

Stallion Fertility

The stallion is responsible for half of the probability outcome in each breeding. Management has a huge impact on fertility. Well managed farms have good pregnancy and foaling rates. However, when pregnancy rates per cycle on the same farm are compared between stallions quite often there are major differences in the figures. In those cases, providing the percentages of mares in the barren, maiden and foaling groups are similar, the stallion is demonstrating his "inherent" fertility. That is something he is born with. I am sure many of us have seen the stallion that just seems to have to sniff his mares and they go pregnant. Compare him with the stallion that takes two, three or even four cycles to get mares pregnant. They can end up with the same number or percentage of mares pregnant at the end of the breeding season, but it is allot more work with the less fertile stallion and his progeny may have an average foaling date that is later than acceptable for commercial foal sales. Nobody knows what the real differences in fertility are caused by. There are sometimes no obvious differences and the only explanation is that one stallion is able to produce more fertile sperm than another.

A stallion is most fertile in his early years, i.e. 4-7 YO. Sperm numbers may increase until the stallion is around 13 -14 years old, however the ability of the sperm to get mares pregnant declines with time due to the effects of aging and other factors. Some stallions tend to have good quality sperm and good numbers well into their late teens. There is evidence within a breed that some sire lines have longer breeding capability.

Fertility evaluations involve analysis of breeding records, semen collection, external genital and maybe a physical examination and occasionally an internal examination. Semen analysis will often show where the problem is occurring. On some occasions it may be the delivery of semen and the stallion is not ejaculating well.

The volume of the ejaculate multiplied by the concentration gives us the total sperm. Volume is usually between 40 and 200 ml, concentration is usually in millions and the total sperm is reported as billions. We know it takes $\sim 500 \times 10^6$ progressively motile sperm to achieve maximum pregnancy rates.

Other tests used are; morphology, which is the anatomy of the sperm: total scrotal width which is a measure of the potential of the testes to produce sperm; pH of the sperm which may indicate incomplete sperm release or infection and bacterial cultures which may identify a stallion that is carrying a bacteria that either may infect mares bred by him or may a recognised venereal pathogen such as the organism (*Taylorella equigenitalis*) that is the agent causing "contagious equine metritis".

There are lots of other things that can be examined and are mostly used either experimentally or after the other tests have not been able to confirm the problem. Some of the new tests are: penetration of dead female eggs with sperm (can compare the different ability of different stallions); sperm chromatin assay and computer aided motility and swimming pattern analysis studies. Some times sperm is examined with an electron microscope (called either transmission or scanning EM) and on occasions, samples for chromosomal analysis are taken.

Pre purchase semen evaluations to predict fertility are a little more risky. It can usually be said that a horse has good semen parameters that should result in normal fertility, however sometimes a stallion has good looking sperm with normal numbers etc, and can breed mares that either do not go in foal or go in foal only slowly.

The only really accurate test of fertility is to breed mares and measure the pregnancy rate per cycle.

People believe that the stallion is just a sperm producing machine.

They have little thought for the normal horse behaviour. For example some stallions are intimidated by another stallion, they do not have to be in next door stalls or paddocks for this intimidation to occur. In addition stallions like to see mares and not be isolated. A study of free ranging horses showed that the dominant stallion has little or no work in stopping the other males from breeding.

However as soon as the dominant stallion has left the vicinity the next stallion in line takes his place, no fuss, no fighting, he just starts breeding. We have seen stallions start to cheat on service and develop bad breeding behaviour simply because they were moved or another stallion was placed closer to them. These signs may be subtle, so it is a caring, thinking approach that we need to engender. In conclusion individual stallions have varying libido and we need to cater for their individual sex drive.