



BREEDING WITH COOLED SEMEN

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Artificial insemination of mares with cooled-transported semen has become a routine procedure in the equine breeding industry. The ability to cool semen makes it feasible to ship semen from one location to another, giving mare and stallion owners more flexibility in their breeding programs. In this month's column we will review guidelines for optimizing the use of cooled semen.

A test cool is usually recommended prior to the breeding season to determine which semen extender(s) work best to maintain motility of sperm from an individual stallion. Spermatozoa from most stallions will remain viable for at least 24 to 48 hours when cooled to 5°C. Consequently, it is common practice to ship cooled equine semen by overnight courier to the farm or clinic where the mare is located. Semen from some stallions does not tolerate cooling well and counter-to-counter or same-day delivery service may be required to obtain pregnancies.

In most instances, stallion owners or managers collect semen on specific scheduled days and will only ship semen once for a given mare per estrous cycle. Consequently, mare management must be sufficient to accurately predict the optimal day to call for semen and in most cases a

hormone treatment is administered to induce ovulation at the optimal time.

Mares in a shipped semen program must be monitored closely by palpation and ultrasonography. The first examination is generally performed on the second or third day of heat to determine the size of the largest follicle. Subsequent examinations are performed at 1 to 2 day intervals. Semen is generally ordered when a follicle 35 to 40 mm in diameter is first detected. If collection and transport procedures go according to plan, the cooled semen will arrive the following day and the mare is inseminated.

In order to help ensure that ovulation occurs within 24 to 48 hours after insemination, mares are commonly administered either human chorionic gonadotropin (hCG) or the gonadotropin releasing hormone agonist deslorelin. The ovulation-inducing agent can be given at the time the semen is ordered or at the time semen arrives. Administration of either agent will cause ovulation in approximately 36 to 42 hours. Consequently, if the hormone is given when semen is *ordered*, the interval from insemination to ovulation will be less than if the hormone is administered when semen *arrives*.

It must be kept in mind that once hCG or deslorelin has been given, the mare is on a 'timed schedule' for ovulation. If the semen does not arrive when initially anticipated, the mare may ovulate before the insemination can be performed. In order to avoid that potential complication, another option is to administer hCG or deslorelin either after the stallion owner has confirmed that the semen has been collected or once the shipment has arrived on the farm.

Stallion owners may ship either one or two doses of semen, each initially containing approximately 1 billion progressively motile spermatozoa (pms) at a concentration of 25 to 50 million pms/ml. Once the shipment arrives, a dose is removed from the shipping container, gently mixed and inseminated directly into the mare without pre-warming. It should be standard procedure to warm a small sample of semen to approximately 37°C and evaluate motility of the spermatozoa after 15 minutes using a microscope. It is expected that some loss of motility will occur during the shipment process. Most stallions that are considered to be 'good coolers' will still have at least 40-50 % of the initial sperm motility after 24 hours of cooling.

If two doses of semen are shipped, several options are available. The second dose can be inseminated at the same time as the initial dose, later that day or early on the following day. If the stallion's semen does not cool well, it is of little value to hold the semen until the next day. In addition, in older mares the second dose of semen may remain unused if the uterus becomes inflamed and filled with fluid following the initial insemination.

Careful mare management, accurate and timely communication and attention to detail

are all key factors in the successful use of cooled-transported semen.



Shipping containers



Fed-Ex truck