



BREEDING RECORDS AND REPRODUCTIVE EFFICIENCY

Keeping good breeding records is one of the cornerstone principles of sound reproductive management. As we gear up for another breeding season, responsible managers should be evaluating last season and making decisions to improve results. In this issue I will discuss the importance of keeping detailed accurate breeding records and the impact of reproductive efficiency on breeding programs. Some of the reasons for keeping good records are to:

- pinpoint problem areas
- determine 'reproductive efficiency' of stallions, mares and management practices
- identify trends and tendencies related to age, season, etc.
- avoid management changes based on subjective impressions or unfounded beliefs
- implement management changes based on objectively gathered data

Most people refer to a stallion's fertility as the percentage of mares in foal at the end of the breeding season. This can be misleading. For example two stallions with the same overall pregnancy rate of 85% are not necessarily of equal fertility. If one stallion has a 70% per cycle pregnancy rate, fewer than 2 cycles per mare are required to attain his overall pregnancy rate of 85%. On the other hand, if the second stallion has a per cycle pregnancy rate of 35%, it requires more than 4 cycles per mare on average to get 85% percent of his mares in foal. Obviously, under similar management conditions, the first stallion is more 'fertile' than the second. A great deal more effort (labor, time, veterinary costs, mare board, etc) is required for the second stallion. The difference in per cycle pregnancy rates between these two stallions quickly separates them in terms of 'reproductive efficiency'.

This concept of reproductive efficiency applies not only to stallions but also to mares, breeding method, management techniques and technician. Mares with a poor reproductive history (low-grade uterine biopsy, for example) have a lower inherent fertility which, while they may ultimately conceive, will require more effort. In most cases, semen that has been preserved by cooling or freezing will have a lower per cycle pregnancy rate than fresh semen and therefore be less efficient. Heavily used stallions collected too frequently may produce semen too dilute for standard extension for transported semen. Without proper semen processing techniques for such ejaculates, semen is insufficiently extended or too few sperm are included in a breeding dose to result in optimum pregnancy rates. Poor semen handling techniques resulting in damage to some of the sperm in the ejaculate will lower per cycle

pregnancy rates, increase the total number of sperm required per breeding dose and severely reduce reproductive efficiency.

Accurate, detailed breeding records can help you to spot trends, pinpoint specific problems, determine reproductive efficiency and therefore make better informed decisions regarding management. You should design your record keeping system to provide the data needed to calculate the following by month and overall for each stallion in your program.

Seminal quality data:

- average number of sperm per ejaculate
- average progressive motility
- average seminal volume
- average sperm concentration
- periodic spermatozoal morphology evaluation (recommend once per month)
- periodic bacteriology of raw and extended semen (recommend once per month)

Additionally for cooled semen programs:

- average progressive motility at 24 and 48 hours post collection
- average number of progressively motile sperm per breeding dose at 24 and 48 hours
- Fertility data (fresh vs. cooled vs. frozen semen):
- pregnancy rate per cycle
- number of cycles per pregnancy
- pregnancy rate at 14 days vs. 60 days vs. live foal rate (to determine incidence of embryonic death)
- average number of shipments per pregnancy for cooled semen
- average number of doses per pregnancy for frozen semen
- pregnancy rate per cycle for maiden vs. foaling vs. barren mares

Armed with this information, a manager and veterinarian can determine where problems exist, seek advice on improving results and make more informed decisions. Furthermore, regular examination of such information during the course of the season may identify a problem that can be corrected before it negatively effects reproductive efficiency and costs time, money, client confidence and your stallion's reputation.

Since the overall performance of a breeding program is determined by the interrelated reproductive efficiency of mares and stallions and the effect on performance of breeding method and management, all of these factors should be carefully considered before breeding decisions are made. Even stallions with poor fertility can obtain excellent results with the application of proper management. When you know that one part of the fertility equation is not optimum, make sure that the others are. Simply put; don't try to use marginal quality frozen semen from a sub fertile stallion to inseminate a 20 year old barren mare with a category III uterus in an attempt to recover, transport and then transfer an embryo into a barren recipient mare.