

by Jeff Stevenson

## A not-so-new pregnancy test

OUR objective as dairy producers is to get cows pregnant and identify the nonpregnant status of cows as soon as possible so re-breeding can occur. Efficient reproductive management of lactating dairy cows can be achieved if an accurate early non-pregnant diagnosis is combined with a resynchronization protocol, resulting in acceptable fertility. Rectal palpation is routinely used to determine pregnancy status, but with this method, it is difficult to diagnose pregnancy status accurately earlier than 35 days after A.I. Ultrasound is becoming more common among veterinary practitioners, but accuracy of pregnancy diagnosis is less for pregnancies under 30 days. Another avenue to determine pregnancy status is a blood test that has been available to cattle producers for about four years. It can accurately determine the pregnancy status of the dairy cow.



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about Day 26 to 30 of pregnancy. The blood test is called BioPRYN. PRYN = Pregnant Ruminant Yes/No. BioTracking LLC and its affiliate laboratories assayed nearly 85,000 samples in 2005. These numbers rose 143 percent to more than 207,000 in 2006. In 2007, BioTracking LLC and its affiliate laboratories tested 336,731 samples, a 62 percent gain from the previous year. This is yet another indication that the cattle producers are finding this new technology to fit their pregnancy detection man-

bera; Okotoks, Alberta; and Woodstock, Ontario), Dickson, Australia, and in Budapest, Hungary.

We know that shorter calving intervals result in more calves, less replacement costs, and greater cow longevity. Because cows spend proportionally more time in early lactation because of shorter calving intervals, they produce more lifetime milk.

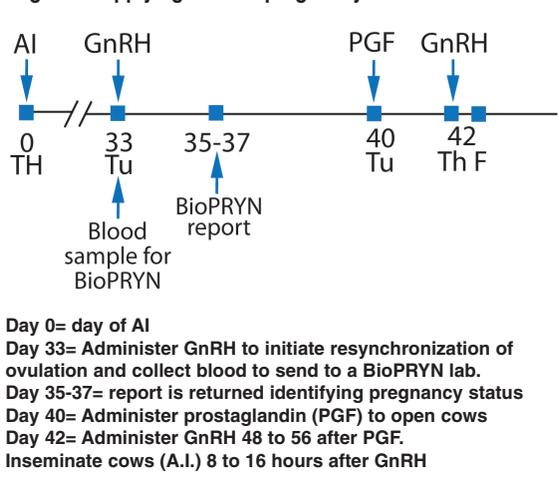
Longer calving intervals can cause substantial economic loss. Estimated financial loss is a result of reduced milk production, higher feed costs, plus costs of additional veterinary care and A.I. services.

Identifying open cows as soon as possible reduces interinsemination intervals.

Estrus and ovulation synchronization protocols were developed to reduce reliance on visual heat detection and improve management of the A.I. breeding program. By coupling two new technologies, BioPRYN and Ovsynch, producers may reduce days open by reducing interinsemination intervals. The program works as illustrated in the figure.

Cows should not be tested that are inseminated before 60 days in milk. That allows the first blood sample to be collected at about 90 days in milk (30 days after A.I.). Coupling an early non-pregnant diagnosis with a reproductive strategy to allow prompt reinsemination (as illustrated) should improve reproductive efficiency by lowering the interval between A.I. services, thereby improve overall pregnancy rates. Happy A.I. breeding! 🐄

Figure 1: Applying a blood pregnancy test into a timed A.I.



### Test evaluates proteins . . .

Laboratory assays for detecting proteins originating from binucleate cells of the embryonic trophoblast have been developed to determine pregnancy status. One of the products from binucleate giant cells (that originally form in the placental trophoblast) and migrate to the uterine luminal epithelium is a group of pregnancy-associated glycoproteins known as PAGs.

Several bovine PAGs produced by these cells exist (which also serve as pregnancy-recognition markers). These PAGs are detectable in the blood stream of pregnant cows.

Pregnancy-specific protein B was the first PAG identified and was later found to be similar to another PAG. Both pregnancy-specific protein B and PAG were subsequently reclassified as boPAG-1. A chemical test (ELISA) was developed to detect these PAGs as a method of early pregnancy diagnosis in cattle.

Mean PAG concentrations in pregnant dairy animals increase from Day 15 to Day 35 of pregnancy. Because of variation in serum PAG concentrations among cows, measured PAG is not a reliable indicator of pregnancy until

agement program, especially in areas where large-animal practitioners are few.

Currently, the main laboratory is in Moscow, Idaho. Affiliate laboratories are found in Colorado (Greeley), Idaho (Jerome), Michigan (Coopersville), Minnesota (Kenyon and Melrose), North Carolina (Olin), Ohio (Junction City), Pennsylvania (East Smithfield and New Holland), Washington (Sunnyside), Texas (Amarillo, College Station, Dublin, and Wharton), Wisconsin (Fredric), Canada (Lethbridge, Al-

BioTracking LLC based in Moscow, Idaho, is a global provider of BioPRYN, a blood pregnancy test for cattle, bison, goats, sheep, and isotopic-based testing of deer, elk, and other ruminants. BioTracking LLC continues to research ways to evaluate and advance the technology. In addition, tests for bovine viral diarrhea (BVD) and caprine arthritis-encephalitis (CAE) are available to allow testing of multiple items in one blood sample.

The new ELISA technology offers a unique opportunity to detect pregnancy earlier and with greater accuracy over traditional pregnancy testing methods. For additional information, call (208) 882-9736 or visit their website at [www.biotracking.com](http://www.biotracking.com)

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