

Project #F021

The Reproductive and Physiological Development of Young Broiler Breeder Males Raised on Shortened Growth Cycles

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“Reproduction Fitness of Males Programmed to Mature at Early Ages”

One of the difficult tasks of raising broiler breeder males is controlling weight gain in the rearing house without inflicting excess stress. During this time, many portions of the male's reproductive system are developing and, if neglected, can have lifelong effects on their reproductive performance. The current male rearing programs of feed restriction and light stimulation at 21 weeks of age were implemented years ago. Current rearing programs inflict increased stress on the developing male, as they are genetically superior to anything broiler breeder producers have previously managed. Feed restriction is one area receiving animal welfare attention. Therefore, in this study males were raised under various management programs which produced a target body weight (3060g) at 24 (T1), 21 (T2), 18 (T3), 15 (T4) and 12 (T5) weeks of age. This study investigated both short term and long-term effects of early semen production and its effects on reproductive characteristics through the normal life of a broiler breeder male. Reproductive characteristics that were measured included, testis size and growth, semen volume, and sperm count. Mating behavior was also observed to determine if early lighting had any negative effects.

Testicular development occurred more rapidly in the older males (T1 and T2) than the younger males. However by four weeks post lighting younger males had achieved the same level of testicular development with the exception of T4 males.

Semen collection began at four weeks post lighting and continued for 41 weeks. Males in the T3 group had significantly higher sperm volume than the other treatments, with T5 males having the lowest semen volume. T3 males also had the highest concentration of sperm

followed by T2, T1, T4, and T5 males, respectively. The concentration of sperm was significantly higher from males in the T3 and T2 groups than the T4 and T5 groups.

Overall mating behavior followed a similar pattern for all groups as the males aged with the highest mating activity accruing between 28 and 32 weeks of age. T4 males had significantly less successful matings than T1 and T3, and younger males crowed, wing flapped and flared their necks less than did the older males.

Life of flock fertility was highest in the in T1 (93.3%) males followed by T2 (91.4%), T3 (90.7%), T5 (86.9%), and T4 (77.9%), with T4 males having significantly lower fertility.

Results indicate that lighting males early at 18 weeks of age may help lower the stress of rearing without negative effects on reproduction. Lighting males early will lower feed costs and reduce the time to sexual maturity.