

Making a Success of AI

Successful AI programs are dependent on "essentials" that have to work hand in hand - good cow herd nutrition, workable facilities, efficient cattle handling, semen quality, knowing how to handle semen, knowledge of a cow's estrus cycle, knowing how and being able to detect heat, proper timing of insemination, a qualified technician, good record keeping skills and a positive attitude. These "essentials" help unlock the door to the favorable results that can be seen by those who are willing to put the time, effort and resources into managing an artificial mating program.

A high degree of technical awareness is necessary on the part of the producer when it comes to purchasing semen, managing the semen tank, thawing semen, and preparing the inseminating device. Extra time and effort, together with common sense, can help optimize conception rates.

Even if semen is handled correctly, results can be disastrous if poor quality semen is used. The National Association of Animal Breeders (NAAB) cautions producers to "know their semen supplier" to ensure that they are using a quality semen product that is properly identified.

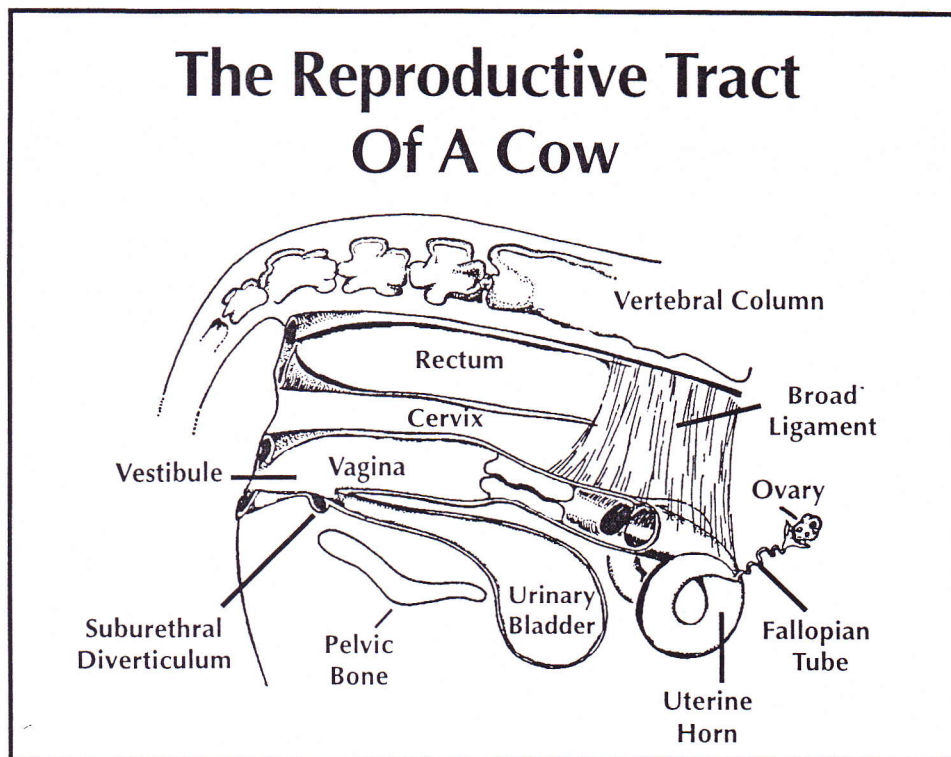
Semen should be acquired a minimum of 109 days to two weeks before the scheduled start of the breeding season.

SEMEN TANK MANAGEMENT.

Because a normal semen tank inventory may run more than \$2,000, according to the NAAB, economics as well as fertility rates tell producers that semen tank management is a must. The semen tank is simply a refrigerator designed to keep containers of semen frozen in liquid nitrogen at -320 F. The container, like a thermos, has both inner and outer shells. A space between them serves as a vacuum to keep the cold in and the heat out.

The weakest part of the tank is in the neck which supports the entire inner shell. Damage to the tank is most likely to occur when it is moved or when stored on concrete floors, which promotes tank corrosion. Therefore, the unit needs to be in a clean, dry, well ventilated area out of sunlight, and placed on a wooden pallet or a dolly with wheels.

The tank also needs to be stored where routine activity occurs, so that it can be observed and liquid nitrogen levels can be



measured regularly. A good rule of thumb is to keep at least 4 to 6 inches of the chemical in the tank at all times and to not store more units in the tank at any time than the number of cows in the herd.

Accurate records are absolutely essential to the management of the semen tank inventory. Straws of semen cannot be pulled out, identified, and counted without destroying semen. Safety should always be a concern when working with liquid nitrogen; the same caution that is used with boiling water needs to be used when handling this chemical. Safety glasses and gloves can help prevent frostbite to the skin if it spills.

HANDLING STRAWS OF SEMEN.

Knowing how to retrieve straws of semen out of the tank and thawing them at the correct temperature for maximum spermatozoa survival is another important factor of semen handling. Straws have a high surface-to-volume ratio and are very sensitive to changes in temperature caused by: (1) transfer of semen from one tank to another; (2) manipulation of the semen within the refrigerator; (3) thawing; and (4) exposure to post-thaw environments of varying temperatures. Straws packaged in goblets are more resistant to temperature changes than single straws.

Temperature fluctuations in straws occur when the canister containing the racks of straws is raised into the neck of the tank during semen removal. Until semen is thawed for use, it should never be exposed to the atmosphere for anything but the briefest interval. Straws need to be removed from the tank quickly (in less than eight seconds.)

The rate at which straws thaw is rapid regardless of temperature. Once semen is thawed, it again becomes vulnerable to the environment, needs to be protected from temperature increases and decreases (cold shock) and should be used as soon as possible.

When semen is handled prior to insemination, the producer needs to be prepared. All necessary equipment needs to be ready and at hand before opening the semen tank. The thaw bath should be at the correct temperature recommended by the semen supplier and within easy reach of the tank, and the insemination kit should be kept warm.

A competent inseminator is a plus to the A.I. process. Although the insemination process is not difficult, it is a technique that requires considerable skill and much practice to be mastered. Knowing how and where to deposit semen in a cow's reproductive tract contributes to the success of AI. ■