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The University of Tennessee
Agricultural Extension Service
TNH-1004

EQUIFACTS

Modern Equine Breeding Management

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Horse reproduction is an inefficient process with less than 50 percent of the mares that are bred each year foaling. A number of newer techniques are available to improve efficiency, but all require attention to detail. Many require competent technical assistance and access to prescription drugs. This fact sheet will address topics related to improving reproduction. These include forced ovulation, estrus control, artificial insemination, cooled shipped semen, frozen semen and embryo transfer.

Forced Ovulation

In order to have a high pregnancy rate, the mare's ovarian follicle needs to rupture and release the egg within 48 hours after breeding. Follicle rupture is difficult to predict in the mare and schedules may not allow breeding at the best times. For example, mares that should be bred on Sunday may not be bred until Monday. Forced ovulation allows certain mares to be bred on a schedule with rupture of the follicle being timed to occur within 48 hours or less of actual breeding.

Two products are used for forced ovulation. Both are prescription hormones and are available only from licensed veterinarians. **Human Chorionic Gonadotropin (HCG)** is given by injection. Rupture of the follicle and release of the egg should occur in 48 hours or less if the mare's ovary contains a follicle 35mm or greater in diameter.

Ovuplant is another hormone used to force ovulation. Ovuplant is placed under the skin after the follicle reaches 30mm in diameter. Ovulation will occur in less than 48 hours.

Estrus (Heat) Control

Often, it is an advantage to schedule when a mare is in heat, especially if she is being hauled to be bred. At other times such as shows, we do not want the mare to be in heat. Several methods are available to schedule heat in the mare.

Regumate is a synthetic hormone available by prescription. It can be fed daily to horses that are cycling normally. Regumate is fed to the mare for 15 consecutive days. The mare will not come into heat during this time. Most mares will come into heat 4-5 days after the end of Regumate feeding and will be in heat for a normal length of time. Regumate can also be given for 10 days with a prostaglandin injection given the last day of Regumate feeding. Again, heat should occur in 4-5 days.

Various prostaglandins are used by injection to control heat in the cycling mare. Two injections of prostaglandins given 14 days apart to a cycling mare should result in heat in most mares within 6 days. Prostaglandins are prescription drugs and must be obtained from a licensed veterinarian.

Artificial Insemination (AI)

Artificial insemination is useful to allow a stallion to breed more mares in a season. Also, in the case of stallions with infections of the reproductive system, collected semen can be treated with antibiotics. Finally, stallions can be collected using a phantom whenever needed and without exposure to an unruly mare. AI does require more time and equipment. Also, some training is required for the stallion and the breeder. Most — but not all — breed registries will accept AI breedings.

Cooled, Shipped Semen

Currently, one of the most popular techniques for assisted reproduction is cooled, shipped semen. Most breed registries will accept registries associated with cooled, shipped semen. Cooled, shipped semen allows mares to be bred to stallions located in other parts of the country without transporting either the mare or stallion. The mare to be bred must be palpated or scanned with ultrasound after she comes into heat to determine if she has a follicle large enough that it can be forced to ovulate by methods described previously. The mare is given appropriate hormones to force ovulation and the stallion owner is notified to collect the semen. The stallion's semen is collected and extended with a special fluid that helps keep the sperm alive. The semen is shipped in a special container to arrive at the mare's location, and the mare is bred. Conception rates can be quite good if the mare is bred within 24 hours of semen collection.

Frozen Semen in Horses

Frozen semen use is allowed by a few breed registries. The use of frozen semen requires significant attention to detail or conception rates will fall. Processed frozen semen is usually stored in 2 cc plastic straws placed in a liquid nitrogen storage tank at minus 325 F. The life span of frozen semen is months (years) in length and it can easily be shipped. Frozen semen has been used successfully for many years.

Embryo Transfer in Horses

Embryo transfer is used to allow a mare to have a foal but without being taken out of use for pregnancy. Embryo transfer begins with the mare being bred. Seven days later a tube is passed into the mare's uterus, and the developing embryo is flushed out and placed into the uterus of a mare, which has been especially prepared. Embryo transfer is relatively expensive; however, it is becoming more widely used throughout the horse industry.

Today, a horse owner is able to select various breeding methods and management programs not previously available. The horse owner or breeder can evaluate modern breeding management options and employ those that will fit their individual operation. Affordability of procedure and efficiency of reproduction will continue to improve as highly developed breeding practices become more readily available in the 21st century.

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