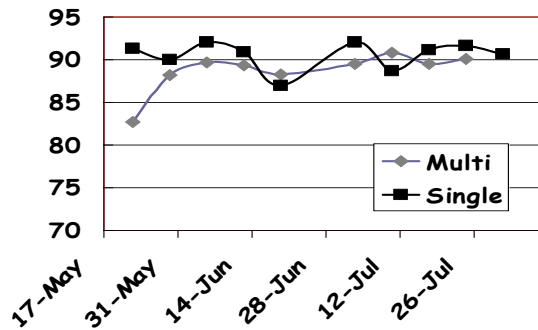
The University of Georgia and Fort Valley University, the U.S. Department of Agriculture and counties of the state cooperating. The Cooperative Extension Service offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, sex, or disability. An equal opportunity/affirmative action organization committed to a diverse work force.

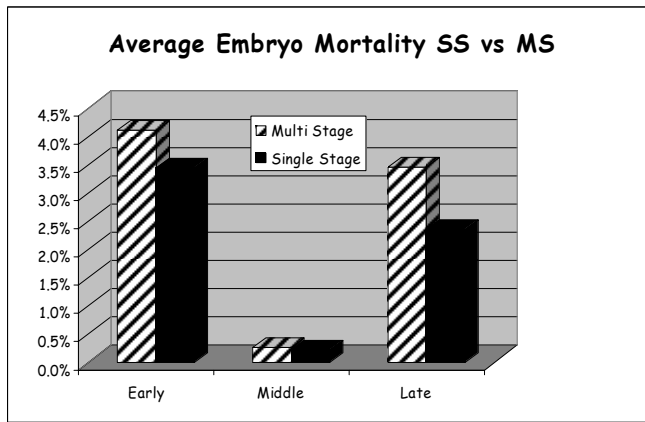
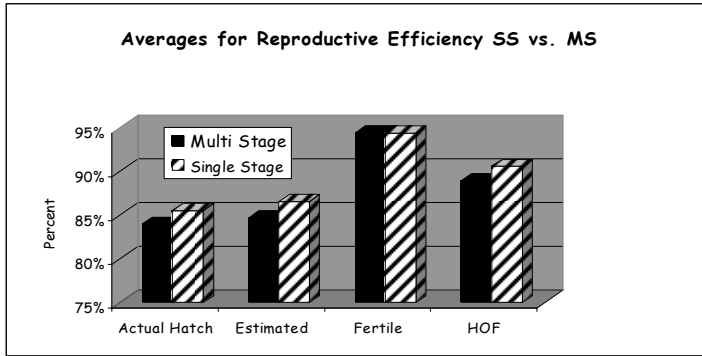
in both types of machines (see data tables and figures). Both early and late embryo mortality was higher in the MS than SS (early 4.12 % MS Vs 3.44 % SS and late 3.46 % MS Vs 2.35 % SS). Percentages of pips and cull chicks were very nearly the same for MS and SS. Data are shown in the figures below.

% Actual Hatchability SS Vs MS



% Hatchability of Fertiles (HOF) SS Vs MS





Notice in the first two figures there is an early (first week data), demonstration of low performance for hatchability and hatch of fertiles in the multistage machines. This was due to a turning problem. Also note that during the middle of June there was a drop in performance, hatchability and hatch of fertiles, in the single stage machines. This was due to a malfunction in chillers for the single stage machines. Overall, the new Platinum single stage incubators had superior performance post incubator adjustment than the multistage incubators. A comparison of moisture loss and chick weights in the two incubation systems will be published in a later Hatchery-Breeder Tip.

J. M. Mauldin

Joseph M. Mauldin
Extension Poultry Scientist

Extension County Coordinator/Agent

“Your local County Extension Agent is a source of more information on this subject.”