Factors affecting breeding in the mare

Studies show that over a 7 year investment period, live foals must be produced in all but one year to yield a positive financial return, yet 63% of mares will not produce a foal every year. Stallion factors have been found to account for just between 2.0 and 14.7% of the variation in conception. Therefore, improving our understanding of factors affecting the mare for breeding would be important to all breeders, whether they own a single broodmare or run a large stud as a business.

There are a number of factors that have been linked to the success of breeding programs such as:

• Age of mare: In mares, a high age is probably the most important factor for decreased fertility as measured by conception, maintaining pregnancy and producing a live foal and age of mare seems to have more effect on breeding outcomes than the age of the stallion.

• Breed of mare - for example Arab stallions were found to be more fertile than Haflinger stallions and gestation length of mares with Freiberger foals lasted 336.5 days while mares with mule foals 343.1 days. Also, stallion factors have been found to account for 5.9, 2.0 and 14.7% of the variation in the conception rates for Dutch Warmblood, Friesian horses and the Shetland ponies, respectively. However, it is important to note that these results may be related more to management factors than to the inherent differences in fertility of the breeds per se.

• Reproductive history: mares that have foaled previously are usually highly fertile whereas barren mares are less fertile. Young maiden mares usually conceive easily but old maiden mares are the most problematic for conception.

• Time of mating: Mating early in season results in higher pregnancy rates than late season. However, in late season the mare population is different, since only repeat breeders are left for mating. Most studs (71%) will aim to breed dry mares early in the breeding season. Mares served at a second cycle were more likely to conceive than mares served at the third or subsequent cycle.

• Frequency of insemination: Mares inseminated three or more times per cycle were 6% more likely to conceive than those served only once per cycle.

• Environment temperature and day length: The natural breeding season for horses is spring and summer when the weather warms up and the length of daylight increases. In some situations it may be important to have the mare in foal early (e.g. thoroughbreds breed early September) but if the weather is not conducive to this i.e. warm weather has not yet arrived, then the mare’s cycling can be artificially induced by using a combination of lights, hormone therapy and rising plane of nutrition.

• Changes in bodyweight: The mare should be maintained at a healthy bodyweight throughout the entire breeding process e.g. condition score of about 3 – 3.5 (using the Australian scale). Gains in bodyweight during gestation have not affected placental and foetal growth, however, weight loss in mid-gestation (e.g. from acutely reduced food intake) has detrimental effects on placental development which results in reduced foetal growth.

• Disease/infections: Bacterial, viral and protozoal infections may cause severe reproductive losses. The presence of venereal transmissible diseases such as equine coital exanthema, equine viral arteritis (also referred to as equine arteritis virus), contagious equine metritis, equine herpes virus type 3, can all result in endometritis in mares and are transmissible from infected stallions that often will not show any obvious signs of being infected. Lateral transmission of some of these has been shown to occur from shedding stallions to other horses just by being in contact with infected bedding.

• Using fresh, chilled or frozen semen: The conception rate of mares served with fresh semen ranges from 67 to 74% and for mares inseminated with frozen/thawed semen this percentage is 59%.

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Mares have a preference for certain stallions. Mares have demonstrated a definite preference for individual stallions throughout the breeding season as determined by oestrus status of the mare. During oestrus, mares’ preferences for stallions were positively correlated with the rate at which a given stallion vocalized. During dioestrus, mares spent significantly less-time in the proximity of stallions and did not exhibit any preference for individual stallions.

So, if you are about to breed a mare this season, consider some of the things that will help you get a successful result - a healthy live foal.

There are however many contributing factors to this end result, and if you do not get the gorgeous foal you wanted, perhaps you need to investigate why.

References:

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