



Physiological Factors That Affect Pregnancy Rate To AI In Beef Cattle

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Factors affecting pregnancy rate

- Pregnancy rate = estrous detection rate x conception rate.
- Estrous detection rate = number detected in estrus/number exposed to breeding.
- Conception rate = number pregnant/number detected in estrus.

What pregnancy rate can I expect?

Estrous Detection Rate x Conception Rate = Pregnancy Rate

Estrous detection rate	Conception rate	Pregnancy rate
95	70	67
75	70	53
95	50	48
75	50	38

Importance of Beef Females Conceiving Early in the Breeding Season

Heifer Progeny	Steer Progeny
↑ Weaning weight	↑ Weaning weight
↑ Prebreeding weight	↑ Hot carcass weight
↑ Precalving weight	↑ Marbling score
↑ % Cycling before breeding	↑ % Average choice or greater
↑ Pregnancy rate	↑ Carcass value

Larson and Funston, 2009

Funston et. al., 2011

Things to do before AI



Criteria That Heifers Should Meet

- What has the pregnancy rate in your heifers been over the past few years?
- Have your heifers received growth promoting implants?
- Have you selected an appropriate target weight? Target weight approximately 65% of mature body weight.
- What proportion of your heifers have a reproductive tract score of ≥ 4 ?

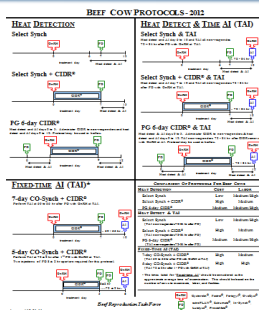
Criteria That Cows Should Meet

- What has the pregnancy rate in your cows been over the past few years?
- What was the body condition score of your cows at calving? Should be ≥ 5 (1 to 9 scale)
- What is the current body condition score of your cows?
- How many days postpartum will your cows be when estrus synchronization is initiated?

Where should I purchase semen?

- Semen from one of the four major AI companies.
 - 4127/6749 (61%; 31 sires, 3 were below 50%)
- Semen from a custom collection site
 - 134/276 (49%; 16 sires, 7 were below 50%)

Which estrus synchronization protocol should I choose?



Fundamental Principles of Estrus Synchronization



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Estrus Synchronization Courses

Welcome to "Fundamentals of Beef Reproduction and Management: Focus on Estrus Synchronization."

Reproduction is the major factor impacting profitability in a cow-calf operation. The largest cause of reproductive loss in beef herds is that cows fail to become pregnant during the breeding season. Heifers and cows fail to become pregnant because they do not show estrus, breed or fail to conceive after showing estrus. Estrus synchronization protocols have been developed that increase the proportion of females that conceive early in the breeding season and facilitate the use of artificial insemination. AI is the most powerful tool for genetic improvement through the selection of sires that are genetically superior for economic traits (e.g., calving ease, growth and carcass merit). Recent advances in estrus synchronization protocols that facilitate the adoption of AI in combination with improved herd health programs provide a series of technologies that if properly integrated will add significant value to calves.

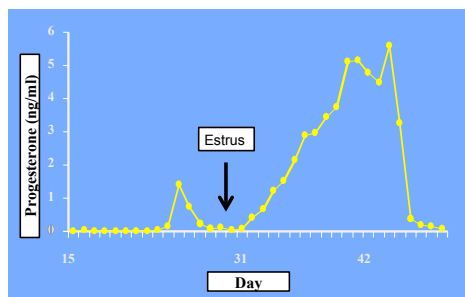
The three courses are designed to familiarize you with the following topics:

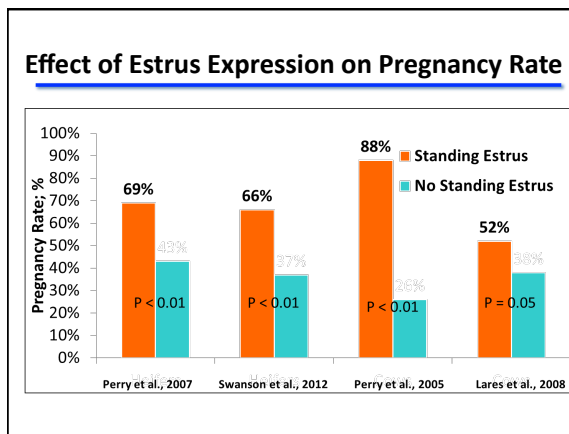
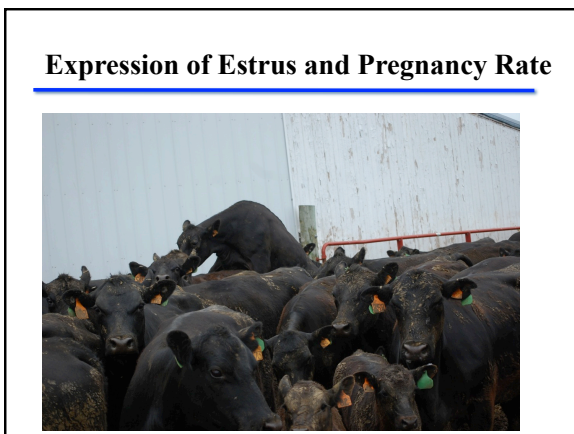
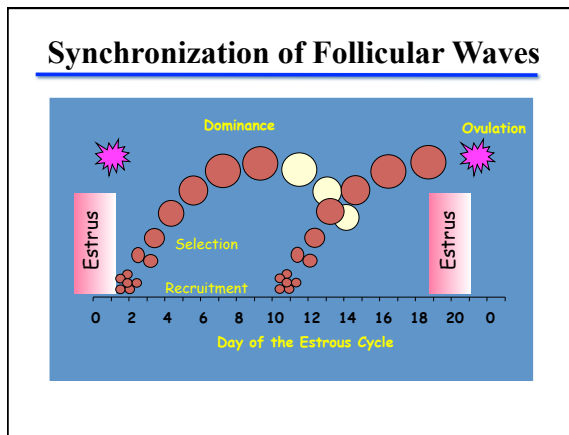
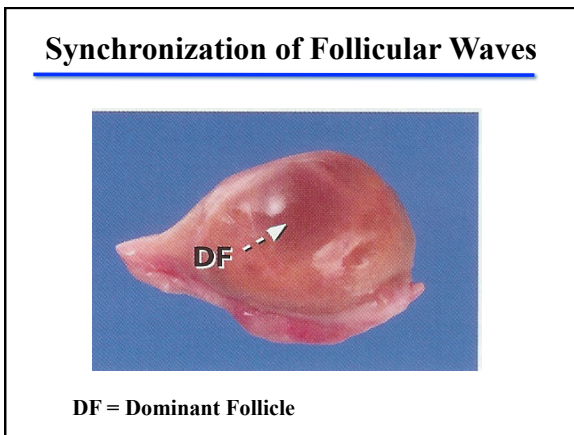
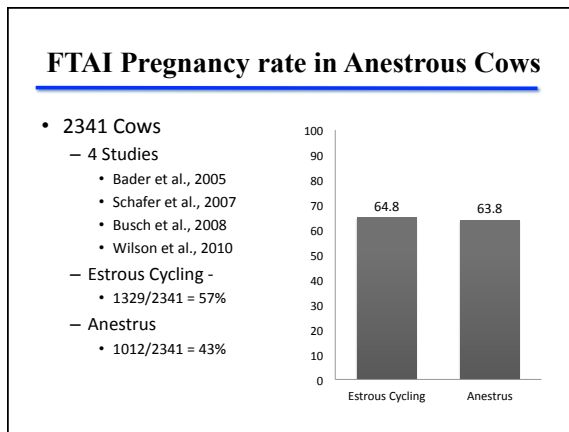
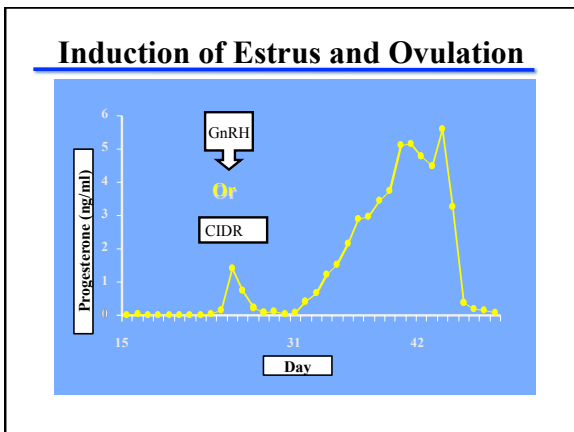
- Course 1 includes:
 - Physiological principles that underlie estrus synchronization
 - An overview of commercially available estrus synchronization products.
- Course 2 includes:
 - Specific estrus synchronization protocols currently recommended for beef heifers and cows.
- Course 3 includes:
 - Management considerations for implementing an estrus synchronization program in your herd
 - A description of the impact of estrus synchronization on reproductive management.

In addition, each module includes assessment questions to help you evaluate your comprehension of the information.

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Importance of Progesterone for Cyclicity

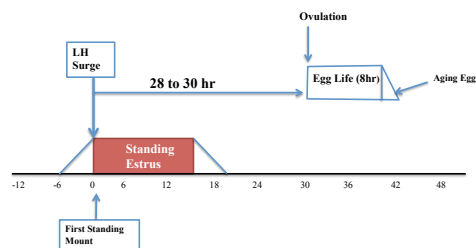




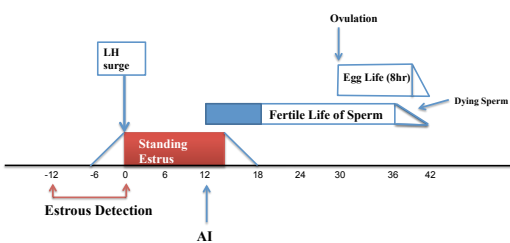
Time of Insemination for FTAI



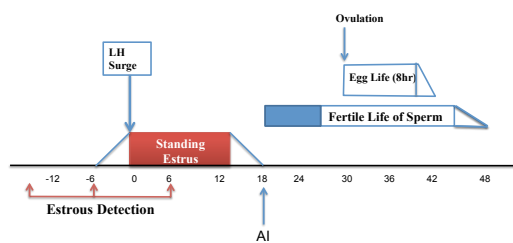
Physiological Basis for the AM-PM Rule



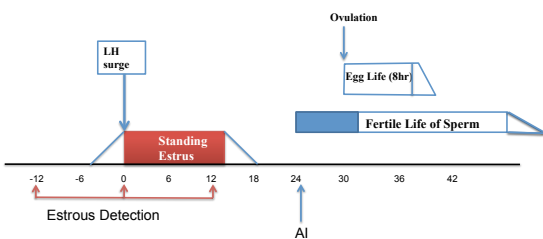
Time of Insemination: AM - PM Rule



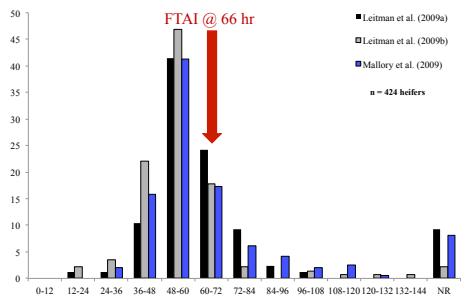
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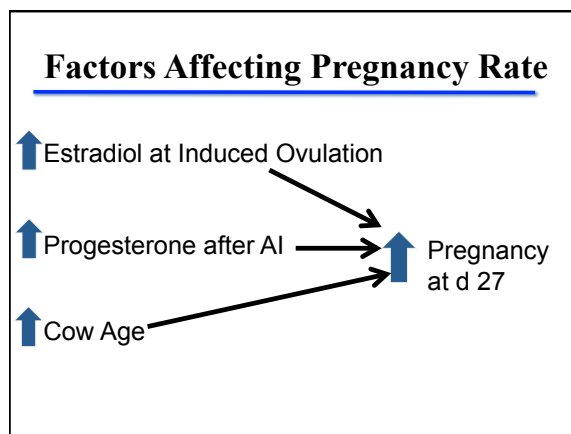
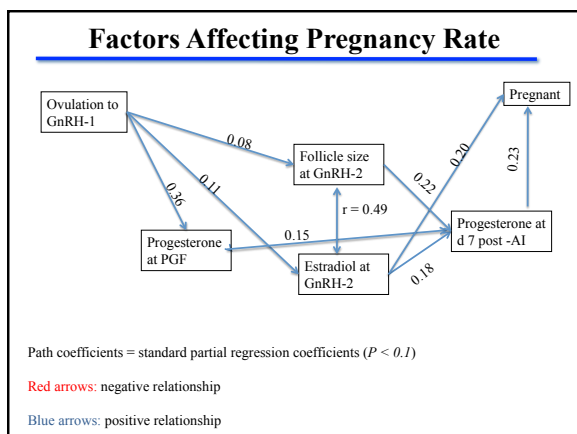
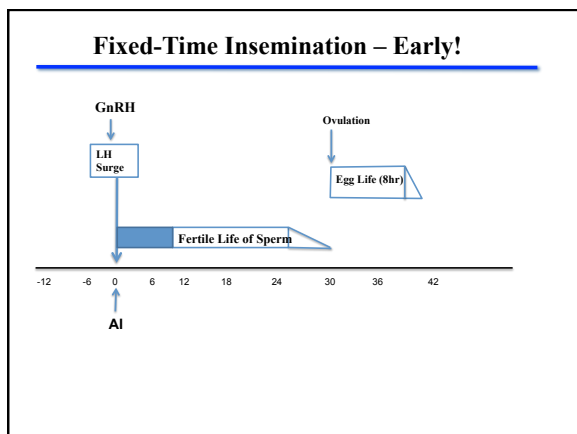
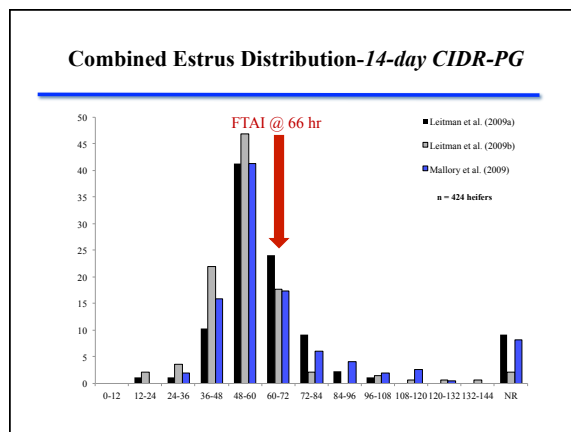
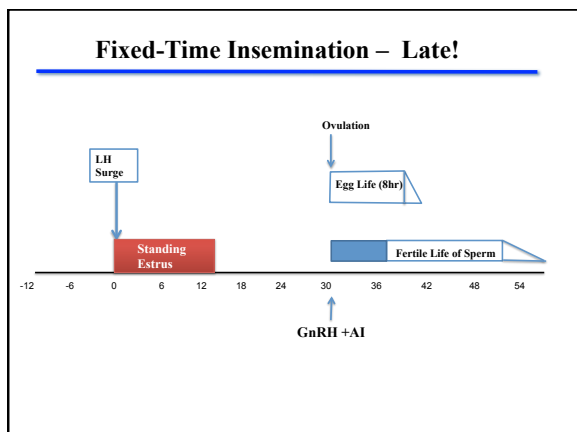


Time of Insemination: AM - PM Rule



Combined Estrus Distribution-14-day CIDR-PG





Summary

- Pregnancy rate = Estrous detection rate x Conception rate
- A successful AI program requires careful preparation and attention to detail!
- Understanding the principles of estrus synch will allow you to choose an appropriate ES protocol for your herd and facilitate your ability to trouble shoot when necessary.

Summary

- Numerous variables contribute to successful establishment of pregnancy.
- Estrus expression is important for the establishment of pregnancy.
- The most important variable related to pregnancy success was estradiol concentration at the time of breeding.

Acknowledgements

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