



# OHIO VETERINARY NEWSLETTER

September 1, 2014

Veterinary Extension

Vol 40, No 4

## In This Issue

### Research

- [A pregnancy detection assay using milk samples: Evaluation and considerations](#)
- [The requirement of GnRH at the beginning of the 5-d CO-Synch + CIDR protocol in beef heifers](#)
- [Delayed insemination of non-estrous heifers and cows when using conventional semen in timed artificial insemination](#)

### Calendar

- [ODHMCP](#)
- [Farm Science Review](#)
- [Organic Livestock and Poultry Health](#)

## Location

Department of Veterinary

## Research

Lawson, B. C., Shahzad, A. H., Dolecheck, K. A., Martel, E. L., Valek, K. A., Ray, D. L., ... Silva, W. J. (2014). **A pregnancy detection assay using milk samples: Evaluation and considerations.** *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2014-8233

**BACKGROUND:** Early diagnosis of pregnancy in modern dairies is important and often performed by a skilled veterinarian using palpation or ultrasound. A reliable pregnancy detection assay could benefit those with limited veterinary support and allow veterinarians to focus on other issues.

**PURPOSE:** The objectives of the 3 experiments were to (1) determine the accuracy of this milk-based pregnancy-detection assay, (2) determine the optimum time for early pregnancy detection using this assay, and (3) to compare the results of the milk-based assay to those obtained with the established plasma-based assay.

**RESULTS:** Experiment 1 –All predictive, sensitivity, and specificity values were over 97%. First check overall accuracy was 99.1%, and second check was 98%. Accuracy was confirmed. Experiment 2 – optimum time to check for pregnancy using this assay was found to be in the 2-wk period from day 30 to 44 after insemination. Experiment 3 – the study found that the milk-based assay gives essentially the same results as the well-established and validated plasma- and serum-based assay.

**CONCLUSIONS:** The authors concluded that the milk-based pregnancy-detection test was accurate with results that compare favorably to the blood-based pregnancy-detection assay that has been used successfully in the field for several years. The assay provides an accurate alternative for dairy farmers who have limited access to a veterinarian or technician skilled in manual or ultrasonographic detection of pregnancy. It also may have some utility as a research tool in studying the biological basis for embryonic mortality.

[ACCESS THE ARTICLE...](#)

Cruppe, L. H., Day, M. L., Abreu, F. M., Kruse, S., Lake, S. L., Biehl, ... Bridges G. A. (2014). **The requirement of GnRH at the beginning of the 5-d CO-Synch + CIDR protocol in beef heifers.** *Journal of Animal Science*. Advance online publication. doi: 10.2527/jas.2014-7772

## Subscribe / Unsubscribe

Contact:  
Jeffrey D. Workman, PhD  
Extension Program Coord.  
[workman.45@osu.edu](mailto:workman.45@osu.edu)  
614-292-9453

<http://vet.osu.edu/extension>

**BACKGROUND:** The 5-day CO-Synch + CIDR protocol currently includes 2 doses of GnRH and 2 doses of PGF2 $\alpha$ . Despite acceptable timed AI pregnancy rates with the 5-day protocol, questions remain relative to the necessity of the GnRH-1 and PGF2 $\alpha$  requirements.

**PURPOSE:** The objective of the study was to determine if the omission of the GnRH-1 would impact Timed AI pregnancy rates in the 5-d CO-Synch + CIDR protocol in beef heifers when 1 dose of PGF2 $\alpha$  was used.

**RESULTS:** Although the incidence of a new corpus luteum at CIDR removal was increased in the GnRH+ treatment, omission of the initial GnRH treatment in the 5-d CO-Synch + CIDR protocol did not influence timed AI pregnancy rate in yearling beef heifers. In addition, a single dose of PGF2 $\alpha$  at CIDR removal was effective at inducing luteolysis in yearling beef heifers enrolled in the 5-d CO-Synch + CIDR protocol, regardless of whether or not the initial GnRH treatment was given.

**CONCLUSIONS:** These findings suggest that the magnitude of the presumed benefit of the GnRH-1 treatment in beef heifers enrolled in the 5-d CO-Synch + CIDR protocol may be primarily determined by the proportion of heifers that ovulate in response to this treatment.

### [ACCESS THE ARTICLE...](#)

Thomas, J. M., Pooch, S. E., Eilersieck, M. R., Smith, M. F., & Patterson, D. J. (2014). **Delayed insemination of non-estrous heifers and cows when using conventional semen in timed artificial insemination.** *Journal of Animal Science*. Advance online publication. doi: 10.2527/jas.2014-7827

**BACKGROUND:** There are fundamentally two distinct groups of females that emerge when assigned to a fixed-time AI protocol: females that expressed estrus prior to fixed-time AI and females that have not. The strategy of "split-time AI" based on estrus expression has proved effective in improving pregnancy rates of non-estrous cows when using sex-sorted semen. However, this strategy has not been evaluated when using conventional, non-sex-sorted semen in fixed-time AI of cows and heifers.

**PURPOSE:** The aim of this study was to evaluate a strategy that more precisely manages females based on estrous expression prior to fixed time AI, delaying insemination until 20 hours after GnRH administration for those females not expressing estrus.

**RESULTS:** Among heifers not expressing estrus prior to fixed-time AI; however, delayed insemination by 20 hours after GnRH administration yielded higher fixed-time AI pregnancy rates than insemination at the standard time (49% versus 34%). Furthermore, although heifers that expressed estrus prior to fixed-time AI achieved higher fixed-time AI pregnancy rates than heifers that did not when using standard fixed-time AI (Treatment 1 estrous vs non-estrous, 52% versus 34%), the pregnancy rates of estrous and non-estrous heifers did not differ significantly when using split-time AI (Treatment 2 estrous vs non-estrous, 56% versus 49%).

**CONCLUSIONS:** In conclusion, split-time AI offers higher heifer pregnancy rates than conventional fixed-time AI by more precisely managing heifers based on estrous expression. The degree to which split-time AI boosts heifer pregnancy rates may be related to expression of estrus in the 20 hour period before delayed insemination of heifers that had not expressed estrus by 66 hours after PGF2 $\alpha$ . However, no statistically significant advantage to split-time AI was observed in mature cows, among which there was also less expression of estrus during the 20 hour period before delayed insemination. Further studies should evaluate alternative strategies in GnRH administration to cows and heifers in conjunction with split-time AI.

### [ACCESS THE ARTICLE...](#)

# Calendar



A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at <http://vet.osu.edu/>

## [Ohio Dairy Health and Management Certificate Program](#)

Module 3 – Basic Dairy Cattle Nutrition  
December 4-6, 2014

Module 4 – Advanced Dairy Cattle Nutrition  
March, 2015 (TBD)

Modules 3 and 4 of this cohort will include nutrition. Space is still available under the specific-module option.

## [Farm Science Review](#)

September 16-18, 2014

Please visit the College of Veterinary Medicine Tent located in OSU Central next to the Leeper Antique Building or the [Question the Authorities](#) program for one of the topics pertaining to veterinary medicine.

## [Organic Livestock and Poultry Health Series](#)

Webinar - Organic Livestock Inputs  
Wednesday, October 1, 2014 at 1:00 pm



**THE OHIO STATE UNIVERSITY**

**COLLEGE OF VETERINARY MEDICINE  
COLLEGE OF FOOD, AGRICULTURAL  
AND ENVIRONMENTAL SCIENCES**