

DECREASE OF FERTILITY IN A BROILER BREEDER FLOCK DUE TO TESTICULAR ATROPHY

ROCIO CRESPO AND H.L. SHIVAPRASAD

Contact Address: hlshivaprasad@ucdavis.edu

Important Findings

Two weeks after spiking, a decrease in fertility from 96% to 82% was observed in a 48-week-old broiler breeder flock. Hatchability in the flock was about 86%. Necropsy of 25 males revealed severe testicular atrophy in 60% of the birds. Researchers concluded that a combination of a recent introduction of replacement (spiking) males, poor environmental conditions, and decreased feed consumption led to the loss of weight, testicular atrophy, and decreased or no spermatogenesis in individual birds, collectively resulting in decreased flock fertility.

Significance of Findings

There are many factors that influence the hatchability of eggs, including fertility of roosters and hens. In roosters, the fertility can be influenced both by infectious and noninfectious causes. Among noninfectious causes, management and nutrition, such as the quality and quantity of feed consumed by the roosters, plays a major role in their fertility. This report describes a decreased fertility in a broiler breeder flock influenced by poor environmental conditions and decreased feed consumption, resulting in testicular atrophy.

Additional Information

Based on the history, the lack of significant lesions, and the poor environmental conditions, it is probable that a problem arising from the lower male weight may be responsible for testicular atrophy. A male with poor weight has a lower percentage of spermatogenesis than does a healthy male. With the information provided by the producer, it is not possible to determine whether the males actually lost weight or just had not gained sufficient weight. The spiked males should have had a minimum weight of 4086 g, or 9 lb. The average body weight of the birds with severe atrophy was 3400 g, with

moderate atrophy 3856.1 g, and with no atrophy 4101.9 g. The difference in body weight between these three groups of birds was statistically significant.

Poor weight gains have been reported to have a negative affect on the development of Sertoli cells, even as early as 12 wk of age, and will consequently reduce fertility later in life. A male should continuously gain weight throughout his life; if for any reason weekly weight gains were not achieved, as apparently occurred in this case, it could result in a negative affect on testes size and weight and, consequently, on sperm production. In addition, if insufficient weight gains occur sometime during 32–65 wk of age, the sperm motility, volume, and concentration decline. If the weight loss is >100 g (0.2 lb) over a 5-wk period, sperm quality and volume decline. If the weight loss is >500 g (1.1 lb) over 5 wk, sperm production will stop and, in most cases, never recover.

Finally, both the male and the female are responsible for fertility. The female's role in fertility can be compromised as a result of poor receptivity and poor sperm storage. Poor hen receptivity can start between 24–28 wk of age and persist for the rest of the flock's life. However, it can start at any time during the life of the flock. If it occurs later in life, it is generally the result of spiking with too many males, males that are too aggressive, or both. Poor hen receptivity can also be due to a poor weight ratio of male:female. Throughout production, a rooster's weight should stay at 115%–130% of the hen's weight. If the male's weight is >140% of the female's, poor receptivity and poor mating efficiency occurs. On the other hand, if the male's weight is <110% of the female's weight, then the females will dominate the males and, as a result, there will be a decrease in mating frequencies.

In addition, the hen's actual weight is important. If the hens get too heavy or obese, it will result in decreased mating frequencies and poor sperm storage, resulting in poor fertility and hatchability. An increase in early, dead embryos has been observed with heavy hens. Unfortunately, no data about the female weights were provided for the broiler breeder flock these researchers studied.

Copyright © 2010, American Association of Avian Pathologists, Inc. 1933-5334 online

DISMINUCION DE LA FERTILIDAD EN UNA PARVADA DE REPRODUCTORAS DE POLLO DE ENGORDA DEBIDO A UNA ATROFIA TESTICULAR

ROCIO CRESPO Y H.L. SHIVAPRASAD

Dirección para contactar: hlshivaprasad@ucdavis.edu

Hallazgos Importantes

Dos semanas después de la madurez sexual se observa que hubo un decremento en la fertilidad del 96% al 82% en una parvada de reproductoras de pollo de engorda de 48 semanas de edad. La incubabilidad de la parvada fue de 86%. La necropsia de 25 machos reveló una severa atrofia testicular en un 60% de las aves. Los investigadores concluyeron que una combinación de una reciente introducción de machos de reemplazo (madurando sexualmente),

malas condiciones ambientales y la disminución del consumo de alimento llevó a la pérdida de peso, atrofia testicular y a la disminución o ausencia de espermatogénesis en aves individuales, colectivamente resultando en una disminución de la fertilidad de la parvada.

Significancia de los Hallazgos

Hay muchos factores que influyen en la incubabilidad de los huevos incluyendo la fertilidad de los gallos y las gallinas. En los gallos, la fertilidad puede estar influenciada por causas infecciosas y no infecciosas. Entre las causas no infecciosas, el manejo y la

Copyright © 2010, American Association of Avian Pathologists, Inc. 1933-5334 online