



Repro Tracks

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Options for pregnancy diagnosis

As you are planning your reproductive-management program, don't only focus on whether you plan on utilizing estrous synchronization or managing the breeding season. Consider pregnancy diagnosis as a tool that may assist you when making strategic nutritional and culling decisions. Diagnosing pregnancy in your herd has the potential to enhance the overall economic productivity of the operation. In addition, there are new developments in pregnancy diagnosis that may allow producers to detect the pregnancy status in their herds that are economical and accurate. Here are some questions that I have received recently focusing on pregnancy diagnosis.

How may pregnancy diagnosis enhance productivity in my operation?

Approximately 55%-70% of the input costs associated with a beef cattle operation are related to nutrition, both in stored feed and pasture inputs. To ensure that producers do not feed cattle that are not productive, strategic culling of nonpregnant cows has significant economic benefits. However, in most reports and in discussions with producers, many cattlemen fail to have a pregnancy diagnosis performed after the breeding season.

The National Animal Health Monitoring System (NAHMS) indicates that less than 20% of producers use a form of pregnancy diagnosis. These numbers are surprisingly poor considering the opportunity cost of diagnosing nonpregnant cows. Generally,

the average overall pregnancy rates after a breeding season of 60-120 days tends to be about 88%-94%. Greater pregnancy rates than this can be achieved occasionally, yet poorer pregnancy rates are more frequent.

Feed costs associated with maintaining a nonpregnant female for one year without giving birth to a calf can cost a producer more than \$400 per year. Waiting to determine whether a cow gives birth rather than diagnosing pregnancy shortly after the breeding season results in added costs to the operation. These costs frequently exceed \$200 per cow.

Therefore, every nonpregnant cow removed from the herd prior to calving could result in significant savings. In addition, diagnosis of pregnancy allows producers the opportunity to strategically feed cows based on their pregnancy status, again reducing

costs associated with excessive feeding of nonpregnant cows.

What methods are available to beef producers for diagnosing pregnancy?

Pregnancy diagnosis can be simply performed at the time that producers work their cattle during their vaccination schedule or even at the time of weaning. There are three practical methods that can be utilized for pregnancy diagnosis in beef herds: (1) rectal palpation; (2) transrectal ultrasonography; or (3) use of a blood sample that is submitted to a laboratory for analysis with results returned to the producer within a few days.

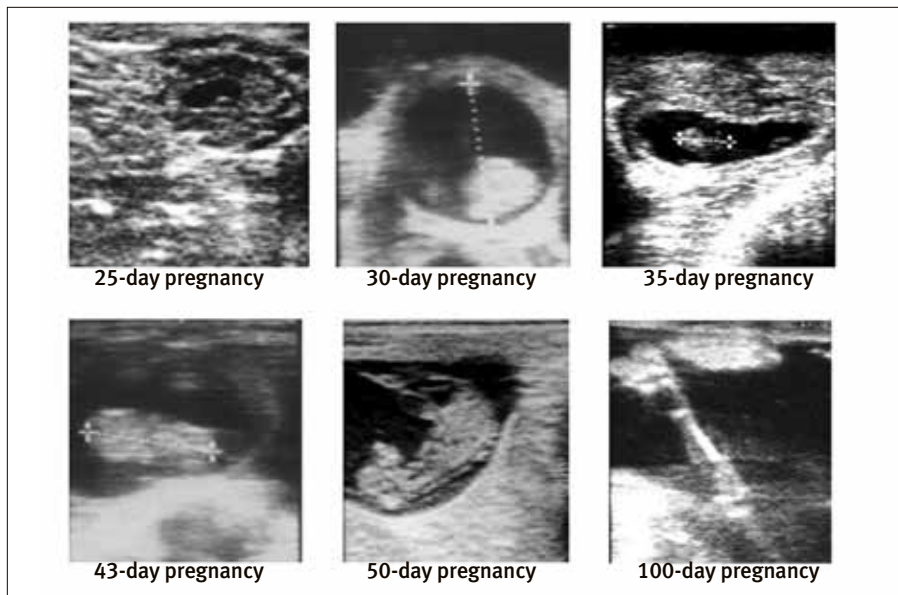
Rectal palpation is an accurate form of pregnancy diagnosis that can be performed after Day 35 of pregnancy. Most veterinarians are proficient at pregnancy diagnosis in the form of rectal palpation, and it is a simple procedure that requires little time in the cattle-handling facility.

However, rectal palpation does not necessarily provide any information about the viability of the embryo/fetus. Therefore, some animals with a nonviable embryo or fetus, or a fetus in the process of degenerating, might be diagnosed as pregnant. However, this procedure is the most utilized of all pregnancy diagnosis techniques because it is generally fast, and you know the pregnancy status while the cow is in the handling facility.

Transrectal ultrasonography can be used to detect early pregnancy, as early as 26 days of gestation for heifers and 28 days of gestation for cows, with a high degree of accuracy (see Fig. 1). For a skilled technician, the procedure is as fast as rectal palpation and may provide additional information in terms of the viability of the embryo/fetus, incidence of twins, and potentially the sex of the fetus.

Prior to the development of ultrasound for pregnancy diagnosis in cattle, technicians were unable to accurately determine the viability or number of embryos or fetuses. Because the heartbeat of a fetus can be detected at approximately 22 days of age, we can accurately assess whether or not the pregnancy is viable. Ultrasound also gives producers an opportunity to diagnose the sex of the fetus, which can occur between Day 55 and Day 80 of gestation. Many

Fig. 1: Ultrasound images of the bovine fetus at various stages of development



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cattle operations are developing strategies to use fetal sexing as either a marketing or purchasing tool.

Blood samples are now a suitable alternative for determination of pregnancy. Blood samples are taken to evaluate for pregnancy-associated glycoproteins (PAGs) or pregnancy-specific protein B (PSPB). Heifers and lactating cows can be tested at 30 days or later after breeding. The primary drawback of a blood test is that the test is not a chuteside test. It generally takes two to five

days after shipping the samples to receive the test results. However, the test often is more economical and provides some convenience, since a producer can collect the sample on his own schedule. These tests cost \$2.40-\$4.00 per cow from the laboratory that processes it, plus the cost of a sample tube and needle. Shipping expenses also must be added if the tests are not processed locally.

There are at least two commercial blood-sample pregnancy test kits [BioPRYN® (Pregnancy Ruminant Yes/No) and DG29™].

Both work effectively. Go to the following websites for information on how to collect the sample and instructions on where to submit the sample after it is collected:

- ▶ BioPRYN: <http://www.biotracking.com/?q=beef>;
- ▶ DG29: <http://genex.crinet.com/page3429/DG29BloodPregnancyTest>.

What are some key aspects of using a blood test for diagnosis of pregnancy?

The blood tests are more than 99% accurate if the cow is called not pregnant, with less than 1% showing false-open

(false-negative). The false-pregnant (false-positive) rate for the test is approximately 5%. In practice, high-producing dairy cows tend to show slightly higher false-positive rates of 7%-8%, especially during periods of extremely hot weather. It is presumed that a portion of this variance is due to higher early embryonic death, and not to test inaccuracy. Since the goal is for a producer to accurately determine nonpregnant cows, the blood tests are highly accurate.

Lactating cows have residual PSPB from the previous pregnancy until 90 days after calving. To be safe in not having a false-positive result, producers are cautioned to

take the sample at 30 days or more after breeding, and 90 days or more after calving. Thus, if a cow is bred at 60 days after calving, it is appropriate to take the 30 days postbreeding sample, which is 90 days after calving. If she is bred at 55 days after calving, then the postbreeding sample should be taken at 35 days so that the cow is 90 days postcalving.

In general, pregnancy diagnosis should be used as a tool to enhance production efficiency of beef herds. Perhaps not all of the advantages of pregnancy diagnosis have been addressed, but producers should consider that understanding the pregnancy status

of cattle in the herd may allow for making critical management and economic decisions several months prior to calving, which allows them to proactively make marketing decisions based on pregnancy status.



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