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### What Impacts Stallions' Sperm Output?

Not all stallions are created equal and neither is the amount of sperm they produce. The most sought-after stud in the area, for instance, could produce minimal amounts of semen, while a less desirable horse might produce more than his breeders ever need. So what are the deciding factors when it comes to sperm production?

Ed Squires, MS, PhD, Dipl. ACT (hon.), reviewed some of those factors at the 2015 World Equine Veterinary Association Congress, held Oct. 8-10 in Guadalajara, Mexico. Squires is a professor at the University of Kentucky's Gluck Equine Research Center, in Lexington.

"It is important for both veterinarians and stallion managers to know the factors that affect sperm output in stallions," Squires said.

Those key factors include stallion age, season, testis size, ejaculation frequency, and sex drive.

Veterinarians, he said, can evaluate these factors during breeding soundness exams and recommend adjustments to help improve a stallion's sperm output. Managers, on the other hand, can use these factors to determine how many mares the stallion can realistically breed in a season.

Squires reviewed each factor in detail, giving attendees considerations to make for each one:

**Age**—Most stallions enter stud when they're 3 years or older, Squires said, and reach sexual maturity by the time they're 5 or 6. At some point, the stallion's testis begin to degenerate. But, like aging in general for horses, the point at which this occurs depends on the individual horse.

"The timing for testicular degeneration varies in stallions and may occur as early as 12 to 15 years or, in some stallions, after 20 years of age," Squires said.

But the bottom line is that, in general, stallions' semen output will decrease as he ages. Thus, it's important to re-evaluate a stud's book each year to ensure he's not being stretched too thin.

**Season**—At many Kentucky Thoroughbred farms, the breeding sheds open in mid- to late-February. At farms in more northern locations, the breeding season might not start until late spring or even early summer. But while stallions are expected to impregnate mares at multiple times during the year, the season can have a significant impact on how much sperm they produce.

"Sperm output in the winter is about half of what it is in late spring and summer," Squires explained. "This seasonality is controlled by the length of daylight."

He said breeders can increase stallions' sperm counts in February and March by keeping them under artificial light for longer periods, starting in mid-December. However, he explained that managers generally do not place stallions under lights because, even though the sperm output will increase earlier in the year, sperm numbers will also decline earlier. This could pose a problem for late-season breeding. He warned breeders against overbooking stallion for the early parts of the breeding season, as decreased sperm output could be a concern.

**Testis size**—Size matters when it comes to a stallion's testis, and veterinarians can garner important information by evaluating these structures.

"Testicular volume can be used to determine whether the stallion has normal size testicles for his age and whether he is providing the expected number of sperm in the ejaculate based on his testicular volume," Squires explained.

Practitioners can use either ultrasound or calipers to measure testicular size, he added.

**Ejaculation frequency**—A stallion can only produce so much sperm, so it stands to reason that breeding him too frequently could reduce his sperm counts. For best results, Squires said, researchers have determined that stallions in artificial insemination programs should be collected every other day during the breeding season.

"For natural mating, the primary factor determining how many times a stallion can be bred per day is the stallion's sex drive," he said. This generally amounts to one to three coverings spread throughout the day, he added.

**Sex drive**—So what controls a stallion's sex drive? Unfortunately, Squires said, researchers and veterinarians aren't sure.

"We do know that factors such as using a stallion heavily as a 2-year-old, being kicked during mating, pain during mounting, an inappropriate artificial vagina, or the height of the phantom can all negatively affect sex drive," he said.

It's not clear what steps stallion managers can take to improve a horse's sex drive, but animal behaviorists have recommended several options that could help. Learn more in [Stallion Libido](#) and [Managing Breeding Stallions](#).

#### Take-Home Message

When it comes to managing a breeding stallion, many factors can negatively impact his sperm production. Understanding these factors can help managers and veterinarians take steps to help improve the stallion's fertility.