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UNIVERSITY OF WISCONSIN-MADISON

DAIRY WORKERS'

TRAINING MODULE **2**

REPRODUCTIVE SKILLS

Pregnancy Detection

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Why do we pregnancy check?

- Determine non-pregnancy status
- Return to service
 - Reduce feed cost
 - Cull
 - Tighten calving interval
 - Confirm for sale

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Why non-pregnancy diagnosis?

The key to early non-pregnancy diagnosis is to couple:

- Identification of **open** cows with
- Strategy to **rapidly** return these cows to an AI service

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Attributes of the “Ideal” nonpregnancy test

- Sensitive
- Specific
- Inexpensive
- Simple to conduct under on-farm conditions
- Ability to determine pregnancy status at same time test is administered



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How well does the test outcome predict the true status of the pregnancy?

- **Positive predictive value:** the test correctly identified those truly pregnant
- **Negative predictive value:** the test correctly identified those truly not pregnant



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Direct detection of pregnancy



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Direct detection of pregnancy

- Detection of tissues and/or associated fluids of the embryo, placenta, and associated membranes

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“Wait and See”



Gestation length Holsteins: ~282 days or ~9 months

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Return to estrus



Photo credit Paul Fricke

“Estrus” or “Heat” 21-day cycle, range 17 to 24 days

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Calf Bumping



Photo credit: Heather Schliesser, Marathon County Extension

Accurate beginning ~180 to 210 days (~6 to 7 months after AI)



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Veterinary palpation & ultrasound

- Predict freshening date, diagnose uterine & ovarian pathology
- Veterinarian-Client-Patient-Relationship (VCPR)



Photo credit: Paul Fricke



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Transrectal Palpation

- Accurate beginning ~35 d after AI
- “Membrane slip” from 30 days to term

Palpation of the Amniotic Vesicle Wisnicky W, Cassida L.E. 1948.

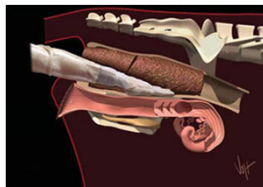



Image Source: Select Sires



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Transrectal ultrasound



Accurate beginning - 30 d after AI

Photo Courtesy of Paul Fricke, UW Madison.

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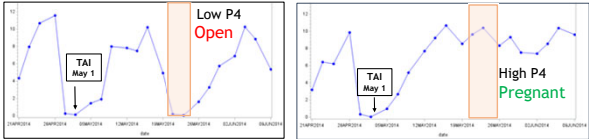
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Indirect detection of pregnancy

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Progesterone testing



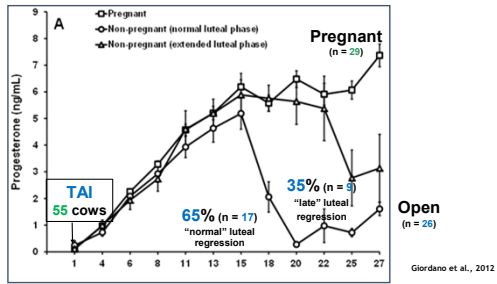
20 to 24 d after AI <1 month in gestation

Graphs created by Paul Fricke

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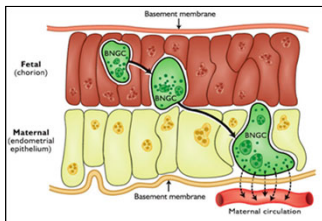
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Progesterone patterns: Pregnant vs nonpregnant cows



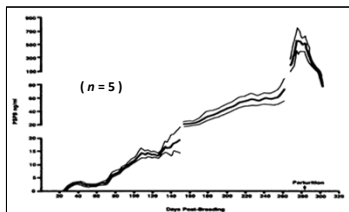
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PAG: Pregnancy-associated glycoproteins

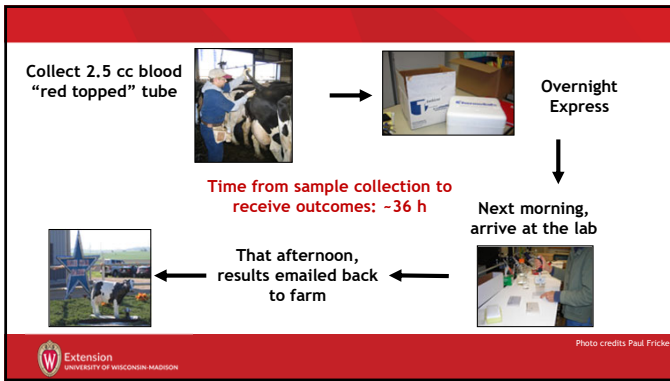


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Pregnancy Specific Protein B concentrations in pregnant dairy cows



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Blood testing conclusions

- PAG tests may more reliably detect cows undergoing pregnancy loss
- Starting Resynch 25 days after TAI resulted in similar fertility to day 32

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Milk pregnancy test

- Measures PAGs in milk
- High sensitivity and specificity from 60 days post calving and 35 days post AI
- Blood vs. Milk PAG tests:
 - Similar ability to identify pregnant and non-pregnant cows
 - Sensitivity of both are acceptable around 32 days and after -74 days after AI
 - Less sensitive from 39 to 67 days

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Milk Vs. Blood PAG Test Pro's and Con's

	Milk	Blood
Accuracy	✓	✓
Can be paired with DHI testing	✓	
Requires additional cow handling to collect sample		✓
Cost	✓	?



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Accuracy of ultrasound, milk, and blood PAG tests

	Ultrasound Day 27 <small>(Silva et. al. 2007)</small>	Blood Day 27 <small>(Silva et. al. 2007)</small>	Blood Day 32 <small>(Ricci et. al. 2015)</small>	Milk Day 32 <small>(Ricci et. al. 2015)</small>
Accuracy %	95	95	92	89



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*Days post AI	"Yes" Pregnant	"Maybe" Pregnant Recheck	"No" Non-Pregnant
Visual return to estrous	Does not return to heat until after calves	Does not return to heat every 21 days	Returns to heat every 21 days
Progesterone assay		High progesterone level on day 23	Low progesterone level on day 23
Rectal palpation	Fetus day 50 -60	CL, membrane slip/amniotic vesicle day 35-40	No conceptus day 35-40, no CL, developing follicle
Ultrasound	Fetal sex day 58	Amniotic vesicle/fetal heartbeat day 30	No conceptus day 30, no CL, developing follicle
Blood PAG	Positive day 74	Positive day 32 False negative: • high milk production • <60 days since last pregnancy • 53 to 60 days	Negative day 32
Milk PAG	Positive day 74	Positive day 33-39 False negative: • high milk production • <60 days since last pregnancy • 46 to 74 days	Negative day 33-39

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Photo Courtesy of Paul Fricke

Pregnancy loss is 3-fold greater for cows with twins vs. singletons

Giordano et al., 2012

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Conclusions

- Identify non-pregnant cows and pair with re-insemination
- Timely non-pregnancy diagnosis options include:
 - Palpation
 - Ultrasound
 - Blood and milk testing
- All pregnant cows should be rechecked (>74 days after AI)



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A promotional graphic for a training module. It features a large red 'W' logo on the left, a photograph of a cow lying down on hay on the right, and text at the bottom: 'DAIRY WORKERS' TRAINING MODULE 2 REPRODUCTIVE SKILLS Pregnancy Detection'. There is also a small logo for 'DAIRY WORKERS' at the bottom right.

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Thank you to the following individuals for providing review:
Tina Kohman | Regional Extension Dairy Educator | Fond du Lac,
Sheboygan, Ozaukee, and Washington Counties
Heather Schlessler | Extension Dairy Agent | Marathon County




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