

Dairy Details

What's with all the twins, Doc?

Re-examining the factors of twin pregnancies.

If there is a season for everything, then the cooler temps of Fall may also signal the presence of “twin season”. On a recent herd check, four of the first five cows examined by ultrasound had two corpora lutea (CL's), an early indicator of a twin pregnancy. These cows will be rescanned closely at next herd check for the presence of viable fetuses. A discussion then followed as to why Fall seems to be the time when more twin pregnancies occur in dairy cows. Unfortunately, there is not much accumulated data to either support or refute this notion. However, when other factors of twinning are considered, it does not seem to be much of a stretch to see that it is possible that Fall really may be the season for conceiving twins. Let's take a quick look at a few of those factors widely reported to play a part.

Genetics – selecting for certain traits such as milk production may have also “selected” for twins (see below).

Breed – Among dairy breeds, the twinning rate in Holsteins is around 4%, Jerseys about 1.5%, Brown Swiss close to 9%.

Parity – the risk of conceiving twins increases with each lactation, being greatest for cows in third or greater lactation. The largest single increase in risk occurs from first to second lactation.

Ovulation – twins can occur when an embryo splits in two early in development, resulting in identical twins. This rarely occurs in cattle. More often, twin pregnancies are the result of double ovulation, meaning two eggs are present to be fertilized in the same cycle, resulting in two separate embryos. The rate of double ovulation in dairy cattle has been repeatedly shown to be around 14%. One study finding this same rate of double ovulation (13.8%) also found the conception rate on double ovulation cows to be a whopping 64%, compared to 45% for single ovulation cows. Clearly there is an association between double ovulation and twinning, but the mechanism by which it occurs is poorly understood at this time.

Another oddity of double ovulation occurs among non-cycling (anovular) cows. On average, most dairy cow's take 33 days to ovulate after calving, but as many as 20% of cows will not be cycling even by 70 days in milk – they will be anovular. These cows are commonly placed on timed breeding programs such as OvSynch (OS). A study on the effects of OS on cows showed that 88% of these non-cycling cows ovulated after the first GnRH injection (compared to 62% of cycling cows). Both groups ovulated well

over 90% of the time after the second GnRH. The interesting part is that of those 88% of the non-cycling (anovular) group ovulating after the first GnRH, 40% of them double ovulated.

Milk Production – it would seem that the more milk a cow produces would leave her with less energy for other things, such as ovarian function, when actually the opposite appears to be true. Multiple studies have concluded that double ovulation occurs much more frequently in cows that produce more than 40 kg (88 lbs) of milk. For better perspective, cows producing 30 kg (66 lbs) double ovulate less than 5% of the time, whereas cows that produce 50 kg (110 lbs) of milk double ovulate over 50 % of the time.

So the theory that more twin pregnancies are being detected in your Fall herd checks seems reasonable because cows that calve in the hot summer months will simply be more physically able to conceive or maintain a pregnancy in the cooler Fall environment. They are also eating new crop forages, possibly higher in quality and energy. Both of these may lead to a “flushing” effect, similar to that commonly practiced in sheep management by feeding higher energy pre-breeding to increase ovulations, leading to more lambs. These cows would also now be somewhere around peak milk production breeding time, which leads to more double ovulations and the potential for more twin conceptions.

If your herd is not experiencing an increase in twin pregnancies, do not feel left out. It is well known that cows that carry twins present management challenges before and after calving. First, more energy is needed to grow two fetuses, leaving less for the cow. Common ways to combat this are to keep these cows on a higher plane of nutrition by leaving them on the “high group” ration until dry off, drying them off early (since they generally calve earlier), and getting them onto the transition diet earlier. Secondly, cows that have twins are also at increased risk for post-partum complications such as milk fever, retained placenta, ketosis, and displaced abomasum. These complications can then make it more difficult to get that cow pregnant again, coupled with a higher probability that she will conceive twins again. Thirdly, twin calvings can also have an indirect effect on heifer inventories if the result is bull/bull or bull/heifer. Heifers calves born twin to a bull have a greater than 90% chance of being sub-fertile or sterile (freemartin). But just as important to heifer inventories is the fact that twin calves have a much higher mortality rate than single birth calves.

The early detection of twin pregnancies is just one of the benefits of ultrasound examination. Future science will continue to help us understand the physiology behind them and better ways to manage cows at risk for them, but we still have to detect them first!