Repro Tracks

▶ *by **Cliff Lamb**, Texas A&M University*

Data and fertility

Most cattle producers have initiated and, in most cases, completed their spring breeding seasons. Many producers will be recording data associated with the breeding season, such as sires, matings, pregnancy information, breeding dates and more. What do you do with this data? A large proportion of producers will not do anything with the data that they record. It frequently is simply saved as a reference in a book or on a computer for some time in the future. Recording data, analyzing that data, and using the data to make decisions may be the most effective way to alter the reproductive performance of an operation.

Use the data

All too often, we make decisions based on memory, and that usually is not accurate. In addition, we also frequently concentrate on treating or focusing on individual animals in the herd, rather than treating the herd as a single unit. Utilizing data often removes the subjectivity from a decision and allows producers to make more informed, accurate decisions. I hope that we can address some of the individual benefits of collecting and analyzing reproduction data for making decisions in an operation.

What are some important things to consider when evaluating fertility in a beef herd?

Beef producers need cows to become pregnant, deliver healthy calves and wean productive calves in order to make their operations economically viable. The failure of breeding females to become pregnant directly impacts the economic viability of every beef operation, yet few producers realize how infertility affects their individual operations.

Infertile beef cows and heifers can fall into three primary groups:

1) cows that fail to become pregnant during the breeding season (usually 60 to 120 days);
2) cows that become pregnant but fail to calve; and
3) cows that become pregnant late in the breeding season.

Infertility that leads to the failure of a cow or heifer to calve during the subsequent calving season results in the single largest economic loss to beef producers. This is because no economic return will be realized from those cows for at least one additional year, unless producers have multiple breeding seasons or a split breeding season.

Cows that fail to become pregnant during the breeding season do not give producers an opportunity to market a calf, becoming an economic liability to beef production systems.

What causes infertility in cattle, and what data are important to determine infertile females in the herd?

Beef females fail to become pregnant for numerous reasons, such as being anestrous or prepuberty (cows and heifers that do not start their estrous cycles during the breeding season), disease, or suboptimal management. In addition, cows may become pregnant but fail to calve because they lose their pregnancy at some stage of gestation because of a disease or traumatic event. Either way, the economic impacts of cows failing to calve are profound.

Approximately 34.5% of all U.S. beef producers use pregnancy detection as a management method to determine if cows are pregnant and to make culling decisions. Pregnancy detection usually occurs about 30-90 days after the end of the breeding season. Pregnancy diagnosis affords producers an opportunity to cull cows that are not pregnant.

However, in an effort to maintain a steady population of brood cows, removing these cows from the herd may reduce a producer's flexibility to cull other cows that may fail to produce thrifty calves, or that should otherwise be culled for more legitimate production characteristics, such as poor genetics, temperament, structural concerns and poor health.

In one report, producers cull approximately 4.5% of the cow herd annually because the cows fail to become pregnant. For the 65.5% of beef producers who fail to use pregnancy diagnosis in their operations, the first opportunity they have to determine which cows are not pregnant is after the subsequent calving season. At that point, producers may decide to either retain the cows that failed to calve, or cull those cows prior to the next breeding season. Either way, there is a significant cost to the producer for maintaining those cows for a full year without producing a calf.

Fig. 1: Cumulative calving by year for two years (2006 and 2007) prior to introducing multiple reproductive management interventions compared to the five years (2008 to 2013) after introducing multiple reproductive management interventions
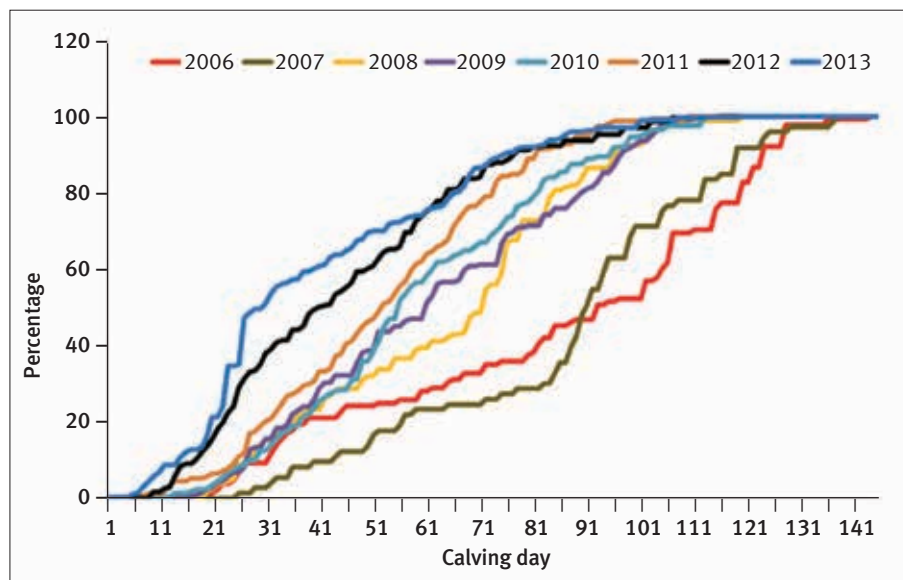
Is there an easy way to determine the effect of infertility in an operation if I record pregnancy information?

Producers can calculate the effect of fertility on their own operations by simply calculating the revenue generated by exposed cows in the herd. Here is an example (using estimated values): calf price for 500-weight feeder calves is $1.50 per pound (lb.); percentage of pregnant cows is 85%; and weaning weights average 500 lb. Therefore, the following calculation may be used (assuming there is little or no difference in the maintenance costs of a pregnant or nonpregnant cow):

1) Value of weaned calf per exposed cow if 100% of cows are pregnant =
500 lb. × 100% × $1.50 per lb. = $750.00 per cow

2) Value of weaned calf per exposed cow when 85% of cows are pregnant =
500 lb. × 85% × $1.50 per lb. = $637.50 per cow

3) Loss due to failure to become pregnant during the breeding season =
$750.00 - $637.50 = $112.50 per cow

This case demonstrates that infertility costs the producer $112.50 per exposed cow. For a 100-head cow operation, that is $11,250. Obviously producers cannot overcome all infertility, but understanding the costs associated with infertility may ensure that changes occur to enhance the factors responsible for improving fertility and reduce the negative influences on fertility.

What additional data should be considered to assist in making decisions on fertility?

Ultimately, the single greatest factor affecting the productivity of an operation is the percentage of cows that calve within the first 30 days of the calving season. Therefore, collecting data that can be used annually to assess changes in productivity should be considered. The key pieces of data to evaluate the productivity of the operation are calving dates of all cows. Using these data, producers should make culling decisions to gradually reduce the length of the breeding season over time. This will enhance the percentage of cows calving in the first 30 days of the calving season.

Additional data that are useful in making an impact to fertility are:
1) breeding season dates (try to reduce the length of the breeding season over time);
2) cows that experience calving difficulty (consider culling those cows having calving difficulty since they will have poorer pregnancy rates);

POWER in DATA

3) differentiate pregnancy rates among cattle groups (to help determine if there may be a sire, nutrition or herd health effect that needs to be addressed);
4) calf performance data (this should be used to assist in making culling decisions); and
5) pregnancy rates to artificial insemination and overall breeding season pregnancy rates (as previously discussed, this can be used to determine the profitability of the operation and should be used to make culling decisions).

These data do not necessarily need to be recorded in any complex data-management software. Starting by simply recording the data in a pocket book and then using it to make an annual analysis is a good start. However, many producers are now comfortable with computer software and can use many different software programs (Microsoft Excel, etc.) or cattle management programs (CattleMax, etc.), which are more robust and allow producers to make more in-depth analyses.

Is there an example of how to use calving data to evaluate an operation over time?

There is a case study conducted during the spring 2008 to spring 2013 breeding seasons of a cow-calf operation consisting of 300 cows. Prior to the 2008 breeding season, the herd was exposed to a 120-day breeding season. The goal was to reduce the breeding season to 70 days within four years. As a result of incorporating multiple reproductive management practices, the breeding season was reduced from 120 to 70 days, and every year a greater percentage of cows calved earlier in the breeding season (see Fig. 1).

The net result was a more compact calving season that increased the value of calves (in current dollars) by $169 per calf or an annual increase in calf value for the 300-head operation of $50,700 per year. Determining the impact of incorporating reproductive management procedures would not have been possible had we not collected calving information.

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