WHAT IS ARTIFICIAL INSEMINATION?

Artificial Insemination is the process of introducing viable semen (sperm and seminal fluid) into the female reproductive tract without involving direct contact between male and female.

WHY ARTIFICIAL INSEMINATION IS PREFERED?

* It is the best method of changing the animal`s genetic potential in shorter time. It is easier for a farmer keeping indigenous cows to select among exotic bulls for cross breeding his herd to obtain crosses which will survive well and become more productive under the existing environment.
* A.I is the best way of controlling cattle reproductive diseases such as Brucellosis, Vibriosis, Leptospirosis and Trichomoniasis. These diseases are transmitted by infected bulls during natural mating and causes big economic loss to farmers by causing infertility, abortion and delayed conception
* Costs and risks associated with keeping bulls are avoided.
* Farmers has a wider range to select a bull of interest within and among breeds.
* Fast genetic progress can be realized and a single bull can serve many cows (one bull can produce up to 100,000 doses which can be used even after bull`s death and also there is no need of trekking a cow to find the bull.

WHAT DO I NEED TO BE AWARE OF WHEN USING A.I?

The missing or limiting ingredient in implementing a successful A.I program is often in the area of management. The use of A.I requires a sound management program. When establishing an effective A.I program, a step by step approached may be the best plan of attack. Some of the factors to be considered are:

* Implementation of a sound and efficient record keeping system;
* A sound nutrition program;
* Well-designed, strong cattle handling facilities;
* A sound, effective herd health program;
* Accurate heat detection;
* A knowledgeable, well trained A.I. Technician.

WHAT IS ESTROUS SYNCHRONIZATION?

Estrous synchronization is simply the manipulation of estrus.  It can easily be implemented through industry standardized protocols.

* This allows for a reduction in time and labor, both at the time of insemination and at calving.
* Many calves can be born within just a few days, allowing a producer to concentrate his or her resources into a few days rather than a long calving season.
* This will also increase the uniformity and average weaning weight of offspring, as more calves will be born at the beginning of the calving season.
* The cost of estrus synchronization is relatively minimal when compared to the savings in time and labor, especially in first-calf heifers.
* In spite of this enormous potential to improve production levels, many beef producers have not put themselves in a position to take advantage of the benefits offered by AI.

**HOW DO I KNOW, MY COW IS IN HEAT?**

She will show the following behaviors changes:

* A cow mount others and stand when mounted.
* Reduces milk when on heat.
* Swelling of the vulva and sticky mucous discharge
* Frequent bellowing
* Reduces feed intake on that particular day.

**WHEN SHOULD COWS BE INSEMINATED?**

The traditional a.m./p.m. recommendation works best with twice daily observations but may not provide the best conception rates because several cows will be bred too long after the onset of estrus, so the chance for successful fertilization may be missed. The exact onset of estrus is usually unknown. For example, according to the a.m./p.m. guideline, a cow beginning estrus at 1 a.m. and observed in estrus at 6 a.m. would be bred approximately 18 hours after the onset of estrus. Breeding cows at this time would reduce the number of cows that become pregnant**. Cows should be inseminated within four to 16 hours of observed estrus when the precise onset of estrus is known**. If estrous detection is conducted twice daily, most cows should be within this time period. However, a single mid-morning insemination of cows that have been observed in estrus the same morning or the previous evening should provide acceptable conception rates

WHY MY COW HAD BLOODY DISCHARGE AFTER HEAT?

A streak of blood in the mucus usually means that, a cow had a high peak of estrogen one to three days ago. It is therefore recommended to record that heat and date it two days ago. This only indicates that she has been in heat. It has no relationship with timing of ovulation or whether or not she conceived (possibly she had Delay ovulation). This condition can be treated in next heat by administering GnRH at the time of insemination to insure that, a cow will ovulate within 7-18 hours after A.I, and a satisfactory conception rate can be achieved.

WHAT CATTLE DISEASES AFFECT CONCEPTION?

We normally think of the venereal type diseases as being the main causes of sterility problems, from a disease standpoint. However, it must be remembered that any disease or condition which will affect general health of an animal can also affect conception. Any disease which can cause a high fever, produce toxins, or create a debilatory condition in a cow can cause a sterility situation. Plant poisoning and the many nutritional area of involvement are also factors similar to diseases which we always have to consider.

The venereal type diseases usually associated with cattle sterility are Brucellosis, Trichonomiasis, Vibriosis and certain virus infection. We usually think of leptospirosis in this classification also.

WHEN SHOULD A COW BE TREATED BECOUSE OF FAILURE TO CONCEIVE?

IF TREATED WHILE IN HEAT, SHOULD SHE BE BRED AT THAT PARTICULAR HEAT?

We know this is a two-part question, and thinking of when to treat a cow, this question means when in the estrus cycle should we treat a cow.

The answer here would have many ramifications depending on what is wrong with the cow, the economic factors involved, and the method employed by the veterinarian performing the services. There are no clear-cut ruled or answer to this question.

A large of veterinarians’ believes that they can do the best job of diagnosis and treating sterility condition in an individual animals if they check the cow when she is in heat or just coming in heat. One thing is sure, it is easier to make intra-uterine injections in a cow that is in heat, and we can often diagnose cases of metritis (infection of the uterus) by checking the vaginal uterus discharge associated with the heat symptoms.

In my opinion, and this is shared by a number of veterinarians doing sterility work, the most optimum time to examine a cow is 16-17 days after a heat period, or 4-5 days before the next one. The uterus of a cow in heat is more tense, and the vaginal and cervical mucosa is often inflamed. This make some conditions in the cow more difficult to diagnose when the cow is in heat.

Now for part two of this question. Should a cow be bred at the same heat period as treated?

Here again, we would need to follow the advice of the veterinary making the examination and doing the treatment. In real several cases of infection he would treat the cow and advice you to wait.

WHAT CAUSES PREGNANT COWS TO COME IN HEAT?

We must always remember nothing works perfect in nature. we have constantly changing conditions, and a corresponding variance from the normal .We know that cows show signs of heat due to the influence of the estrogens in the ovarian follicles .These follicles form ,fill with fluid containing estrogens formed to the extent that the cow shows signs of heat even though pregnant. This situations usually occurs only once or twice in early weeks of gestation, but it may continue all through the pregnancy and if that is the case, the cow will show signs of heat about every 3 weeks right up to freshening. We usually do not attempt treatment, but extra injections of progesterone would, in most cases, check these symptoms.

A COW IS HAVING REGULAR HEATS, SHE HAS BEEN EXAMINED AND NOTHING IS FOUND WRONG INTERNALLY, A HIGH CONCEPTION BULL HAS BEEN USED, SHE DOES NOT CONCEIVE. NOW WHAT DO YOU DO?

We always feel like we are giving out with double talk when we try to answer this kind of question. It is very difficult to advice treatment of condition when we don’t know what is wrong. Our attempt to solve the problem becomes almost a trial and error situations. We just have to attempt different things and hope it will do the job.

If a cow is coming in heat regular, and nothing can be found wrong when checked by a veterinarian, and high conception bulls have been used by the service man, then I would say the cause of the return services would be one of the following situations.

1. This cow may not be ovulating in the normal range of time. In other words, we may be breeding her too early or too late. Time of breeding in some of our sterility cases is a big factor. We know ovulation can occur anywhere from 16 hours up to 65 hours after the start of heat. In an occasional cow, this range of time may be even more toward one or the other extreme. The female eggs of the cow can retain its ability to be fertilized only about 20-40 hours. Sperm life in the cow is not much longer than that of the unfertilized egg, so we need to juggle the time of breeding in problem cows, or in some situations we might breed her more than once. This could solve the difficulty if time of breeding is the cause.
2. The cow may have uterine infection so mild that we cannot diagnose it by ordinary methods, yet it will be severe enough to keep the cow from breeding. I have followed enough cows to the slaughter house myself where I had repeatedly checked the internal organs and they felt normal, yet when the reproduction tract was removed from the cow and opened , the mild inflammation of the mucous lining of the uterus was very apparent. So, sometimes we need to treat cows for mild metritis even though we cannot be positive that is the cause of the repeat breedings.
3. Anatomical causes. Occasionally we have some blockage of the oviducts or adhesions in the area of the ovaries which could obstruct passage of the sperm and ovum, but in no way affects the heat periods. Some of these conditions are very difficult to diagnose even by the most experienced sterility specialists.
4. Nutrition.If only an occasional cow in the herd is giving trouble as described in this question, we would not be suspicious of a nutrition problem. But if a large number of cows are involved we certainly cannot rule out a vitamin mineral nutrition problem.
5. Always be aware of the fact that a small percentage of cows will come in heat and still be pregnant.

HOW SOON AFTER BREEDING CAN A COW BE EXAMINED FOR HEAT?

Usually the interval between 45-60 days is preferred by most veterinarians. Some men have trained themselves to diagnose pregnancies much sooner around 28-30 days but if we wait until around the 45-60 day interval we are past the point where we get the early embryo death, and we can be a little more sure of the diagnosed pregnancy reaching birth.

WHAT CAUSES COWS TO SKIP HEAT PERIODS OR NOT COME IN HEAT?

The following might be one of the reasons which cause a cow to skip heat or not come in heat:

1. cows may be coming in heat but not manifesting it by the usual signs .We say they are going through ‘silent heats’ , everything is normal, except that they do not show the symptoms.
2. Cows are coming in heat, but only for short length of time, and hence are real easy to miss. This can happen quite often.
3. Cows are coming in heat normally, but through lack of observations close sianctioning , or through ignorance of dairy workers , they go unnoticed .
4. Suckling a calf will inhibit normal heat in a lot of cows for a considerable period of time.
5. Retention of the corpus luteum (yellow body). This can usually be treated with good results.
6. Dormant ovaries – (We see this most often in old cows). It is associated with nutritional deficiencies and with aging.
7. Infections of uterus- This will check heat in some cows.
8. Excessive cold weather – This seems to check heat in some cows.
9. Pregnancy-Often, to our embarrassment or surprise, we find cows are not showing heat because they are already pregnant.
10. In skipping a heat period, or periods, any of the above situations could be the cause, plus the conditions known as early embryonic death where the cow conceives, the embryo starts to develop, may be lives 3-6 weeks, dies, and we have a cow returning for services -6 weeks or more after being bred.

HOW SOON AFTER CALVING SHOULD A COW BE BRED BACK AFTER 9 MONTH PREGNANCY?

Let us first discuss the length of time to wait after calving until breeding in a normal 9 month pregnancy, with a normal parturition and passing of placenta.

In almost all of the literature we read, test book, farm magazine, extension services etc., we will find suggestions, wait at least 60 days after calving until we breed the cow back. The artificial breeding organizations have spent years trying to tell the patrons of their services to wait 60 days before calling for service. This interin has become an acceptable fact. Wait at least 60 days. It is sometimes quite a surprise then to learn that if we wish to raise the conception percentage in our herd 10%, if we are following the 60 days plan, all we would need to do is wait 30 more days. A 90 day waiting period after calving will get you a 10% better conception than the suggested 60 days .most dairymen are more interested in having a cow calve every 12-13 months than in showing a high conception rate. So , if we start breeding cows at 60 days after freshening and rebreed all that return in 3 weeks , we will have more cows bred at say 100 days after calving than if wait 90 days, but not near as many will conceive on the first service. So, even though we know we will have less conception on the first service, we still say breed back in 60 days. The reason is that a good percentage of cows are ready to breed at this time. This, of course, is assuming that everything is normal, and that, if not, a longer interval will be necessary, depending on the severity of the abnormal condition.

HOW SOON SHOULD WE BREED A COW BACK AFTER A 7 MONTH ABORTION?

Here we can immediately say, it would depend on what caused the abortion. In diseases like trichomoniasis and vibriosis we know cows need about 90 days more to overcome the infections .The virus abortions may take less time .If the cow cleans normally and no infectious agents are diagnosed, the return of the uterus to normal should be about the same in a 7 month abortion as with a 9 month pregnancy.

WHY CONSIDER CROSS-BREEDING?

A successful cross-breeding strategy can:

* Introduce favourable genes from another breed selected more strongly for traits of interest remove the negative effects associated with inbreeding depression for many traits to capitalise on what is known as heterosis or hybrid vigour (HV).
* HV means that cross-bred animals usually perform better than that expected based on the average of their parents.
* HV is generally higher in traits related to fitness and health i.e. traits which have lower heritabilities.
* Heterosis for production traits is usually in the range of 0 to 5%, whereas heterosis for traits related to fertility is usually in the range 5 to 25%.

**ARE THERE ANY DOWNSIDES TO CROSS-BREEDING?**

Increased variation: if both parental breeds differ considerably for a given characteristic (e.g. animal size) then considerable variation in this trait can be experienced with multiple crosses.

**WHAT IS MEANT BY GENOMIC SELECTION?**

* Genomic selection is simply a fancy term for “breeding using DNA”.
* DNA is the backbone of genes which cause differences in performance among animals.
* DNA is passed from parents to offspring and is therefore fundamental to breeding.
* Animals with the best DNA are selected as parents of the next generation.
* DNA is the same in all cells of the body and remains the same throughout life.
* If we know how each piece of DNA effects performance, by taking a DNA sample of a calf, we can predict its performance later in life.
* Genomic selection currently constitutes approximately one-third of the EBI of the animal; the remainder is from the traditional method of genetic evaluation of the parent