

Pregnancy optimisation using frozen semen

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There are many challenges facing the equine practitioner when performing artificial insemination (AI) using frozen-thawed semen. On average, per-cycle pregnancy rates are lower and the number of cycles per pregnancy are increased when compared to natural cover or fresh-semen artificial insemination.¹ Also, the practice of allowing more than one offspring to be registered from a dose of semen sold, rather than selling a live foal or pregnancy guarantee, puts further pressure on vets to achieve pregnancies using sub-optimal doses of semen. These considerations along with a greater intensity of veterinary management due to the poor longevity of frozen semen can make using frozen semen seem unattractive to equine vets. However, with good mare management, attention to detail and client education, equine practitioners can achieve reasonable results from a frozen semen breeding programme.²

The inherent quality of the semen and its ability to withstand the freeze-thaw process as well as the breeding status of the mare and how she is managed during the oestrus period are the factors that have the greatest effect on pregnancy rate.³

STALLION FERTILITY AND MARE SELECTION

Fertility of stallions in frozen-semen programmes is more closely related to the susceptibility of individual stallions to cryo-injury and the insemination dose used rather than factors such as freezing method, extender type and packaging systems. Only 25% of stallions are thought to retain pregnancy rates similar to that of natural cover or fresh semen following the freeze-thaw process. The other 75% will be adversely affected by cryopreservation, some more so than others.¹ Careful recording of stallion used, number of straws/dose and batch number of ejaculate will help veterinarians identify which stallions are doing well with frozen semen and what dose produces the best results. Mare selection has a major impact on pregnancy rates when frozen semen is used. Older maiden mares, mares with recent uterine infections and/or fluid accumulation and mares with no/poor signs of oestrus will generally achieve lower pregnancy rates than younger mares and those displaying normal cyclic activity.⁴ Pre- and post-breeding management is also critical to success when using frozen semen. As mares do not have to acquiesce to being mated by AI, it is easy to focus on the ovaries without checking for uterine signs of proper cyclicity. Careful attention to oedema patterns and cervical relaxation are important to ensure that mares are not bred during a dioestrus ovulation or an abnormal cycle. Also, induction agents such as hCG* and Deslorelin** are more effective at driving ovulation if used when an oedema pattern is present along with a pre-ovulatory follicle.⁵ Correct timing of insemination is

important and being able to reliably predict ovulation is of huge benefit when fitting in mares for frozen semen with other equine work.⁶

Decreasing oestrogen levels associated with the common practice of post-ovulation insemination may interfere with uterine contractility and thereby increase the likelihood of persistent mating induced endometritis (PMIE). Therefore, post-breeding ultrasound examination is recommended to check for signs of endometritis such as fluid accumulation and increasing uterine oedema. Timely interventions with ecbolics, uterine lavage and/or antibiotics may improve pregnancy rates in such mares. Prophylactic corticosteroids at the time of insemination have been used by this author in mares where PMIE is considered likely.

In conclusion, breeding with frozen semen is most likely to disappoint if owner and veterinarian expectations are unrealistic. Many stallions do not freeze well, sub-optimal doses are often used and mares who have poor-breeding prospects are often expected to perform as well as young, reproductively healthy tuberculosis mares in natural mating programs. However, there are many benefits to frozen semen, not least the potential to use stallions that would otherwise be unavailable in Ireland and so, with attention to detail, good management practices and persistence, pregnancy rates can be optimised.

*Chorulon@1,500 IU, MSD Animal Health

**Ovuplant®, Dechra

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