

# Overcoming Obstacles to TAI

by  
**STEVE SUTHER**

Only 10% of cattlemen use artificial insemination (AI), with time and labor most often cited as barriers by the other 90%. Plenty of them have never considered it because, they figure, you still need bulls anyway, so why bother?

Yet many of the Missouri producers now using AI never thought about it 10 years ago.

"It might seem like a heck of a job, but now if you've got a place to catch a cow, you can AI a cow," says Jon Schreffler, herdsman for the University of Missouri (MU) Thompson Farm herd at Spickard, Mo. Heat-synchronizing protocols make it easy, and free online tutorials ([http://animalsciences.missouri.edu/extension/beef/estrous\\_synch/](http://animalsciences.missouri.edu/extension/beef/estrous_synch/)) help with the details.

Schreffler was a skeptic when it came to timed AI (TAI) in 2003.

"I was a pessimist at first," he admits. "Two or three years down the road you really start to see results. But the first time we used [TAI], you look around and think, 'what have I forgotten to do?' It just simplified everything so much. In two hours we bred 100 head and were done."

Genetics from the high-accuracy sires make for a real advantage, he says. "It's starting to show up not only in the heifers, but in the steers and

the final product as well." Economic results are on the money, too. When pasture-bred calves are breaking even, progeny of high-accuracy AI sires are making \$60-per-head profit, according to MU economists.

What about calving everything on the same, possibly stormy day?

If 62% of the 7,000 cows across Missouri conceive on schedule, as they tend to, will 4,300 calves arrive on their due date? No, says

David Patterson, MU reproductive physiologist. Statistically, a 100-cow herd with 62 pregnancies from TAI would see an average of 12 calves on the due date. The rest would follow the bell curve before or after, stretching out to 20 days.

Patterson feels a sense of urgency in educating producers, now that TAI protocols are proven effective.

"Using TAI is only the first step, because a wrong sire choice means

they're just breeding cows, not adding measurable value. When they do add value, we have to work on effective marketing," he says.

Producers wear many hats, so professors must work together — the reproductive physiologist with the nutritionist and marketing specialist.

"We're helping producers put together these puzzle pieces that we created," Patterson says. "We have to work closely with each of them until they see the huge opportunities; then they're off and running, and we're off to replicate that success."

"The Certified Angus Beef (CAB) program sold 775 million pounds (lb.) of product this year and will need a billion pounds a year by 2020. That's 3.5 million cattle; that's opportunity for those who can meet the demand," he says. "The urgency is that we don't want to see more producers lose interest or quit because they don't think they can compete anymore — there is a way. Everybody knows inputs have increased so remarkably relative to selling commodity calves. We have to figure out how to get more out of each calf crop we're producing."

Aaron Arnett, vice president of beef genetics for Select Sires, credits Patterson and MU for spreading the use of AI in beef herds across the world.

"Dave has led by example," Arnett says. "The Show-Me-Select



Aaron Arnett says, "Nothing is better for consistent, highly predictable outcomes than a cow herd with pedigrees stacked for a desired trait or combination of traits."



David Patterson feels a sense of urgency in educating producers, now that TAI protocols are proven effective.

PHOTO BY STEVE SUTHER

PHOTO BY TROY SMITH

## Stacked straightbreds

Uniformly excellent cows are a possible byproduct of a long-term artificial insemination (AI) program, depending on other strategies. Many Missourians in the Show-Me Select program have intensified straightbred Angus genetics, paying more attention to the cow side than most advisors suggest.

It could be a matter of perspective, because nobody can argue with the biology: A bull will sire 20-40 calves each year, while a cow typically has only one calf. But cow culling and heifer selection contribute to the herd effect by moving the bell curve for the population that well-chosen bull can breed.

Show-Me Select Tier-Two heifers are known for predictable maternal performance just as their steer siblings are proven qualifiers for the *Certified Angus Beef*® (CAB®) brand target. Aaron Arnett, vice president of beef genetics for Select Sires, suggests, "Success on both counts can be attributed, largely, to the sires and the stacking of pedigrees."

Obviously, the female herd is the primary means of such stacking. Just as obviously, it all starts with high-accuracy sires, he says. "But even the best of sires mated to a group of mongrelized cows will not produce calves that hit the high-quality targets with any consistency.

"On the other hand, nothing is better for consistent, highly predictable outcomes than a cow herd with pedigrees stacked for a desired trait or combination of traits," Arnett says. "When proven AI sires are mated in such a herd, the results will be impressive, worth retaining ownership and selling those calves on the grid."

Stacking pedigrees is difficult with crossbreeding, which Arnett still advocates in many if not most cases; it is the most recommended strategy for commercial producers. Those who aim for sustained heterosis may value breed complementary averages rather than focus on individual cows and lowly heritable reproductive traits.

"Still, that doesn't mean we completely discount those traits from consideration in the selection equation," says David Patterson, University of Missouri reproductive physiologist. "High-accuracy maternal bulls distinguish themselves on the basis of a combination of traits, including calving ease. We have not seen an increase in smaller pelvises or dystocia when stacking those [Angus] pedigrees."

"But we have run into problems where crossbreeding is involved, where high-accuracy calving-ease Angus sires are used on Continental-cross heifers," Pat-

erson says. "We've seen cases where birth weight in the calves from those heifers becomes a complete wild card — for better or worse, heterosis begins at conception."

Patterson and Arnett agree that producers can make progress toward greater predictability with straightbred, commercial Angus cow families with stacked pedigrees. Those who pursue straightbreeding without such an approach might be giving up heterosis benefits without the consistent tradeoff in high-quality beef premiums.

"Don't expect to pick an apple from an orange tree," Arnett says. "If you want a high measure of your cattle to qualify for CAB, you are going to have to practice some selection for the desired traits on both sides of the pedigree. It's just that simple."

Arnett says straightbreeding makes more sense with Angus than other breeds.

"All breeds are not equal, as the latest MARC (Meat Animal Research Center) data shows. Angus cattle now have more growth than some 'terminal' breeds and they do a lot of other things better, as well. That's just due to selection and concentration of desired genes over time; Angus cattle have been selected in large numbers to be that way."

program is generally regarded as the industry standard for replacement heifer development that results in heifers that are fertile, highly productive and make profitable contributions as cows." Patterson's leadership there "has increased the willingness of producers to practice better heifer development and use AI. That's because he has demonstrated that it increases profit versus less management, which is sometimes — mistakenly — perceived as lower-input and therefore more profitable."

Mike Kasten, Millersville, Mo., with 35 years of AI experience and that many years of detailed records, says he gets 91% bred in 40 days, and cows get four chances to breed in 65 days. His records also indicate heifers settling to TAI tend to rebreed and stay in the herd, 71% after seven years, compared to 63% pasture-bred as heifers.

"Maybe we can select for this," he says. "We have two cows bred for seven years with only one AI calf between them. Taking those out shows 80% of AI service results in a live calf."

Among other advantages Kasten points to compared to pasture breeding: 11 days more age can mean 30 pounds at weaning, fewer losses when calving during a narrow window of time and the opportunity for better, proven genetics. He recently bred 400 cows to the same bull and looks forward to the impact those daughters will have in the still-improving herds.

TAI lets him breed fall calvers without trying to observe heats in scarce daylight, but some bulls seem to work better than others. Kasten has seen a sire range of 22% to 75% settled using TAI. "With that kind of variation, it pays to ask the AI company," he says.

Arnett says there are apparently "considerable differences in the performance of sires across the population," based on conception data from several TAI projects through the years. His company has worked with universities on AI research for more than 40 years, and with MU for the past 15.

Doug Frank, beef product manager for ABS Global, has heard anecdotal ranges, too. "Logically, there would be some variation, but is the bulk of that bull-specific or related to other factors in the individual herd or specific collection? We would need 2,000 matings per sire, comparing a cross section of collections on each bull, to sort out whether those differences are truly sire-specific and repeatable."

While that's nearly impossible, Frank says, "we do have a significant amount of data suggesting that strict quality control can improve results." A two-year snapshot of ABS progeny-test herd data on nearly 5,000 matings showed semen produced using ABS quality control increased conception rates by 9%. It also reduced the variation in conception rates by half compared to custom-collected semen, he reports.

"In this data set, all bulls processed to ABS standards exceeded 56% conception on timed AI," Frank says.

Arnett and Frank say their respective

field staffs typically share what they have heard from anecdotal results.

Patterson sees a need for "more research on which bulls work best and how to improve that," as well as development of new technologies that can make all sires more effective in TAI, such as encapsulated semen for predictable timed release.




---

**"We're helping producers put together these puzzle pieces that we created," Patterson says. "We have to work closely with each of them until they see the huge opportunities; then they're off and running, and we're off to replicate that success."**

---