

Theme 5: Fertility and Breeding

ARTIFICIAL INSEMINATION

Level 2

Topic	Training & information Content
5.1	Dairy Cattle Breeds and Breeding
5.2	Breeding program for a dairy farm (medium & large)
5.3	Conformation, Type classification and judging
5.4	Cow handling
5.5	Milk production recording
5.6	Heat Detection
5.7	Artificial Insemination
5.8	Pregnancy Diagnosis
5.9	Fertility Management
5.10	Cows with abnormal discharge
5.11	Fertility disease recording
5.12	Calving recording
5.13	Use of Key Performance Indicators



Artificial Insemination (Level 2)

You will learn about:

- Why Artificial Insemination (AI) is better than Natural service (use of bulls)
- Tips of carrying out successful insemination
 - accurate heat detection
 - timing of insemination
- Keeping breeding records (heats observed)
- Handling cattle before and after insemination

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Cattle breeding - Artificial Insemination (AI) vs. Natural Mating

- AI helps improve genetic potential of the herd (cows), as a farmer is free to choose semen from a bull with better genes.
- Farmers, particularly smallholder save money as it also eliminates cost of rearing a bull and problem with infertile bulls.

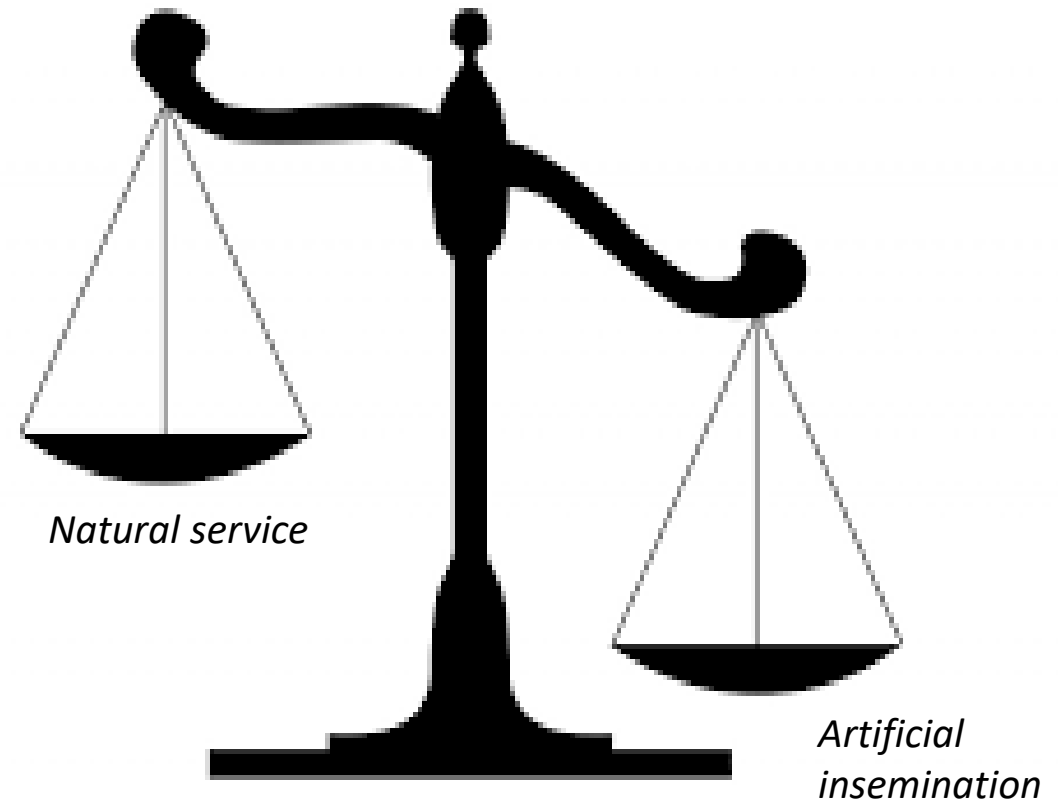


Use of AI outweighs the use of bulls



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- There is no transfer of sexually transmitted infections/veneral diseases from a bull to a cow
- Prevents injuries to animals that can occur from natural breeding (use of bulls)
- AI reduces the risk of inbreeding
- Encourages keeping and maintenance of perfect breeding and calving records (*see calving card later*).



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Successful AI depends on:

1. Accurate Heat detection

Before farmer decides to implement Artificial Insemination:

- It is very important that a farmer and all his/her staff undergo training in heat detection
- Everybody must be aware of the heat signs/signals and the importance of each signal to improve chances of successful AI
- It is important to **keep records** of dates when heat is observed!

Heat signs that are important to recognize;

Restlessness	5 %.
Drop in milk production	5%
Swollen vulva	5 %
Phleming	10%
Bellowing	10%
Mounted but not standing.	10 %.
Fresh saliva on cow's back	15%.
Chin resting.	20 %.
Back bending (touching clitoris)	30%
Continuous Clear Discharge (Few Days)	30 %
Sniffing several other cow's vagina	30 %.
Mounting farmer (when standing in front of cow)	30%
Mounting or attempt other cows.	40 %
Mounting head side other cows.	60 %
Standing Heat.	100 %.

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- Records can be kept using a **Calving Card**
- Simple to use. Can be used for a group/herd of cows or individual cow.
- Has dates which are easily monitored on one card, all in one line


How to read the Calving Card


Example: Assume today is **September 16**

- Cows/cow can be marked with colours to alert on next event

Calving	control		control		control		control		control		control		control		control		control		control		
	October	August	November	September	December	October	January	November	December	March	January	April	February	May	June	April	July	August	June	September	
Insemin.	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	
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 Cow(s) Inseminated – September 16, 2020
 Cow(s) might come on heat again 21 days later – October 7

 Cow(s) advised to be dried off on April 16, 2021

 Cow(s) due to calve down on June 16, 2021

Artificial Insemination (Level 2)

sign	value	Cow A	Cow B	Cow C
Restlessness	5			X
Drop in milk	5	X		
Swollen vulva	5			
Phle밍	10			
Bellowing	10		X	
Mounted but not standing	10			
Fresh saliva on back	15	X		
Chin resting	20	X	X	
Back bending	30			X
Continuous clear discharge	30		X	
Sniffing other cow's vulva	30			
Mounting farmer	30			
Mounting or attempt other cows	40			
Mounting head side other cows	60		X	
Standing heat (stands when mounted)	100			X

Information from the Calving card can be used on a **Heat Detection Score Chart**, to tell which cows might/must come in heat the coming days (for next insemination)

Based on this information the herd manager/farmer can decide when to alert an AI technician



Heat detection score chart helps capture all the signs observed by different people throughout the day

Artificial Insemination (Level 2)

2. Proper timing of Insemination: When to Inseminate

- Artificial Insemination is more sensitive and more time bound compare to natural service
- Therefore, its important to be sure that your cow is in good heat



Artificial Insemination (Level 2)

- Good heat means as cow has scored 100 points because of several heat signs or standing heat (*use Heat detection score chart*), it is time to call the AI technician.
- **Perfect time to inseminate:** Time of the first Standing Heat event (primary heat sign) OR when the total score of all other heat signs (secondary heat signs) is > 100 .
- Take note of Time of the first Standing Heat event

10:08 AM



100 points

Artificial Insemination (Level 2)

- It is time to call the AI technician/service provider
- He/she must have skills and knowledge to handle semen and inseminate correctly



Artificial Insemination (Level 2)

- An **AM-PM rule** is a guide to when the AI technician should inseminate her, particularly if heat detection is good
- In practice, if the first standing heat/total score of all other heat signs > 100 is observed for instance in the morning - 10.08 AM, present the cow for insemination immediately



Artificial Insemination (Level 2)

Separate the cow on heat from the rest

- As you wait for the AI technician, take the cow away to a separate place where she can avoid stress and disturbance from the rest
- It is best is to separate the cow in heat at least 1-1.5 hours before insemination



Artificial Insemination (Level 2)



Fresh feed

Clean water

- While kept separate, provide fresh feed and clean water as you wait for the AI technician/service provider
- Continue to monitor the cow

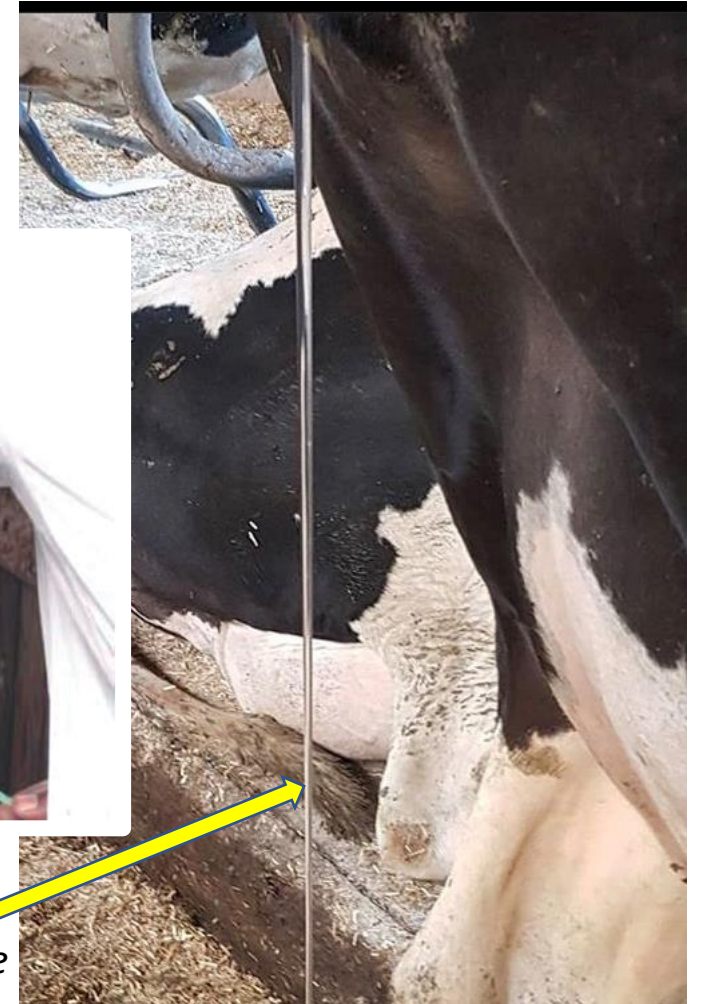
Artificial Insemination (Level 2)

- Make sure the cow feels free and relaxed. Insemination without stress is **very important!**

Inseminate immediately/as soon as possible but not later than 12 hours (AM-PM rule); i.e. before

10:08 PM

- Insemination without stress means;
 - No Pain,
 - No Discomfort,
 - No Noise, and;
 - No Abnormalities.



Clear discharge

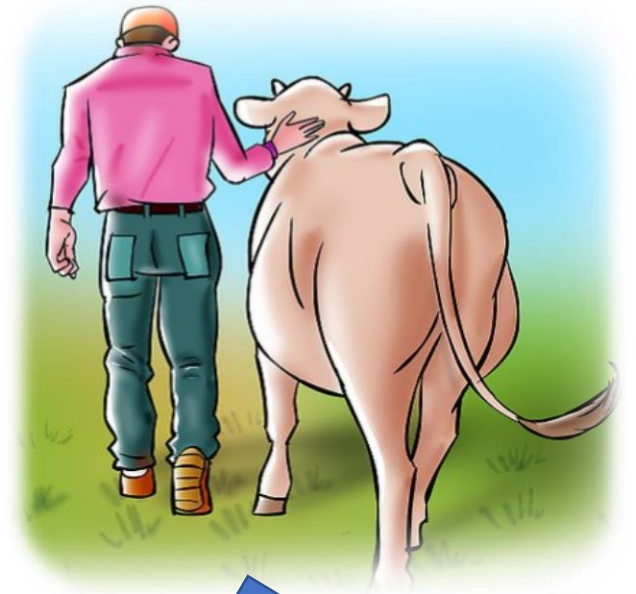
- A calm and correct insemination without all kinds of disturbance/unusual actions for the cow gives the greatest chance of success; and most usually a clear discharge will appear during insemination.

Artificial Insemination (Level 2)

- So, keep the cow separated for at least one hour before she goes back to the herd.

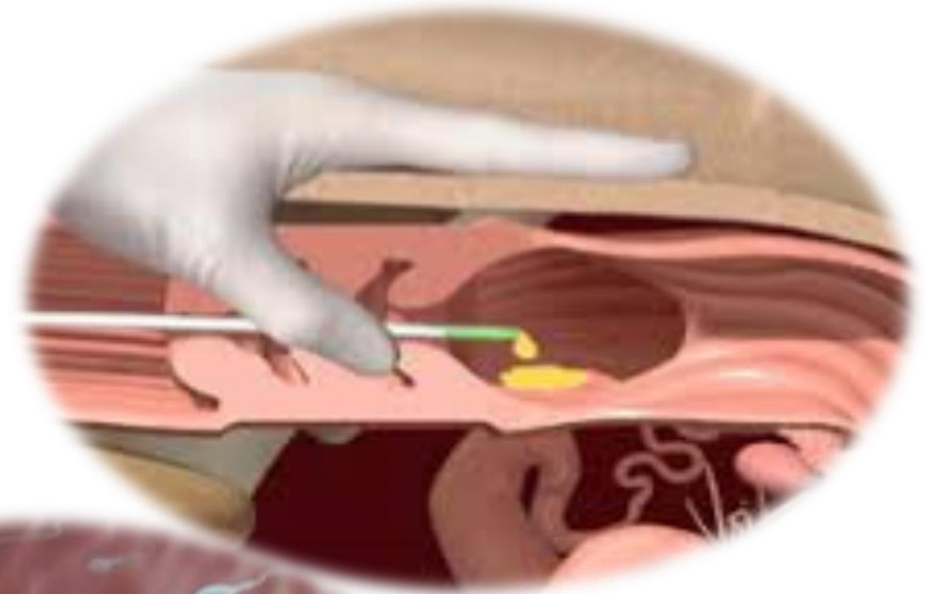


Wait at least one hour



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- After insemination, the semen has a long way to go before it reaches the oviduct where fertilization takes place. Any little level of stress will have a negative impact on the process of fertilization.
- At the herd, maintain low the possible causes of disturbance or stressors to the cow as the semen continues to swim to the oviduct

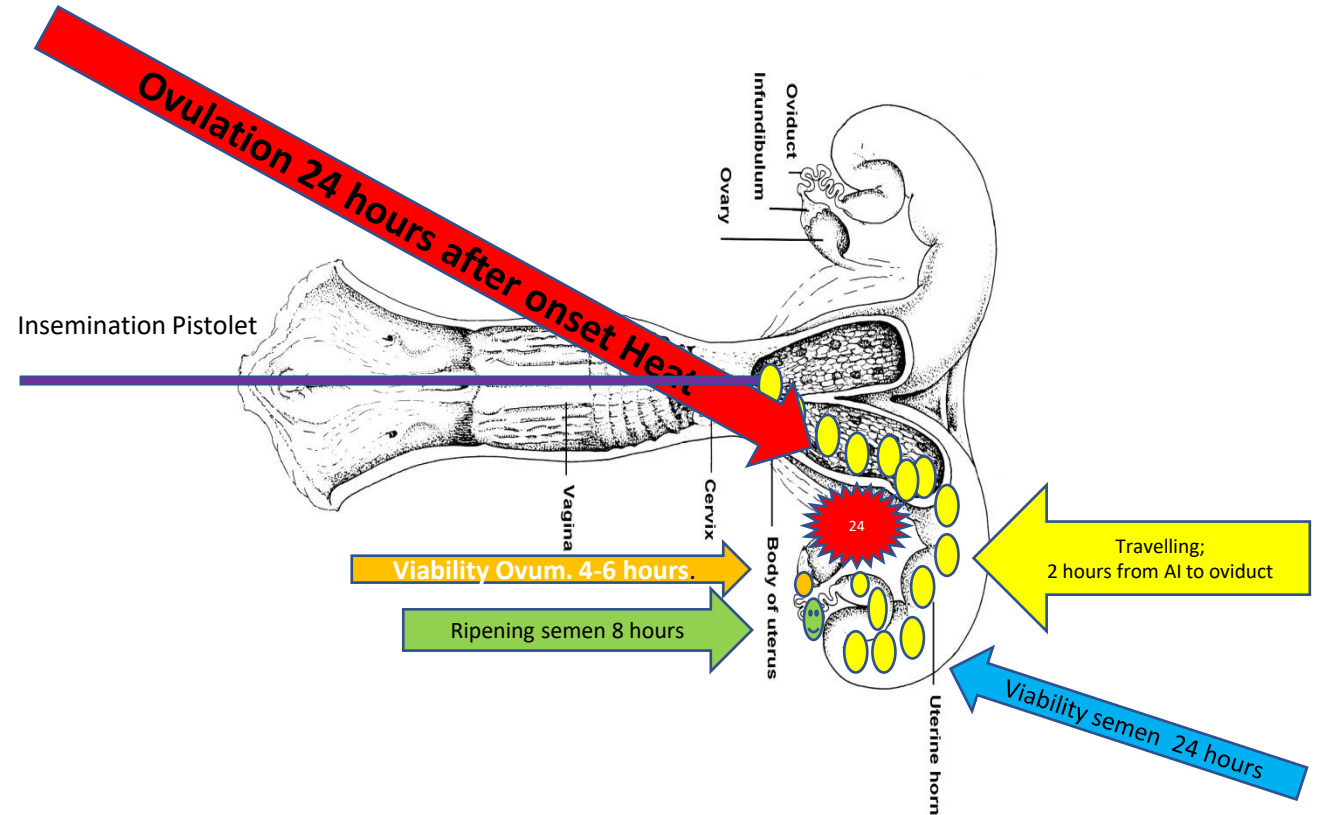


Artificial Insemination (Level 2)

Heat Detection Relative to Ovulation: The Biological events contributing to successful AI

- The physiological relationship linking ovulation to the onset of standing heat underscores the importance of **accurate heat detection** and **timing of insemination**
- This is why it is important to maximize the limited window of opportunity for conception to result from AI

Every minute (time) counts!!!



Artificial Insemination (Level 2)

Take Home message

Successful AI = Cow being pregnant
(conceiving)

- Successful AI depends on:
 1. **Preciseness!** - heat detection
 2. **Timing!** - insemination
 3. **Awareness and Knowledge!**
 - Farmer
 - Other Observer (farm staff)
 - AI technician (Skills, Adequacy & Semen management)



*TRAINING of the farmer and farm staff as well as
COMMUNICATION between the farmer, farm staff (observer)
and AI technician all lead to **BETTER RESULTS!!***

- END -