

Preparing your Mare for Breeding

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Breeding your own foal is a wonderful experience but the are many aspects to consider before you get started.

The most important consideration is whether your mare is suitable to breed from. How old is she and has she had foals before? Older maiden mares have much lower fertility rates than younger mares or those that have foaled before. If she has had previous foals, then a detailed history of the insemination and pregnancy can be helpful. Are there any undesirable genetic traits that could be passed on to the foal? Certain types of orthopaedic disease can be passed on so it's important to talk to your vet before making your decision.

Once you're happy you have a suitable mare the next thing to choose is the stallion, not only his type and credentials but it's also important to consider how he is bred. Is it by natural cover in which case it is likely your mare will have to travel to him, or is it by artificial insemination, in which case we'll need to know whether it is frozen or chilled semen and how many days it will take to order. Clear communication with the stallion manager is essential so that we can get the timings right.

The Equine reproductive cycle

Mares are seasonally polyoestrous, which means they have multiple cycles but only during the breeding season. Mares cycle when the length of daylight is long, so in this hemisphere that is generally between March and September. During the winter when the daylight is short they are in anoestrus - where their ovaries are inactive. During the transitional period as the daylight increases, their ovaries become active and start producing follicles. The transitional period finishes when they have a surge of luteinizing hormone causing ovulation. After that they establish a regular cycle of ovulation generally every 21 days. During these cycles the ovaries will produce waves of follicles and usually one follicle will become dominant, getting close to ovulation (when the egg is released from the follicle into oviduct, ready for fertilisation) when it reaches a certain size. The time around ovulation is called oestrus, during this time they are receptive to breeding and usually display signs of being "in season". This generally lasts 3-6 days.

Signs of oestrus

- Frequent urination
- Raised tail
- Squatting and winking
- Standing still



Once mares have ovulated the follicle they have ovulated from forms a corpus luteum and produces hormones help to support a pregnancy. If a pregnancy is not established this corpus luteum will disappear and the next cycle will continue with a new dominant follicle and subsequent ovulation.

In most mares you'll be able to track their cycles by monitoring their oestrus behaviour but we can also accurately pinpoint where they are in their cycle via trans rectal ultrasonography. We can then manipulate the cycle using hormones which is hugely beneficial when getting the timing of insemination right.

Artificial Insemination: frozen, chilled, fresh

Whilst natural cover is still required by certain governing bodies such as the jockey club, artificial insemination plays a big role in equine breeding, bringing with it a host of benefits to the mares, stallions and personnel involved:

- Reduced risk of disease transmission
- Reduced risk of injury to mare, stallion and personnel involved in natural cover
- Greater monitoring of semen quality
- Increased number of mares bred as each ejaculate can be split into multiple doses
- Ability to breed mares with stallions all over the world without the need to travel the mare
- Decreased physical demand on the stallion
- Allowing stallions to continue competing without the need for a break for the breeding season

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Artificial insemination is the process of collecting semen from the stallion and manually placing it in the uterus of the mare. Semen can be either fresh, chilled or frozen.



Fresh semen comes straight from the stallion and must be implanted into the mare immediately. As a result this is usually done with the mare and the stallion in the same location. Fresh semen has the highest conception rates in normal mares.

Chilled semen is the next best conception wise. It is mixed with an extender and antibiotics to increase it's lifespan and chilled. In this state it can last for 2-3 days. Mares are ideally inseminated with chilled semen 12-24 hrs prior to ovulating.

Frozen semen has slightly lower fertility rates as some of the sperm can lose viability in the freezing-thawing process, however advances in preservatives and veterinary input mean that they are only marginally less. Frozen semen is usually stored and transported in liquid nitrogen and thawed only immediately prior to insemination. Mares must be inseminated within 6-8 hrs of ovulation meaning that close monitoring of their follicles is required to get the best conception rates. At the Liphook Equine Hospital, we use a technique called deep horn insemination which involves guiding the catheter through the cervix and deep into the horn of the uterus that has the dominant follicle. This deposits the semen close to the end of the "fallopian tube" decreasing the distance that the sperm have to travel.

Embryo Transfer

Embryo transfer is the collection of an embryo, usually 7 days old, from the uterus of a donor mare and it's transfer into the uterus of a recipient mare whose reproductive cycle has been synchronised to that of the donor. The recipient mare then carries the pregnancy to term and nurtures the foal until weaning. This process allows donor mares to be bred without interrupting their competition season or going through the risks of pregnancy. It also allows multiple foals to be produced from one mare in a single breeding season. It can also be useful in mares with some uterine based fertility issues to allow them to reproduce.

Pregnancy Diagnosis

The first scan to check for pregnancy is 14-16 days post ovulation. The timing of this scan is important not only to check for a pregnancy but also to detect twins. Unfortunately, the equine uterus is not well designed to carry twins, one foetus needs the entire endometrial surface (uterus lining) to fulfil its nutritional requirements. As a result, twins usually result in the abortion of one or both foetuses in mid to late gestation and if a live foetus is delivered they are rarely viable. If twins are discovered at this early stage we would normally squeeze one embryo so that only one continues.

The next landmark is the heartbeat scan which is normally done around days 28-30. Placentaton begins around day 32-35, after which the pregnancy should be well established, so we recommend a third scan around day 45. This confirms the pregnancy is still viable after the highest risk period has passed.



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