



Infertility in Stallions: Factors Affecting Fertility

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Stallion fertility can be affected by many things including age, heredity, management, season of the year, illness or injury. The term infertile is often interpreted several ways. Actually there are three categories when assessing a stallion—fertile, subfertile, and sterile. A horse can be temporarily sterile (following fever or injury, for instance). Subfertile is a very broad category that can encompass a wide variety of problems or situations ranging from mild subfertility (a stallion that gets about half his mares pregnant per cycle) to marked subfertility (10 to 30% pregnancy rate).

AGE OF STALLION—A stallion is not fertile until he reaches sexual maturity. The testicles start producing sperm when the colt is a yearling, but he usually does not reach full maturity until age two. Even then he is not capable of breeding very many mares. The young stallion should be used on a very limited basis until he is three or four.

Old age can also affect fertility. As stallions grow older, degenerative changes may reduce the total number of sperm produced. In many cases the sperm produced in the older stallion have more abnormalities, which can further reduce his fertility. A good semen evaluation program (and use of artificial insemination, if possible, to save the stallion unnecessary breedings) may be the only way to obtain foals from an old but valuable stallion.

HEREDITY—Stallions may inherit tendencies toward high or low fertility. The physical makeup and structure of his reproductive organs—whether he has large or small testicles, abnormalities in the reproductive system, testicles that hang properly and are fully descended—are inheritable. Some colts are born with a condition in which the testicle is unable to produce sperm at normal levels.

Sometimes you'll find families of stallions in which nearly every male member of that sire line has the same characteristics of semen and certain defects, whether the horse is young or old. An examination in mid-life would indicate some level of testicular degeneration, but the horse had the same abnormality at age four; he was genetically programmed that way. Some subfertility problems (reduced semen quality, smaller testicles, hormone problems, etc.) are genetic. This is becoming all too common and may be due partly to the fact that horsemen tend to disregard reproductive potential when selecting stallions; they are selecting for other things than fertility (speed and athletic ability) and so certain defects in fertility may be carried along in some sire lines.

OVERUSE—Too much stress or overuse of a stallion can lead to infertility or psychological problems that may interfere with his sex drive. How much a stallion can be used during the breeding season depends on the individual. Some stallions can be bred daily and occasionally twice or three times daily without reducing sperm output enough to cause infertility or reduction in libido, while others become infertile or lose their desire after only five or six days of daily use. Stallions should be checked periodically through the breeding season to evaluate fertility, and stallions with low fertility should not be used more than two or three times a week. Overuse of a stallion can reduce semen quality and sperm count.

Overuse, especially of a young stallion, can also jeopardize his future at stud. He may "burn out" and show his displeasure by not getting ready in his usual time, refusing to mount the mare, or perhaps mounting several times without ejaculating. Stallions that have been overused, mishandled, kicked or injured during breeding sometimes develop poor breeding habits. They may refuse to breed, or dismount too quickly while still in the process of ejaculating, or get into the habit of ejaculating as they dismount.

SEASON—Sperm production and sex drive peak in May and June, but many breeders begin the breeding season in February. This can make for fertility problems. For instance, most stallions produce only 50 to 75 percent of sperm numbers early in the year as compared with their normal output in June, and sex drive is also lower in February-March compared with May or June.

Many breeders use artificial lighting for mares to get them cycling more normally sooner, lengthening the breeding season to allow a stallion more time to cover a larger number of mares. Some also use artificial lighting for stallions to hasten their full reproductive potential earlier in the season. Studies have shown that stallions do respond to artificial lighting, but unlike mares, do not sustain their high level of reproductive function quite as well throughout the breeding season.

Stallions respond to lighting programs by producing higher levels of hormone, sperm production and libido by February—similar to what they normally experience in June. But, by June some of these values will be dropping, more like what would be normal in December. So stallions should not be placed on the same regime; mares are started under lights in November or December, but this is too early for stallions, causing stallions to peak in reproductive abilities prior to the breeding season, with libido being

reduced too soon afterward. Lights are best used for stallions just one month prior to the period of anticipated heavy use, otherwise they are not recommended. If stallions are in the same barn as the mares, make sure there are separate light controls for their stalls or unscrew the lights in the stallions' stalls.

SPERM LIFE—Different stallions have different sperm life (how long the sperm remain alive within the mare's reproductive tract). For the majority of stallions, the length of sperm life averages 40 to 60 hours but there are some stallions whose sperm is viable only up to 24 hours. These stallions must cover their mares within 24 hours of ovulation for conception to occur. By contrast there are other stallions that can cover a mare as much as four to five days prior to ovulation and still get her in foal.

Other factors that can interfere with fertility are hormone imbalance and improper use of drugs. Steroids may cause shedding of too many immature sperm cells (which are not capable of fertilizing the egg) and may also contribute to decreased "livability" of apparently normal sperm.

ILLNESS AND INJURY—Infertility can also be caused by fever. Anything that raises the temperature of the testicles for any length of time can interfere with sperm production. This is why an illness in which there is general body fever may leave a horse temporarily infertile. The higher and longer the fever, the more severe the after-effect on fertility. Local infection or direct injury to scrotum or testicles can produce inflammation and heat, and subsequent infertility. The after-effect of local injury or any severe fever may continue for some time, until sperm are being produced again and become mature.

The effect of the production shut-down may not be evident for several weeks, since the stallion has a large amount of sperm already stored. The mature sperm may still be viable and he may be able to settle his mares for awhile, until he runs out of mature sperm and has no more coming on just yet, due to the gap in production while he was sick or injured. Formation and maturation of sperm cells takes 60 to 70 days. A periodic semen check is advisable following any severe illness or injury, to see if he will have an infertile period and how long it will last. The horse may be infertile very briefly, or for several months before healthy sperm are mature and present in the semen again.

If just one testicle is injured, the other may go ahead and produce normal sperm. A sperm count in this case may show a lower number, due to lack of production in the injured testicle, or the count may show half the sperm as normal and half deformed, or inactive. Several sperm checks may be necessary to find out when the horse will be ready for breeding again. In some cases a horse may not fully recover from injury to the testicles; if there is too much scarring it may permanently interfere with sperm production.

IMPROPER MANAGEMENT—Good mare and stallion management is crucial for maximizing a stallion's breeding efficiency. Proper heat detection and pinpointing ovulation time is essential to keep from overusing a stallion. Manipulation of the estrous cycle and ovulation (such as

use of artificial lighting to bring mares into fertile heat earlier in the season, or use of hormones to bring a mare into fertile heat at a certain time) may be necessary to get full utilization of a stallion.

Management can be a very big factor in stallion fertility; a stallion whose inherent fertility (as evaluated by sperm count and quality, etc.) is only 10 to 20 percent can achieve a 50 to 80 percent pregnancy rate with excellent management, whereas a highly fertile stallion may end up with very low pregnancy rate under poor management. What we call "stallion fertility" is actually a combination of his basic fertility, the fertility of the mares he is bred to, and the breeding management.

TESTICLE CONFORMATION—Size and position of the testicles play important roles in fertility. Since the testicles produce and store sperm, a stallion with large testicles is almost always more fertile. Another important factor is whether the testicles are completely descended into the scrotum. If one or both are only partly descended, the horse will be relatively infertile or even sterile, because of the effect of body heat upon his sperm factory.

Stallion fertility is a complex mix of many factors, some of which are easy to evaluate and/or correct and some not. If a stallion has a certain problem that lowers fertility, often the veterinarian, farm manager and stallion handler can work together and with careful management and mare selection get an acceptable pregnancy rate. With good teamwork, some problems can be resolved or minimized so that the stallion can be a successful breeder.

