

Incorporating Milk and Blood Pregnancy Testing Into Your Management Program

Technology has changed the world of dairy reproduction management. In the past, pregnancy diagnosis was primarily guesswork, deduced by failure of the cow to return to heat. If a heat was not detected, then “she must be pregnant”. Palpation skills of veterinarians are valuable when we have access to them. However, the decrease in dairy farm numbers and the increase in farm size have had a significant impact on palpation being the best tool to use for pregnancy determination. Another tool, ultrasound diagnosis, became popular several years ago. This equipment is portable, and veterinarians that are trained to use the technology have been able to offer greater and more precise information on the pregnancy status of cows.

There was a time when we thought we could determine pregnancy by progesterone presence in the milk. Although technically still true, the obstacle of cows producing progesterone normally during each estrus cycle can only be overcome by repeated testing for this hormone. Repeated testing is costly, time consuming, and often not practical for routine pregnancy testing. Chemical pregnancy testing as a practical approach in the testing phase of reproductive programs has been around for more than 10 years now, and measuring the specific proteins only produced by the placenta of a growing fetus lends to an accurate and easy way to test for pregnancy.

Blood pregnancy testing

Blood pregnancy testing that can detect bovine pregnancy was added as a Dairy One service in July 2013, and to date, we have processed more than 9,000 samples. DG29™ from Conception Animal Reproduction Technologies provides accurate pregnancy detection on day 29 after breeding. This early diagnosis impacts profitability on the farm by reducing days open caused by delays in placing open cows back into the breeding protocol. Using a tool like DG29 affords dairy producers the opportunity to detect pregnancies on their schedule with little interruption to daily routine. Blood pregnancy testing can be especially valuable where professional service is far away or for pregnancy detection between veterinarian visits. Another important consideration is that veterinarian service may be more valuable in helping solve other management challenges on the farm while chemical pregnancy testing does the work to determine open cows for us.

Milk pregnancy testing

Milk pregnancy testing is the new kid on the block when it comes to pregnancy detection technology. Introduced to the marketplace by IDEXX in late 2012 and Dairy One in April 2013, milk pregnancy testing has grown rapidly due to the convenience and ease of obtaining a sample while maintaining a high level of accuracy. With more than 38,000 samples analyzed by the Dairy One ELISA Lab, more and more producers are trying this tool to find a fit into their reproduction management. For the moment, label instructions indicate we can test cows at 35 days post breeding. While this may lend well to early pregnancy diagnosis, the best value is the ease at which we can do confirmation testing of pregnancy monthly for identified pregnant cows with a normal DHI milk sample. As with blood samples, the test measures pregnancy-associated glycoproteins (PAGs), which are released into the blood by the placenta during pregnancy and subsequently find their way into milk.

Chemical pregnancy testing adds more choices and flexibility to the management of a dairy’s reproductive program. There are a couple of considerations when deciding whether blood or milk pregnancy testing is right for your farm. The first is the fact that when you palpate or ultrasound for pregnancy, you have immediate results known as soon as the procedure is finished. We operate our pregnancy lab 6 days per week to provide the best turn-around time for results to be sent to the farm. Dairies do have to manage for the shipment time it takes before we can perform the analysis. The second is that additional information such as twins, age of fetus, sex, reproductive tract problems, and possible others are only available with professional services or skilled technicians. These reasons will direct each individual farm in the application of the chemical pregnancy test.

Some dairies may choose to use blood or milk pregnancy testing and then bring in a veterinary specialist to advise and assist with only the open cows; after all, they are the cows we are really interested in since we typically do nothing different when we find cows pregnant. There are dairies that are managing the number and quality of replacements they are raising by using sexed semen

and knowing the sex of the fetus may be important enough to use ultrasound. So what are some ways that chemical pregnancy testing can fit into a successful reproductive program for a dairy?

Protocol 1: A 3 Three blood test method

Some farms implement a simple program that accomplishes specific goals. First, diagnose as early as possible with the least disruption to the cows and milking routine. Second, be consistent with protocols on every cow. Third, be proactive and not reactive by using confirmation testing to avoid long days open when cows lose their pregnancy. One farm with these goals has decided to use a 3 blood test protocol as part of their reproduction management. They begin breeding cows after 50 days in milk using a sync program and then use a blood sample for initial pregnancy detection at 29 days post breeding. All pregnant cows have blood submitted a second time at 80 days post conception for their first recheck. Finally, at the end of her lactation, a third blood sample is submitted for one last check before she is treated and turned dry. All the blood samples are shipped to our lab for fast and accurate results plus the convenience of e-mail notification of results. We also facilitate direct loading into compatible software to avoid potential errors in data entry. It sure sounds simple enough, and it may be bit overkill since most pregnancy losses happen before the 80 day post conception test. This herd happens to have a 25% Pregnancy Risk for the year moving toward 30% over the past 6 months. They have put into place an accurate, efficient, and simple program.

Just a note on the importance of confirmation checks after initial pregnancy determination: data in the graph below shows what we might expect on average for the loss of pregnancies by when the loss occurs in pregnant cows.

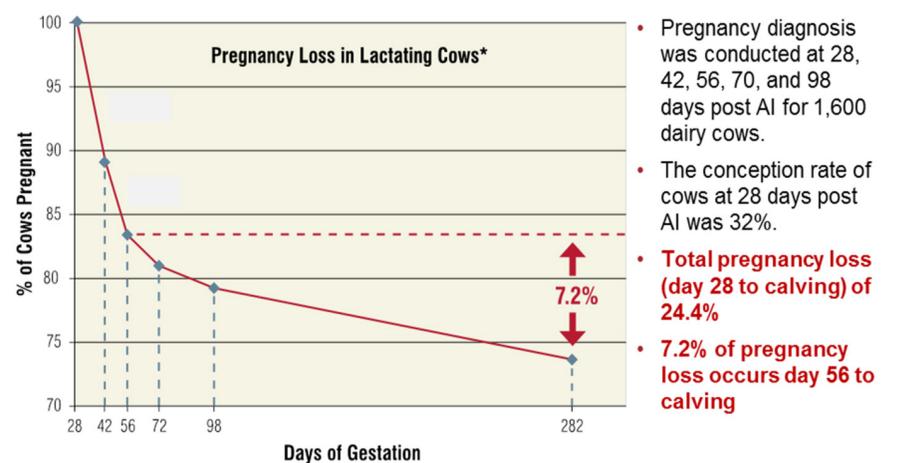


Chart adapted from Vasconcelos et al, 1997.

*Percentages represent pregnancy loss between days.

Test With Confidence™ IDEXX

This IDEXX illustration indicates days post conception when pregnancy losses are most likely to occur.

Protocol 2: Using DHI milk samples

There are farms that have changed to a pregnancy diagnosis program where they are using nothing but milk samples submitted on DHI test day. This program, although not as quick to find those open cows, due to a longer waiting period after breeding to test, cannot be any easier or simpler. The herd already is testing on a consistent once per month DHI program. That means that each month a range needs to be used to identify cows eligible for pregnancy testing. We can make that list quickly by setting the software used on test day to identify cows that are 35 days or more post breeding and have not been diagnosed pregnant or open already. We will typically have a range of cows between 35 and 66 days post breeding on our list for first submission for pregnancy. They are doing confirmation checks as well, so another group is identified as 70-101 days post conception for a recheck. The cows are identified as pregnancy test cows and the single DHI sample we send.

Another option, although not directly linked to the reproduction program, is to do a late lactation Johnes disease screening before cows are turned dry. We can couple this with one final confirmation of pregnancy for a solid program that still uses the single DHI milk sample that is taken on test day. Knowing the Johnes status helps us control of that disease when cows calve the next time.



Protocol 3: Use both blood and milk samples

The third example of a herd that has used chemical pregnancy testing as a routine part of their reproduction protocol actually is using both blood and milk pregnancy detection. This approach allows them to take advantage of the earlier time allowed after breeding with a blood sample (29 days) and thus minimize the days open for cows that should be found open. They submit blood samples weekly for cows 29-35 days post breeding. Cows that are pronounced pregnant after each week are then watched for any signs of pregnancy loss. If they pass that test, they will be identified for a confirmation test done with a DHI milk sample on test day after they passed 90 days post conception. With a monthly DHI testing plan, pregnant cows that are 90-121 days post conception will be identified and analyzed for pregnancy.

If you would like more information, or want to discuss a chemical pregnancy program that fits your management style, please contact your local Dairy One DHI technician or call 800-344-2697.