

Reproductive Management of the Broiler Breeder Female

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Much is expected of modern-day broiler breeder females. They must possess the genetic capacity to produce high numbers of offspring, *and* deliver progeny that will perform in the broiler house. Managing these birds in order to maximize their reproductive potential and to prevent problems from occurring, requires an understanding of several of the components of the reproductive system.

Reproductive System

The reproductive system of the hen contains several components, some more obvious than others. Certainly anyone who has posted hens in production can appreciate the ovary and oviduct, but there are also less obvious components also. The brain, skeletal system, and liver are also crucial to proper reproduction function.

Two of these less obvious components are located beneath the brain; the hypothalamus and anterior pituitary. These two endocrine organs work together to produce several hormones, among these are, luteinizing hormone releasing hormone (LHRH), luteinizing hormone (LH), and follicle stimulating hormone (FSH). LH and FSH stimulate ovarian hormone production and early follicular development, respectively.

Follicles on the ovary also produce important hormones, primarily estrogen and progesterone, which are involved in many functions. Estrogen is important for promotion of secondary sexual characteristics like the growth and development of the comb and wattles, and relaxes the pelvic bones for ease of egg passage. Progesterone is important for feedback to the hypothalamus to initiate ovulation.

The liver is a key organ in egg production, as it produces lipoproteins that contribute to egg yolk. This yolk synthesis takes place due to messages sent by estrogen. In some instances, the liver becomes so good at producing and storing lipids that it becomes very pale, fatty, and fragile. Such livers are prone to damage and subsequent hemorrhage (fatty liver and hemorrhagic syndrome).

The skeletal system is also important in storing and providing calcium for eggshell production. Disruptions in the balance of mobilization and storage of calcium can result in diseases such calcium tetany and contribute to poor eggshell quality.

Body Weight Management

Proper body weight management and feed allocation are critical to maximizing the potential of broiler breeders. Overweight breeder pullets have a tendency to express excessive follicular development. This is detrimental to achieving high egg production, and can result in a higher than normal incidence of double-yolk eggs, oviductal prolapse, laying of more than one egg per day (often without good quality shells), abdominal laying

that results in egg yolk peritonitis, and laying out of the normal laying time of the day (erratic oviposition). Poor fertility may also arise in overweight hens due to sperm transport problems in the oviduct and from birds being too large to effectively mate.

Flock Uniformity

Another important component to breeder flock health is the relationship of flock uniformity and reproductive performance. As flock managers, we expose an entire flock to the components that bring a flock into production, so it is essential that as many birds as possible are at the same point of physical and sexual maturity. If smaller pullets are brought into production, they will have lower maintenance requirements than larger pullets. In addition, smaller pullets often do not have the same opportunity to eat, further exacerbating the issue.

Calcium Tetany

Often a direct result of poor uniform flocks is a metabolic condition known as calcium tetany. This condition usually occurs in young broiler breeder hens between 25 – 35 weeks of age. Due to the low circulating blood calcium levels, the hens are too weak to get away from the males. Hens are often found down in the scratch area, and are mistaken as “male-kills” due to the similar appearance.

Mortality is often dramatically reduced through the use of supplemental oyster shell in the scratch area and additional vitamin D in the drinking water. The large particles of oyster shell are retained in the gizzard providing a constant source of calcium to minimize the depletion from the bloodstream.

Strain Variation

There is not a single “ideal” program for managing follicular development in all strains of broiler breeders. Some strains are more resistant to the effects of over-feeding and uniformity problems than others, therefore it is extremely important to follow the recommended body weight profiles provided by the parent stock supplier.