

SO YOU WANT TO BREED YOUR MARE. . .

Dr. Susan A. Mende, DVM, Dipl. ABVP

Breeding season is just around the corner, and you may be one of many mare owners who are considering breeding your mare. A great place to start is discussing the many options available with your veterinarian. Communication and knowledge are the keys to a successful breeding.

Reproduction in the horse can be a tricky business. Although the horse seems to have done rather well keeping the species alive, most people don't realize that the fertility rate of mares in the wild barely reaches 50% (fertility rate is the percentage of pregnancies produced out of all mares bred). However, using today's technologies, the fertility rate at many breeding farms is upwards of 90%, often successfully impregnating mares that by nature's standards would be considered sub-fertile.

About Your Mare:

It is important to evaluate your mare's health status and fertility type early in the program. Her medical history is quite valuable in determining her likelihood of becoming pregnant. Systemic illnesses such as hypothyroidism, liver disease, colic or laminitis may interfere with reproduction. Age also has a detrimental effect on fertility. After the age of 15 or 16, fertility starts to decline. A young, maiden mare less than six years of age has the highest fertility. An older, maiden mare more than nine years of age has reduced fertility. Mares with foals, those that are still lactating and some barren mares may require special management. Your veterinarian will need to know such information as when the mare last foaled, if there were any complications, if she cycles normally or if she has had any history of reproduction problems.

Early on, one of the trickiest elements encountered is the delicate timing involved. For this reason it is essential to know your mare's cycle, or when she comes into estrus or 'heat'. Horses as a species are *seasonally polyestrous*, which means that their heat cycles are dependant upon the amount of daylight they are exposed to. This is nature's way of assuring that foals are born in the spring when the grass is lush and capable of supporting the mare through lactation. Some mares will cycle through the winter; these heat cycles are of questionable fertility however. Most mares only have fertile cycles during the spring and summer, and they ovulate every 21 days, with a heat period lasting five or six days. A mare's estrus is usually monitored by changes in her behavior when confronted by a stallion or viable substitute (called 'teasing'). When in heat, the mare usually stands with her ears erect, acts interested in the stallion and would stand to be mounted. Most mares assume a classic base-wide rear stance and often urinate while 'winking' their vulva. When not receptive the mare will reject the stallion, sometimes violently. She may bite, squeal, and flatten her ears, or she may simple act sullen and indifferent.

Now here's another little trick -- some mare's don't show behavioral signs of heat, even when actually in heat. This is great when she is your performance mare, but inconvenient when trying to breed. These mares must be tested by a veterinarian with a manual or ultrasound examination of her ovaries to determine her status. Mares have prolonged cycles, so a single examination is often inconclusive. If your mare has 'silent heats', or if she lives alone without a male horse to 'tease' her, be prepared to have your veterinarian check her several times during the breeding cycle. Your veterinarian may be able to induce estrus with the use of prostaglandins and other hormones, depending on where the mare is in her cycle. These induced heats are as fertile as a natural heat and are often a useful tool when dealing with silent individuals.

A few additional diagnostic tools may assist your veterinarian in determining your mares reproductive potential, especially if she has had troubles with pregnancy. A *uterine culture and sensitivity* is a test to determine if the mare has an infection in her uterus. If she does have an infection, this may prevent her from becoming pregnant, so the infection should be resolved before she is bred. Many stallion owner's will not allow their stallions to breed mares with infections for fear of infecting the stallion. These stallion owners will request a negative test before breeding your mare. An *ultrasound exam* can be performed on the mares reproductive tract if the veterinarian is suspicious that something is amiss, e.g. the mare is accumulating fluid in her uterus or has an abnormal ovary. When a mare demonstrates that she has difficulty remaining pregnant, a *uterine biopsy* may be performed to evaluate the condition of the uterine lining in case there is scarring present from chronic infection or previous pregnancies. *Hormone assays* can also be done using a sample of the mares blood. This will determine if abnormal levels of certain reproductive hormones are present and allow the veterinarian to supplement the mare accordingly.

About the Stallion:

Today's technology provides many methods through which to breed your mare. The breed of horse you are creating may be important in the method selected, since some breed registries have restrictions limiting the use of shipped semen, artificial insemination, use of frozen semen, embryo transfer, and so on.

A hands-off method of breeding is *pasture breeding*. This method is sometimes used by people with a closed herd of their own mares. It is perhaps the least expensive way to breed your mare, but is not without hazards to the mare and the stallion. Some stallions can be quite rough during the breeding process, and some mares can endanger the stallion when no longer receptive to his advances.

Research has shown that breeding a mare many times during a single heat cycle is actually detrimental to fertility, with pasture breeding averaging around 60% fertility rate. A higher fertility rate is achieved by breeding the mare once or a maximum of twice just prior to ovulation. Assisted breeding via live cover or artificial insemination both use this principle to control the time of insemination to right before ovulation. With *live cover*, the mare is bred by the stallion once or possibly twice right before she ovulates. Handlers are usually present to hold onto the mare and stallion and prevent injury to both whenever possible. Using *artificial insemination*, the stallion's semen is 'collected' using an artificial vagina before being manually placed within the mares uterus. Artificial insemination is often used when many mares need to be bred to the same stallion at the same time. The ejaculate which is collected can be divided into several smaller portions (after a semen count is performed) with the aid of a liquid called a semen extender. A trained technician or veterinarian then places the semen within the mares that are ready to ovulate within the next 24 hours. This method is safe for both the mare and stallion because they never physically contact each other. An obvious requirement for both of these methods, however, is that the mare and the stallion need to be on the same premises at the same time.

Artificial insemination using *cooled-shipped semen* has become more popular in the last several years. With this method, after the semen is collected, it is extended with a product to help the sperm survive for up to 72 hours. The semen is then cooled and sealed in a special container for shipment. The advantage of this method of breeding is that you can breed your mare to a stallion that lives across the country, yet she never leaves your farm. Using this method obviously requires great synchronization between the stallion's handler and the mare's owner and veterinarian. Artificial insemination using *frozen semen* is accepted in some breeds of horses. The fertility rate using frozen semen is the lowest, only approximately 20%, because the freezing process can kill many of the sperm cells. Timing with frozen semen is the most crucial, with insemination necessary within 6 hours (before or after) ovulation. Often hormones are used to manipulate the mare, multiple evaluations are performed during and after the breeding cycle, and special techniques and equipment are used to store and then thaw the semen properly.

The Economics of Breeding

Depending on the method chosen, breeding can become quite costly, especially when a live foal is not produced. Factor the cost of semen, veterinary fees and increased management needs before you take the leap. If you choose a stallion solely because he's a few hundred dollars cheaper than another stallion, you're talking about a savings of pennies a day over a horse's life. When you look at how many years you're going to have that foal and how much difference a little more quality would make, the savings become rather unimportant. If a mare is respectable, if her legs are straight, if she has decent size and doesn't have any glaring faults, then the nicer the stallion you go to, the nicer the foal you're going to get. Take a moment to understand the breed registry the mare is in, and the requirements to register the foal you produce. For many of the warmblood breeds, these registries are not straightforward. Producing a foal eligible for a registry is far superior to producing a foal that becomes a horse without a certificate of pedigree.

See *Regarding Artificial Insemination with Shipped Semen*, *The Prospective Breeder's Balance Sheet*, and *When One and One Makes Three* for more information on the venture of breeding your mare.