

A GENETIC APPROACH TO IMPROVED FERTILITY



Alta 4-EVENT COWS don't happen by accident. It takes a clear focus on the best day-to-day management, and a long-term plan toward breeding and developing a healthy, fertile, and productive herd.

Here, we focus in on how the decisions you make on breeding and genetics can help you create more 4-EVENT COWS in your herd. We share two ways – plus some proof – that genetics are a key piece of the puzzle in maintaining a trouble-free, profitable herd – now and down the road.

1. CREATE MORE PREGNANCIES NOW

If you're looking for a fertility advantage on inseminations today, sire fertility rankings are where you'll want to focus. Alta's **CONCEPT PLUS** sire fertility evaluation ranks each sire on his ability to get cows pregnant. In fact, regardless which semen type you use in your breeding strategy, you'll find high fertility **CONCEPT PLUS** options to fit.

Why should you trust Alta's **CONCEPT PLUS** ratings? They are based on real pregnancy check results from progressive dairy herds throughout North America. The evaluation also maintains accuracy by accounting for factors like number of times bred, month/season, technician and breeding code effects.



CONCEPT PLUS DxD
High fertility sires

high fertility sires will give you a 2%–5% greater chance at creating a pregnancy with conventional semen.



CONCEPT PLUS 511
High fertility SexedULTRA™ sires

high fertility SexedULTRA sires offer a 4%–9% conception rate advantage over the average sexed bull.



CONCEPT PLUS BxD
High fertility beef x dairy sires

high fertility beef x dairy sires give you a 2%–5% greater chance at creating a conventional pregnancy than the average beef bull used on dairy cows.

If you're more familiar with sire conception rate (SCR), keep in mind that Alta's **CONCEPT PLUS** evaluation is more complete, current, and consistent – and actually served as a basis for SCR. The table below compares what's included and accounted for in each evaluation.

COMPARING SIRE FERTILITY EVALUATIONS	SCR	CONCEPT PLUS
Based on real pregnancy check results	✓	✓
Accounts for various factors affecting fertility, including age, month, herd, service number and lactation	✓	✓
COMPLETE		
Separate ratings available per semen type, including conventional, sexed and for beef x dairy breedings		✓
Accounts for additional factors affecting fertility, such as technician and breeding code effects		✓
Data is collected from partner herds in North America, and not restricted to US farms on official test		✓
CURRENT		
Ongoing data is collected directly from DairyComp and other herd management software programs		✓
Updates are available every other month		✓
CONSISTENT		
Data is gathered only from progressive, large herd environments		✓

2. CREATE MORE FERTILE COWS FOR THE FUTURE

While sire fertility selection can get you more pregnancies, and more [Alta 4-EVENT COWS](#) now, it takes a long-term plan and genetic selection for female fertility to ensure your herd's reproduction continues to improve.

Daughter pregnancy rate (DPR), heifer conception rate (HCR) and cow conception rate (CCR) all provide a genetic basis for creating more fertile females. Emphasizing one, or any combination, of these traits in your customized genetic plan means you are breeding a next generation of cows with a greater ability to conceive.

Daughter pregnancy rate is defined as the number of non-pregnant cows that become pregnant within each 21-day period. When a sire has a DPR of 1.0, it means that his daughters are 1% more likely than the average herdmate to become pregnant in a given 21-day window. And each added point of DPR equates to 4 fewer days open.

When referring to HCR and CCR, these traits are defined respectively as a virgin heifer or lactating cow's ability to conceive. For each of these traits, when a sire has a value of 1.0, it means that his daughters are 1% more likely to conceive than daughters of a sire with an HCR or CCR of 0.0. While DPR is a slightly different calculation than HCR or CCR, all three are a way to measure the fertility of the female herself.

WHY SELECT FOR DPR IF HERITABILITY IS LOW?

Heritability is the proportion of the total amount of variation in a trait between groups due to genetics.

In the simplest terms, think about two cows in two different herds. How much of the difference in their ability to become pregnant is due to genetics, and how much is due to management? It turns out that in terms of DPR, about four percent is due to genetics and the remaining 96 percent is due to management and environment. Therefore, DPR has a heritability of 0.04.

Despite DPR's low heritability, you will still be missing out on more fertile cows in your future if you decide against selecting for it within your genetic plan.

As a big-picture example, think of a herd with a 25 percent preg rate. If this dairy owner selects a group of sires with a favorable DPR average of +3.0 to create more fertile cows for the future, then we expect daughters of those sires to have a 28 percent pregnancy rate.

Even though fertility for DPR is low, selection for this trait makes a difference in real herds. Take this real-life example from a 1,500-cow dairy with very good management and reproductive performance. We've separated out the herd's first lactation cows into quartiles based solely on their sire's DPR value. After that, we compare each group's average sire DPR with the group's actual preg rate.

Lactation 1 cows	# of cows	Average Sire DPR	Actual Preg Rate
Top 25% for highest Sire DPR	174	2.3	27%
Bottom 25% for lowest Sire DPR	137	-1.1	20%
Difference		3.4	7%

It's clear to see that the high DPR sires, do indeed, create daughters that become pregnant more quickly than the daughters of low DPR sires.

IMPROVE FERTILITY RESULTS – NOW AND INTO THE FUTURE

If your goal is to create more [Alta 4-EVENT COWS](#) through improved fertility and reproduction, don't miss out on the impact that genetics can make in taking you to that next level. Despite the low heritability of fertility traits like DPR, these two tips will help improve your herd's reproductive results now and into the future:

1. Improve conception rates now by using sires with the high fertility CONCEPT PLUS rating to boost your herd's current conception rates.
2. Improve fertility for the future of your herd by including DPR and/or HCR and CCR in your customized genetic plan to create a next generation of more fertile females.