



Repro Tracks

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Dealing with embryonic and fetal mortality

Getting cows pregnant is only part of the battle. Breeders must design their vaccination programs and management practices to avoid pregnancy loss. Having realistic expectations and understanding factors that influence embryonic mortality and abortion can improve management decisions that influence the rate of pregnancy loss.

Breeder Question No. 1:

I have a small herd of 30 registered cows that calve from December through February. Last summer the vet pregnancy-checked them and indicated that all but one had become pregnant during our breeding season. At calving time, three cows that he said were 90 days pregnant did not have a calf. Is this much embryo mortality normal? What should I do with these cows?

Response: Losing more than 10% of the pregnancies in the herd to embryo mortality, especially after they were 90 days pregnant, is higher than expected. However, remember that you are dealing with a small group, and a difference of one or two lost pregnancies looms large in a group of 30 cows.

To get a handle on “what’s normal,” we conducted an experiment to document the rate of embryonic mortality in a herd of Angus cows at Virginia Tech. After breeding the cattle by artificial insemination (AI), we pregnancy-checked them using ultrasound at 25, 45 and 65 days of pregnancy. Then we calved them out.

Ultrasound allowed us to pregnancy-check earlier (25 days) than if we had rectally palpated the cows by hand. It also allowed us to see a heartbeat and verify each embryo was alive at each stage of pregnancy. The results of our study are shown in Table 1.

Overall, we lost 12 of the 138 pregnancies detected at 25 days after breeding. That reduced our pregnancy rate to the AI breeding by 6%. Notice that the rate of embryo loss decreased as pregnancy progressed. Nine were lost between 25 and

45 days; two were lost between 45 and 65 days; and one was lost between 65 days and term.

This was a well-managed group of cows that had an average body condition score (BCS) of 6 and had routinely been vaccinated 30 days prior to the breeding season for infectious bovine rhinotracheitis (IBR), parainfluenza-3 (PI₃) virus, bovine viral diarrhea (BVD), leptospirosis (lepto) and vibriosis (vibrio).

Your loss of three pregnancies in late gestation may not be a reason for alarm if it happened one time and if the herd is on a sound vaccination program. This is particularly true if most of the other cows in your herd became pregnant on the first breeding and there were no other reproductive problems. Conversely, if a high rate of embryonic loss occurs repeatedly or if there are other signs of reproductive failure (e.g., open cows or numerous late-calving cows), there may be reason to be concerned.

The best place to begin tracking down the cause of late gestation embryo loss is by working with your veterinarian to focus on the cows that were palpated pregnant, but failed to deliver a calf. Collecting urine and blood samples from those cows would allow you to test for a leptospirosis problem. Testing those cows for persistent BVD infection and testing the calves of all the other cows in the herd could be used to eliminate persistent BVD as a potential cause of the abortions.

The bull(s) breeding the cows should not be overlooked. Depending on the geographical location of a herd,

trichomoniasis may be a possible cause. Trichomoniasis is more commonly a cause of pregnancy failure early in gestation, but any bull(s) servicing the cows should be tested for trichomoniasis if the herd is in an area where trichomoniasis is prevalent. The bull(s) should also be tested for a persistent BVD infection.

In the end, if the cows that suffered late-gestation abortions test “clean,” there is no reason not to rebreed them and keep them in the herd.

Breeder Question No. 2:

I saw a cow in a sale catalog that was listed as “safe in calf,” but it indicated she had twin calves. If this cow is purchased, is she more likely to abort the twin calves than a cow carrying a single calf? Is the seller obligated to return money to the buyer if this happens?

Response: Cows carrying twin calves in utero are more likely to suffer embryonic mortality and abort than cows carrying a single calf. A recent study of dairy cows indicated that pregnancy loss was 3.1 times more likely in cows bearing twins than in those bearing a single calf.

However, the same researchers noted that the likelihood of embryonic loss in 211 cows carrying twins depended on whether the twins were developing in the same uterine horn or whether each developed in a different uterine horn. Sixty-six of 125 cows (53%) that had embryos developing in the same uterine horn lost the pregnancy and aborted both calves after Day 35 of pregnancy. In contrast, only nine of 86 cows (10%) lost the pregnancy and aborted if the embryos were each developing in a different uterine horn.

Another interesting finding in this study was that in 13 cases (6%) one embryo died during pregnancy and the cow delivered a single calf at term.

It is clear that buying a cow carrying twin calves is risky. The risk is made even greater by the fact that calving difficulty is twice as likely to occur in cows bearing twins. Furthermore, if the pair of calves includes a male and female, the chance of the heifer calf being a freemartin (sterile female) is greater than 95%. This figure is based on reports from a herd of cattle selected for increased

Table 1: Rate of embryonic mortality

No. cows bred	No. of pregnancies, %			No. calves born
	25 days	45 days	65 days	
205	138	129	127	126
	67%	63%	62%	61%

twinning at the Roman L. Hruska U.S. Meat Animal Research Center (MARC) at Clay Center, Neb. During a five-year period, cows in that herd produced 463 female calves born twin to a male. Only 20 of those females (4.3%) were fertile.

The risks associated with buying a cow carrying twin calves is transferred to the buyer at the time of the sale. The "Suggested Sale Terms and Conditions" published by the American Angus Association does not specifically describe responsibilities of the buyer and seller in the case of twins. However, in the case of the sale of a cow described as "safe-in-calf" the Terms and Conditions states only that "females are guaranteed by the seller to have been examined by a competent veterinarian and determined to be in calf."

Therefore, a cow safe in calf with twins, like a cow carrying a single calf, is only guaranteed to have been pregnant at the time of the sale. Technically, the fate of that pregnancy becomes the responsibility of the buyer at the time of the sale.

A responsible breeder who identifies cows carrying twin calves in the sale catalog is acting with as much good faith as possible. By identifying those cows he knows are carrying twins, he is providing the buyer with as much information as possible on which to base the buying decision.

Before leaving this topic, it is only fair to point out that in cases where the sale of a pregnant cow carrying twins results in an undesirable outcome (abortion, dystocia and/or calf death) many breeders are willing to work with buyers to negotiate some relief for the economic loss, especially if the cow was not identified as carrying twins. Although the liability technically rests with the buyer, most breeders are interested in customer satisfaction and may negotiate some credit or settlement with the buyer if asked to do so.



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Editor's Note: *Bill Beal is a beef cattle reproductive physiologist at Virginia Tech. He conducts research involving estrus synchronization, AI, embryo transfer and the use of ultrasound technology. This column is designed to provide answers to questions about reproductive management commonly posed by commercial and purebred breeders. If you have questions or comments related to the reproductive management of cows or bulls, e-mail them to him at wbeal@vt.edu or mail them to him at the Department of Animal & Poultry Sciences, Virginia Tech, Blacksburg, VA 24061-0306.*