

Breeding Your Mare by Transported Semen.

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Question: *I own a Quarter-horse mare that will be eight years old in March. I am thinking about breeding her in the spring. I am looking into artificial insemination (AI). I don't understand how to determine when my mare is "ready" to be inseminated. How would I go about documenting her heat cycles? Is this even necessary? What is involved in receiving shipped semen? What are the odds that she will become pregnant as compared to natural breeding methods? Any information you can offer would be much appreciated.*

Answer: It is popular among horse owners today to keep their mares at home to be bred instead of sending them away. The reasons include safety for the mare (and foal if she happens to have one at her side), reduced risk of infectious disease transmission, and reduced cost. While the opportunity for choice exists among most breeds, the mare owner must be informed of the potential inconveniences associated with keeping the mare at home for breeding. These include closer monitoring of the mare's estrous cycle, more frequent visits by the local veterinarian to examine the mare for ovarian activity, and advanced communication with the stallion owner to arrange semen collection and transportation.

Negotiations need to start early between mare and stallion owners. This involves contract agreements in advance so that each party knows their respective responsibilities. These negotiations may require that the mare owner bear the cost of some or all of the transport-related expenses. These may include purchase of the semen shipment container, fees for each semen collection, and air or overnight-courier service costs. Limitations on availability of semen also have to be considered. The stallion owner may only collect on certain days of the week. The stallion may be a show or performance horse, in which case he may not be available for semen collection during certain days or weeks. In actuality, what seems like a convenience to the mare owner can sometimes turn into a scheduling "nightmare".

Stallion fertility is dependent upon three factors: libido, mating ability, and semen quality. The total number of progressively motile (moving or living), morphologically normal (shaped properly) sperm per ejaculate is still the best predictor of overall fertility. This supports the view that for a successful transported semen program, the stallion involved must have average or better sperm motility (>50%), and store well in extender in a cooled (5°C) state of preservation for up to 24-72 hours. There is a great deal of individual stallion variation as to how well sperm survive the challenges of collection, processing, cooling, storage during transport, and AI. Some stallions with excellent conception rates with AI on the farm, have similar success with transported AI. Others do not! Ask the stallion owner to provide you some information on the particular stallion you intend to use. You should expect a 60%

conception rate per mare cycle for semen from a 'good' stallion. This means 6 of 10 mares inseminated on each of their first cycles will conceive, the other 4 won't. But this does not mean either the mare or the stallion were necessarily at fault. Conception is a probability, a risk, a chance encounter between a viable egg and sperm at the right window of opportunity. It does not happen 100% of the time!

Since all stallion semen intended for transportation is extended and cooled to preserve the life of the individual sperm, the addition of antibiotic(s) to the extended semen is necessary. This kills most of the bacteria that are present in the semen in most situations. Regardless, it is always prudent to make certain the stallion from which the semen is collected has been cultured and determined free from the 3 primary venereal disease-causing bacteria of the horse: *Taylorella equigenitalis*; *Pseudomonas aeruginosa*; and *Klebsiella pneumoniae*. He should also be negative on serological test for exposure to Equine Arteritis Virus (EAV).

Mares need to be examined prior to breeding to be certain they are suitable candidates. This includes a rectal palpation for ovarian activity and an examination to determine the health of the internal reproductive organs (uterus, cervix, and vagina). A cytological sample of the mare's uterus (endometrium) should be obtained and perhaps a bacterial culture of the same. Further diagnostics also include an ultrasound exam of the mare's ovaries and uterus, and potentially a uterine biopsy (histological evaluation of the endometrium). Appropriate timing of the AI is equal in importance to stallion fertility. This makes frequent examinations of the mare by a veterinarian experienced in equine reproduction very important. The goal is to predict the mare's ovulation in advance of its actual occurrence by at least 48 hours, and not later than 96 hours. This gives the stallion owner time to arrange a semen collection, and hopefully meet transportation schedules to allow arrival of the semen shipment in a timely manner. Sounds simple enough, but it does not always happen!

The job does not end at breeding. Success is defined by conception, and in order to determine this most effectively, an ultrasound examination should be performed between 14 and 17 days after the ovulation to which the mare was inseminated. The detection of conception is relatively easy at this time by an experienced practitioner. This technique provides further benefits, however. One is the detection of the presence of twins. A situation which can be most easily resolved when first detected during this early stage of gestation. Most twin pregnancies in the mare result in failure. The second benefit is that if the mare did not conceive, an estrous cycle has not been lost. She may be ready to breed again in a few days starting the process all over. But do not be discouraged! Most young mares bred to an otherwise 'good' stallion should conceive within 3 attempts.

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