



ARTIFICIAL INSEMINATION AND YOUR MARE

Puget Sound Equine Reproduction Center

So, you have decided to breed your mare to the perfect stallion who lives several states away. You would like to keep her close to home and use artificial insemination to produce your perfect foal. What do you need to do to prepare for this process? The first step is to assure, to the best of your ability, that both the stallion and your mare are potentially fertile animals. Working closely with your veterinarian to provide optimal management of the process at your end is your best bet for success.

THE STALLION

Artificial insemination of your mare may be performed with a stallion's shipped cooled or frozen semen. Pregnancy rates for any stallion will vary depending upon many factors, including the breeding method chosen. Traditionally, the best first cycle pregnancy rates are achieved using live cover. With the advent of modern semen processing methodologies and more intensive mare monitoring and management, the pregnancy rates with shipped cooled semen can approach that of live cover with many stallions. Frozen semen has the greatest variability, with some stallions showing exceptionally good rates, approaching that seen with their shipped cooled semen. Some otherwise fertile stallions have spermatozoa that are so intolerant of the freeze-thaw cycle that their frozen semen is not suitable for use.

It is helpful to inquire about your chosen stallion's success with both shipped cooled or frozen semen to decide which may be the best option for you and your mare. You may ask about his first cycle pregnancy rates for the last season, and the average number of cycles per pregnancy, for either method chosen. For example, a stallion with a first cycle pregnancy rate of 60% with shipped cooled semen *may* produce a pregnancy in your mare in a fewer number of attempts (defined as insemination during one cycle) than one with a 30-40% rate. Bear in mind that many factors come into play when determining this number. He may get most mares pregnant in 1-2 cycles, but it still may take your mare 3 attempts to achieve a pregnancy. In addition to his inherent fertility, the mare population that he ships to (young/maiden versus older or problem) can greatly impact his percentages.

You also need to closely examine all the details of your stallion contract. Beyond the stud fee, how many collections (shipped cooled) or doses (frozen semen) are provided? What will be the additional costs to you for multiple cycle attempts? What are the collection days/times, methods of shipment available (FedEx, counter-to-counter) and notification rules? What is his season? Do they give priority to in-house mares? These questions all address the availability of semen when your mare needs it. All of these factors will help decide how your mare should be managed and when you should start getting her ready.

THE MARE

Once you have all the particulars on your chosen stallion and have determined that his past fertility has been good, you can focus on your mare as a candidate for artificial insemination. The best way to determine if she is a good candidate is to have a breeding soundness examination performed by your veterinarian. A breeding soundness examination involves a history of past reproductive performance, a general physical examination, and an internal examination of her reproductive tract, including an ultrasound exam. This allows gathering of a database of information about your mare that can help determine if she is likely to have a reasonable expectation of success with artificial insemination. This examination also allows identification of risk factors that may

warrant further diagnostics (such as uterine culture/cytology and/or endometrial biopsy) to help assess her suitability. Fertility can be affected by anatomy, age, previous reproductive history/problems and overall health issues. Your mare should be current on vaccinations, deworming, dental care, hoof care and be in good body condition prior to embarking upon breeding attempts.

Once your mare is “ready to go,” you will need to decide when you would like to have your foal born to know when to start the monitoring process. Mares have a gestation length of approximately 11 months, so if you would like to have a March foal, then your mare needs to conceive in April. Keep in mind that because of a roughly 21 day inter-ovulatory interval, if she takes several cycles to conceive, this foaling date will creep correspondingly toward summer. So, if an early foal is important to your breeding program, start planning early!

For those of you who wish to produce early foals, it is important to recognize that mares are seasonally polyestrous. This means that most mares at this latitude have predictable fertile cycles in the summer months (during longer daylight hours) but experience “transitional heat cycles” in the fall and spring months and have a period of winter anestrus (no heat cycles/ovulations). Transitional heat cycles that occur in the late winter/early spring are characterized by hormonal, follicular and behavioral fluctuations that may look like the real thing but do not culminate in ovulation and are therefore infertile. To achieve a fertile heat cycle earlier in the year, we can “trick” a mare into establishing a regular cyclic pattern by placing her under lights. If your goal is to start breeding your mare in mid February, she should be started under lights by December 15th. The best way is have a timer set to deliver added light during the evening hours, still allowing overnight darkness to occur. A 100 watt bulb for a 12x12 stall, producing a total of 14-16 hours of total daylight time (lights on from dusk to 10 or 11 pm), should be started 45-60 days prior to her first anticipated breeding attempt. If you plan on starting in April, when a mare is likely ending the transitional phase on her own, lights are probably unnecessary.

Efficient, cost-effective use of artificial insemination is all about timing. With live cover, teasing and every other day breeding can achieve very good success rates. The longevity of the fresh semen is the main factor at work here. Best pregnancy rates are produced when viable spermatozoa are in the mare’s reproductive tract at the time of ovulation. Shipped cooled semen has an expected viability of approximately 48 hours and frozen-thawed is in the range of 12 hours. In order to ensure that your mare is inseminated at the appropriate time, you will need to work closely with your veterinarian to monitor her. This typically requires multiple exams, including internal ultrasound, to monitor the changes in her reproductive tract that help predict the timing of ovulation and determine when to order semen. Often your veterinarian will use hormonal manipulation to help encourage your mare to ovulate at the “right time” and help avoid needing more than one semen shipment per cycle. This cycle management may be performed as farm calls or at a reproduction facility where more intensive monitoring (such as for frozen semen) may occur.

OVULATION AND BEYOND

Aftercare of your mare post insemination should include an ultrasound exam on the next day to confirm ovulation and check for intrauterine fluid. Detection of ovulation establishes “day zero” (the starting point) if a pregnancy results. If the mare has not ovulated, the decision to order more semen for this cycle can be made if appropriate. The presence of intrauterine fluid the next day may indicate a problem with persistent mating-induced endometritis. Intrauterine deposition of semen, whether from live cover or artificial insemination, causes a normal, transient inflammatory response within the uterus. Persistence of this inflammation, detected as excessive fluid on ultrasound exam, is detrimental to embryonic survival and can be a significant cause of an apparent failure to conceive.

Fertilization of the equine ova (egg) occurs in the oviduct (fallopian tube), with the embryo descending into the uterus 5-6 days post ovulation/fertilization. This creates a window of time during which the mare’s uterus may

be treated for problems, such as persistent mating-induced endometritis, which can help maximize your chances of pregnancy in mares determined to be at risk for early embryonic loss.

The earliest that your mare can be ultrasounded to detect pregnancy is 12 days after ovulation. Most veterinarians like to start looking for pregnancy at 14-15 days when the embryonic vesicle is larger and easier to distinguish. If your mare has a history of twinning or multiple ovulations, multiple early pregnancy exams may be recommended to help identify the presence of twins. Twin pregnancies are not recommended to be allowed to go to term because the majority result in the loss of both fetuses as a late-term abortion and may be a threat to the mare's future fertility or life. Early detection of twins allows the option of twin reduction by your veterinarian. This is most successful between days 16-19 of pregnancy. A subsequent ultrasound examination to detect the presence of an embryo with a heartbeat is typically performed between day 25 and day 30. Depending upon stallion contract requirements or risk factors present in your mare, additional pregnancy monitoring may be recommended by your veterinarian.

The best strategy for a successful experience with artificial insemination is to consult with your veterinarian and establish a plan based on your goals and his/her experience and recommendations. Remember, optimal management of fertile animals produces the best pregnancy rates no matter what method of insemination you choose. Good planning can make artificial insemination an economically feasible way of producing the foal of your dreams.