Need to Know: Breeding practices & reproductive technologies

KNOW ABOUT BREEDING PRACTICES

The breeding process includes both the physical act of breeding and the pregnancy and foal that results. There are different methods and technologies for breeding horses, each with advantages and disadvantages. Breeders select the best method for their individual circumstances.

Natural breeding

The best time to breed a mare is just prior to ovulation, or within the last two days of estrus. The breeder should keep records of brood mares to determine her estrous cycle. Then, if estrus has been confirmed with teasing and if the length of a typical estrus is known, the breeder can calculate the best time to bring in the stallion for mating. This procedure will prevent stressing the stallion or mare due to excess mating when there is little likelihood of conception.

Stallions should be trained to be handled during the natural breeding process. The stallion should approach the mare slightly to the left and from the rear, obtain an erection but not mount until the stallion handler allows him to. Once the stallion has mounted, he should be taught to remain mounted until he ejaculates and loses his erection.

Individual stallions may vary, but many mature stallions can be used twice a day, preferably early in the morning and late in the evening. The stallion should be rested whenever possible to reduce the possibility of overuse.

Pasture breeding

Pasture breeding consists of maintaining the stallion together with all breeding mares during the breeding season. The advantages of this method of management are that little or no labour is required and heat detections are not needed. Stallions and mares in a closed herd can readily adapt to a pasture breeding system.

Preparing the mare and stallion for breeding

If the mare is in estrus, she will empty her bladder when exposed to a stallion. The tail should be wrapped to keep it out of the way. The vulva should be washed with a mild soap and thoroughly rinsed, because the clitoris might harbor microorganisms that can cause venereal disease, which can cause an abortion. The stallion’s penis should be washed before breeding.

The breeding area should be large enough for the mare to get away from the stallion if she becomes nervous during the teasing process. The mare should be restrained before breeding for her safety, the safety of the stallion and the handlers’ safety. Once the mare is restrained, the stallion may be brought in and allowed to mount the mare.
Artificial insemination

In artificial insemination, semen is collected from the stallion and evaluated. If deemed acceptable, it can be used raw or extended to be used with more than one mare. The semen can be used immediately or may be stored in the refrigerator or frozen for later use or for shipment to another mare.

In the artificial insemination process, a pipette is inserted into the mare’s uterus. Then, semen is drawn up into a sterile syringe and expelled through the pipette, thus placing the semen into the mare’s uterus. If the mare ovulates during the time the sperm is active, a pregnancy may occur.

There are many advantages to artificial insemination, including increased numbers of offspring from superior stallions, reduced disease transmission and less risk of injury to stallions or mares that may occur during natural breeding. However, there are also increased costs for veterinary requirements.

Artificial lighting

The key factor that causes mares to cycle normally is increased hours of daylight. Artificial lighting is sometimes used to induce mares to cycle earlier in the year. Increased temperature has no influence but increases in quality and quantity of feed have been found to have some effect.

The type of artificial lighting can include a 200 watt incandescent bulb in each box stall or fluorescent lights that produce 140 candle power at eye level. The lighting procedure can be handled three ways, starting between November 1 and November 15.

1. Start by exposing mares to 11 hours of light per day and increase by 15 minutes per week until 16 hours of light exposure is obtained.

2. A more practical method is to use a fixed 16 hours of light exposure and 8 hours of darkness. This saves adjusting time clocks and mares respond similar to the adjusted times.

3. The third method of light stimulation is to expose mares to two hours of light eight hours after dusk. By using lights it is possible to have most mares cycling normally in February.

The use of supplemental lighting is a good management tool. However, for a lighting schedule to work, the mare requires a minimum dark time daily and must have been through a period of time in which daily light exposure has been getting shorter.
**Other reproductive technologies**

There are several other options for breeding mares. These options can allow a mare to produce multiple foals each breeding season, instead of the usual one. Therefore, mares may have an even greater value for breeding.

**Embryo transfer** refers to the process of flushing out a mare’s fertilized embryo about seven days after insemination. The fertilized embryo is then transferred to a surrogate mare. The surrogate mare must be in the same phase of the estrous cycle as the donor mare.

**Gamete intrafallopian transfer (GIFT)** involves depositing the mare’s ovum and the stallion’s sperm in the oviduct of a surrogate mare. This technique can be used when a stallion has a lower sperm count. GIFT requires fewer sperm to successfully fertilize the egg.

**Egg transfer** refers to the process of removing an immature ovum, or egg cell from the mare’s follicle and transferred into the fallopian tubes of the recipient mare, who is then bred. This technique is used with mares that may have physical problems that prevent successful breeding.

**KNOW ABOUT PREGNANCY & BIRTH**

The average **gestation period**, or the time from conception to birth, is approximately 340 days or 11 months. However, gestation periods can range from 320 to 360 days.

In a natural environment, the stallion will breed the mare in late spring or early summer, and foals will be born in spring and early summer. This ensures that the foals are born when pasture is abundant, and the weather has become less harsh. If a mare gives birth earlier — during the late winter months, for example, the foal will be born with a thicker coat, but still need indoor protection from severe weather conditions.

**The gestation and birth cycle**

1. **Confirming pregnancy**

Other than the absence of an estrous cycle, mares may not show any visible signs of pregnancy for the first three months. An ultrasound can be used to confirm a pregnancy about two weeks after breeding takes place. At about two to three months after conception, blood and urine testing can be done. A veterinarian can also be consulted about five weeks into a possible pregnancy to manually feel changes in the uterus and confirm the pregnancy.
The mare should be checked by a veterinarian early in the pregnancy to ensure both she and her foal are healthy. The mare should also be checked for twin foals. Although they are rare, twin foals can cause the mare to abort. If twin foals are carried to term, both may be at risk. Therefore, it is often recommended to "pinch off" one embryo early in the pregnancy.

A mare can lose a pregnancy, so ultrasound, blood or urine tests are recommended again at about three months.

2 Development of the foal

After about three months the foal develops rapidly and starts to look like a small horse. After about six months, the pregnancy will be visible. The mare’s belly will continue to grow as she continues into her pregnancy.

3 Preparation for birth

About two weeks before the due date, the mare’s udder expands and starts to produce sticky yellowish fluid, called waxing.

Within the last one to two weeks of pregnancy, the mare will start to show signs that she is preparing for foaling. The yellowish fluid in the udder will turn into colostrum, or the first milk. The muscles around the tail head may relax and the udder may drip. The mare’s belly may also change shape or look smaller when the foal starts to position for birth. At this time, the mare should be checked frequently and regularly. Just before giving birth, the mare may show signs of restlessness and may paw the ground or check her sides. At this point, she should be moved into a clean, large stall that is bedded with straw.

4 Giving birth

When the mare is close to giving birth, she may repeatedly lie down and get back up. She may give birth either lying down or standing up. When the birth process starts, the amniotic sac may be visible. The foal’s front hooves and nose appear first and the birth process is usually complete within 10 to 20 minutes.

Sometimes, a foal may be born breech. This means that the hind quarters appear first or one or both of the fore limbs are bent back. There can be a risk of injury to either the mare or foal during the birth process. It is important that a veterinarian checks the mare and foal carefully soon after the foal is born.
What does the Code of Practice for the Care and Handling of Equines say about care of the pregnant mare?

Attentive management will help ensure the birth of a healthy foal with no injury incurred by the mare. The average length of gestation for mares is 341 days (+/- 15 days).

Appropriate vaccinations and biosecurity planning helps to protect the mare and fetus during gestation. They also help to protect the foal after foaling through the immunity transferred from the mare to the foal via colostrum. Vaccinations should be boosted three to four weeks before the projected foaling date to optimize the antibody concentrations in colostrum.

The following requirements are identified in the Code of Practice.

- Mares requiring medical care during gestation must receive such care.
- Pregnant mares must have some form of exercise or turnout, unless under stall rest for medical reasons or severe environmental conditions make this temporarily impossible.

These recommended practices are also provided in the Code of Practice.

- a. Consult a veterinarian to develop a health management plan tailored to the mare (e.g., pregnancy examination, pre-foaling instructions, contact information for emergency veterinary care during gestation or foaling).
- b. Ensure the mare is appropriately vaccinated and dewormed.
- c. Consult a veterinarian or experienced breeder for appropriate levels of exercise during late gestation.

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The process for the development of Codes can be accessed through the National Farm Animal Care Council at [www.nfacc.ca/codes-of-practice](http://www.nfacc.ca/codes-of-practice).