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Attention breeders and veterinarians managing Friesian mares:

With the rise in popularity of Friesian horses here in the US, it becomes increasingly important to bring to the attention of breeders and veterinarians certain reproductive characteristics peculiar to the breed. I have asked Dr. Tom Stout at The University of Utrecht to share his insights gained from years of experience managing Friesian mares in their native environment. I hope you find this information useful.

Paul Loomis
Select Breeders Service, Inc.

Comments from Dr Tom Stout

“Our experience is that Friesians do everything slower, tend to have a longer oestrus and do develop much larger follicles. As with other breeds, it is difficult to set hard-and-fast rules, but we don't get many Friesians that ovulate follicles much less than 45mm (and rarely under 40mm). Their follicles can develop to 60 mm before ovulation - without anything abnormal going on.

The other thing that we commonly see is that the development and reduction of oedema is much slower and more pronounced - i.e. I rarely inseminate Friesian mares with a lot of uterine oedema but rather wait until the oedema is going (they normally ovulate 1-2 days after the oedema starts decreasing). If the problem is shipment of semen with a distance of more than a day, then I would still wait for a 45mm follicle and very good uterine oedema and give hCG. If you are used to warmbloods/thoroughbreds, it is difficult to make yourself wait long enough with the Friesians before inseminating.

I advise most of our students that if they don't have any experience with Friesians they should delay insemination until they really don't dare wait any longer - and then wait one more day!”

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THE TIMING OF OVULATION IN MARES: PREDICTION AND RELEVANCE TO MANAGEMENT OF A BREEDING PROGRAMME

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Excerpts

Palpable and ultrasonographic signs of impending ovulation

Transrectal palpation and ultrasonography are of course the commonest aids to determining when a mare should be inseminated. Changes in uterine and cervical tone, uterine oedema and in follicle size, hardness and ultrasonic appearance can be used to help identify approaching ovulation. Certainly, uterine oedema is a good indicator that a mare is in heat, and usually reaches a peak approximately 2-3 days, and begins to wane around 24-48 h, before ovulation. Impending ovulation is also accompanied by changes in the follicle itself, which often include softening and increasing irregularity in shape (e.g. "pointing" of the follicle towards the ovulation fossa). Shortly before ovulation, an increase in follicle wall thickness and follicular fluid echogenicity (speckles of blood or luteinised cells) may also become apparent, although the latter can also herald ovulation failure and the formation of a 'haemorrhagic follicle'. Unfortunately, none of these indicators of approaching ovulation is always present and consistent, and the most reliable parameter remains the average diameter of the preovulatory follicle. Of course, follicle diameter also differs dramatically between mares, but it is reasonably consistent and reliable between cycles within a mare, and looking back to follicle size just before ovulation in previous cycles can be very helpful in deciding when a mare should be inseminated, or when ovulation should be induced. **In most breeds, a follicle diameter of 35mm is taken to suggest that a mare is approaching peak oestrus or ready for pharmacological induction of ovulation, this may however be insufficient in mares that repeatedly grow large follicles, as is the case in many Friesian horses.**

Induction of ovulation

In the case of limited, expensive or transported semen, one of the best ways to ensure that a mare ovulates within a given interval after insemination is to pharmacologically induce ovulation. The most common agent used for this purpose is human Chorionic Gonadotrophin (hCG), which has an LH-like action in mares and, when given at the appropriate time, induces ovulation within 48h in >80% of mares, with most ovulations occurring between 36 and 42 h after injection. More recently, implants containing the GnRH analogue deslorelin in a slow-release format (Ovuplant®) have provided an alternative, if more expensive, means of inducing ovulation. Both drugs need to be given at the appropriate stage of oestrus if they are to be effective, and this is usually taken as being when the dominant follicle(s) exceeds 35mm in diameter and the mare shows other clear signs of being in heat, in particular a high level of uterine oedema. **In Friesian mares, the threshold follicle size appears to be greater, but the endometrial oedema score helps to identify when the drug should be given.** Giving either ovulation induction agent too early usually results in a simple failure to respond, but can occasionally lead to luteinisation of a follicle without ovulation. Other problems reported include the formation of antibodies to hCG, a foreign protein, although this is usually only a problem after more than 3-4

administrations within a season and the result is mostly limited to a failure to respond. Ovuplant appears to give a better concentration of ovulations within the 36-42 hour interval, without the problem of antibody development. However, there are reports of mares subsequently becoming acyclic due to an overdose of GnRH, and it has become common practice to remove the implants after ovulation. The other main group of mares that fail to ovulate in the 36-42 h window after ovulation induction are those that ovulate “too early” because they were about to do so anyway.