Monitor Reproductive Programs Through Bovine Blood Progesterone Testing

Managing a successful artificial insemination program includes not only time, technique and expertise but also monitoring to maximize results. Blood progesterone concentrations can be used to evaluate heat detection accuracy, synchronization efficiency and animal cyclicity.

Why should blood progesterone concentrations be monitored?

Inaccurate heat detection is costly. Research has estimated between 5% to 25% of cows are not in heat when inseminated and in some problem herds this number can be as high as 60%. Additionally, low heat detection accuracy can increase the incidence of pregnancies lost because the insemination of pregnant cows can induce embryonic death or abortion. In general, a heat detection accuracy of 90% (2 of every 20 cows inseminated are not in heat) is an acceptable goal.

Monitoring synchronization protocol efficiency can be challenging. Obtaining efficiency requires all protocol injections to be administered correctly and given at the appropriate times. In practice, it can be difficult to track compliance on injections. However, according to university research, when the protocol is correctly applied, a synchronization rate ranging from 80 to 90% can be obtained for Ovsynch and Presynch-Ovsynch protocols. This number can be used as a reasonable goal to evaluate synchronization efficiency of the protocol in your herd.

The negative impact of anovulation on reproductive efficiency is well known. Non-cycling cows do not conceive and might not respond to synchronization protocols delaying the occurrence of first ovulation. Although they do not ovulate, some show heat and might be inseminated, resulting in a considerable loss of semen and labor. Research has reported between 15 to 25% of cows are non-cycling by 45 to 70 days postpartum. A high incidence of non-cycling cows is associated with poor timed breeding results. In general, a percent cycling of 85-90% is an acceptable goal. (Figure 1)

![Figure 1: Blood progesterone testing results for RMS dairies, goals and observed research](image1)

* Routine monitoring of RMS® dairies (n=782) has assisted ABS customers in improving their heat detection accuracy, synchronization efficiency and cyclicity to high levels.

When should blood progesterone concentrations be monitored?

Progesterone concentrations vary throughout a cow’s estrous cycle. Figure 2 shows the normal change in levels and the appropriate time to sample based on the monitoring objectives.

![Figure 2: Expected progesterone levels during the estrous cycle and sampling times to evaluate heat detection accuracy, synchronization efficiency and cyclicity](image2)
Heat Detection Accuracy:

Use progesterone testing in conjunction with breedings based on observations, visual and from heat detection aids.

- Sample every cow the technician breeds by observed estrus until a minimum of 20-30 samples are obtained. Cows with low progesterone levels on breeding day indicate good accuracy.

Synchronization Efficiency and Cyclicity:

Use progesterone testing in conjunction with a timed A.I. synchronization protocol.

- Sample a minimum of 20 animals on the day of breeding and resample the SAME animals 7-14 days post insemination. Cows with low progesterone at breeding and high progesterone 7-14 days post breeding represent cycling cows as well as validate synchronization efficiency. Cows with low progesterone at breeding and 7-14 days post breeding may indicate the cow is non-cycling or undergoing early embryonic death. Further investigation is warranted.

How can ABS assist in monitoring blood progesterone concentrations?

ABS Global Technical Services offers blood progesterone testing for use in reproductive management and monitoring. Below are sample collection and submission information.

Sample Collection:

Use a blood collection kit (Figure 3) to obtain blood sample in individual red top tubes. Do not break the vacuum on the tube. Label the tube with the cow’s ID and date.

Once the samples have been collected, serum should be separated within 12 hours of collection. To do this, sit them upright in a warm place until serum separates from the clotted red cells. Pour off the serum into additional red top tubes. Alternatively, you can centrifuge the samples and separate the serum into new red top tubes. Label the tubes with the cow’s ID and collection date (submission tubes). Serum samples should be frozen until submitted.

Note: serum should not be separated and then frozen in serum separator tubes. The gel, when thawed, may separate from the walls and then the red cells and serum will mix again.

Sample Submission and Charges:

1. Cost is $7.00 per sample, minimum of 20 animals or $6.00 per sample for 50 or more samples.
2. Send notice of samples (dairy and quantity) to ABS Technical Services before sending samples: 1-800-356-5331 ext. 1489 OR ABS.Dairy.Performance.Prgm@genusplc.com
3. Pack submission tubes/samples in a foam shipping box with ice packs, submission form (page 3&4) and payment.
4. Send samples via UPS or FedEx to the address below. Results will be returned within 10 business days following receipt of samples.

Send samples to:

Joel Yelich
Bldg 459 Shealy Drive
University of Florida
Gainsville, FL 32608

Figure 3: Blood collection kit

References:

ABS Global Blood Progesterone Submission Form

Date ________________

Dairy Name ____________________________________________

Address ______________________________________________

City __________________________________________ State ____________

Method of Contact: □ Email  □ Fax  Contact Email: __________________________

Contact Phone: __________________________ Contact Fax: __________________________

Method of Payment:

□ Make checks payable to ABS Global

□ Credit Card □ MasterCard □ VISA

Name on card: ____________________________________________

Credit Card # (16 digits total): ____________________________

Expiration Date (mm/yy): ________________________________

Amount to be Charged ( _____Samples × $7.00 or _____Samples (50+) × $6.00): __________________________

Signature: ____________________________________________

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Attach additional sheets if needed