



Missouri Shows U.S.

Show-Me Select program kicks targeted high-quality beef production up to Tier Two.

Story & photos by **Steve Suther**

You might call it the Missouri miracle, or luck, or give credit to a few highly motivated people. But neither fate nor the work of a few could achieve what a long list of Missourians have done with Angus cattle in the past decade.

In 2000, Team Angus dared to target 30% *Certified Angus Beef*® (CAB®) brand acceptance. The goal was considered bold then, but recent years have seen a parade of Show-Me producers doing more than that, with 70%, 85% and even a load of 100% CAB and Prime. The Show-Me State is home to five past CAB Commitment to Excellence honorees on the cow-calf side and the top Quality Focus Award for small feedlots for the past three years.

In fact, if you look up records and Certified Angus Beef LLC (CAB) awards for the highest-quality commercial Angus cattle, you will find most of them either in the state of Missouri or in the watershed of its namesake river.

That's not to ignore the many excellent cattle outside of the region, but numbers are compelling. And for all the vaunted reputation of north-river Angus cattle, the carcass data seem to favor the southern watershed.

All right, so it's no miracle or coincidence. What's going on? Most observers would give some credit to the strong focus on beef

quality among Angus seedstock producers there and in nearby states. And they would certainly point to the University of Missouri (MU) work in helping spread top Angus genetics across the commercial sector.

The 90,000 females developed in the MU Show-Me-Select™ Heifer Program in 13

years have begun to show a compounding effect. Stacking generations of excellence has made for more predictable and higher quality and performance. Mike Kasten, Millersville, Mo., discovered after just a few years that three generations of females sired

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► **Above:** Missouri-source calves represent at least 10% of total CAB supplies today, and perhaps an even-higher share of CAB Prime. That’s more than 300,000 cattle yielding nearly 40,000 tons of boxed product for the brand, CAB’s Larry Corah says.

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by registered Angus bulls with above average marbling could produce 100% CAB and Prime progeny.

Integrated effort

Neither Kasten, nor David Patterson, MU Extension beef reproductive physiologist, will accept much credit, but they can't deny the role of catalyst. Patterson's team researched synchronized artificial insemination (AI), evolving protocols now used on thousands of ranches around the world.

That's because strategies such as one called "Show-Me Synch" have overcome the primary obstacles that kept AI from being widely adopted. Today, 73 herds and more than 7,000 cows in Missouri compose the expanding demonstration. Nearly all of them include Angus genetics.

When Patterson came to MU from Kentucky in 1996, the heifer program was his first project, and the first statewide, on-farm beef heifer development and marketing program in the nation. It also was a vehicle for driving an integrated approach to boost beef profits in the nation's third-ranked cow state. The first of three U.S. Department of Agriculture (USDA) grants was narrowly focused on developing AI protocols, Patterson says, but two successive grants have relied on all three legs of the land-grant system: research, teaching and Extension education. The grants have infused \$1.25 million into the state's economy since 1999.

Missouri presented a great opportunity because MU stood alone as the state's land-grant college, with a large research cow herd at Thompson Farm, near Spickard, Mo.,

and a strong veterinary program. "It was easier to get everybody on the same page," Patterson says. "The state's veterinarians really supported Show-Me Select, and it has opened other doors to herd improvement."

Nationwide, such progress has been slow. A 2008 USDA survey indicated no more than half of all ranchers have a defined breeding season, only 34% of herds are routinely pregnancy checked and only 10% use AI. Missouri figures to move well ahead of that curve, though many producers started at a low base.

"Years ago, they'd just breed a heifer and wait nine months to see if she would live or die," Patterson says.

Veterinary-certified health and reproductive tract scoring and pelvic measurement have set the stage for heifers

Overcoming obstacles to TAI

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 that easy, and free online tutorials (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 a \$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 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



PHOTO BY PAT PATTERSON

► Mike Kasten has conception rates to individual sires in a TAI program range from 22% to 75%. "With that kind of variation, it pays to ask the AI company," he says.

that showcase the world's most successful AI strategies and move Missouri beef genetics toward predictable calving ease and added value.

"We went from 10% to 15% losses at calving in the mid-1990s to 1% or 2% the last three years in the Show-Me heifers," Patterson says, citing buyer surveys. Little is left to chance, and service sires must be in the top 15%-30% of their breed for calving ease (see Show-Me Select requirements at <http://agebb.missouri.edu/select/prgmreq.htm>).

New level

A 2007 USDA integrated grant to develop fixed-time AI for the benefit of small farmers gave rise to the idea of improving genetics of the heifers over time, Patterson says.

"The whole idea was if we could increase the use of timed AI across the state, with an emphasis on high-accuracy bulls, we'd not only generate superior replacements, but more desirable carcass quality in the steers as well," he says. "We know how to control the estrus cycle in cows and heifers to where we can get 62% bred to one bull on one day. But that doesn't do much good if little thought is given to sire selection."

The approach led to development of an elite "Tier Two" level of heifers sired by high-accuracy, proven bulls. The MU focus had transitioned from crossbred research of the 1960s-1980s to straightbred Angus in the 1990s, mirroring local producers, capitalizing on the large Angus database and eliminating heterosis and other breed-effect "noise" from the data.

Using the Thompson herd for those studies in conjunction with progeny testing for research partner Select Sires, Patterson was impressed with the predictable reference sires.

"In 2005, we had 100 calves from one high-accuracy Angus sire come in from three different research herds and environments, and wow, it was like they came from a cookie cutter," he explains.

Sally Northcutt, genetic research director for the American Angus Association, which is a partner in the 2007 grant, helped the Show-Me Select board set requirements for Tier Two. As the website details, these heifers must be sired by registered Angus bulls with accuracies on their expected progeny

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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 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 out, compared to pasture breeding 11 days more age can mean 30 lb. 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 over 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?" Frank asks. "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," he says, "all bulls processed to ABS standards exceeded 56% conception on timed AI."

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.



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differences (EPDs) of 0.65 for calving ease direct (CED), 0.30 for calving ease maternal (CEM), 0.75 for weaning weight (WW) and 0.20 for both marbling (MARB) and carcass weight (CW).

“Those levels were designed to capitalize on the enormous database of nearly 8 million growth EPDs in the Angus breed for a balance of traits important to breeders,” Northcutt says. “High accuracy in the growth trait requirements allows program participants to select from a large pool of balanced-trait sires.”

Carcass trait accuracies of 0.20 are not extremely hard to attain, but Northcutt says they are enough to “ensure consideration has been given to the end product as well as cow-calf traits.” Anyone who wants to dig deeper can “specify some target intervals for accuracy by using our possible change table at www.angus.org/Nce/Accuracy.aspx,” she adds.

Hitting the target

The first sales of a few hundred Tier Two heifers in 2010 found them bringing nearly \$200 above average program prices, Patterson says.

Meanwhile, steer mates to those heifers from the Thompson Farm herd were proving the carcass value in those genetics. Enrolled in the AngusSource® program and fed at the CAB-licensed Irsik & Doll Feedyard near Garden City, Kan., they were harvested on the U.S. Premium Beef (USPB)



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grid at a National Beef Packing plant. Their 86.8% CAB and CAB Prime took regional honors in the 2010 second-quarter AngusSource Carcass Challenge (ASCC), even better than the 85% CAB results in 2009.

A couple of the stops on the August 2010 Missouri Beef Tour provided further evidence of what Tier Two genetics can do to add value.

Mike Kasten has used AI and

documented the results since the mid-1970s on his 4M Ranch in Bollinger County, so he can appreciate the latest labor-saving aspects of timed AI. That protocol allowed him and one helper to breed 800 females this year, while investing only an hour of their scheduled time for each dozen head.

Kasten was a regional winner in the ASCC last year, and a recent load of calves brought \$100 per head in premiums on the USPB grid, with 90% CAB, including 30% Prime.

The Masters family at Cape Girardeau, Mo., pioneered the Tier Two concept a couple of years before that designation was official, according to Southeast Missouri Extension Specialist Roger Eakins. “Their GAR Predestined-sired heifers bred to SAF Connection sold in our May 2006 Fruitland Show-Me Select sale,” he reports, “and 31 head averaged \$1,831. They would have qualified as Tier Two today, and this family continues to produce top-quality Angus heifers.”

On the other side of those genetics, the Masters’ finished cattle, 992 of them through USPB over the last 10 years, have earned \$90,000 in added premiums. They averaged more than 67% CAB and Prime with only four head discounted in any way. This year’s 70 steers were 100% Choice or better, 83% CAB and Prime and no discounts.

Eakins, along with producers from Kasten to Masters, credit one local business for the area small producers’ ability to hit so close



► Missouri Extension beef specialists, including Roger Eakins (left), see Gerry Shinn’s example as one that could be replicated around the state to help small producers capture the value from improved genetics.

PHOTO BY PAT PATTERSON



PHOTO BY PAT PATTERSON

to the bull's-eye: More than 130 of them are customers of Performance Blenders, Jackson, Mo., which also became a CAB-licensed partner this summer (see "Blending Feed, Service, Beef Quality," page 174).

Marketing model

Arguably, any producer with Tier Two heifers in the Show-Me-Select program could point to these widespread results and negotiate a higher price for his steers. But the MU team suggests this level of achievement may be best rewarded by feeding or at least sharing in retained ownership on feed.

"You don't have to be big to retain ownership and receive premiums for superior genetics," Eakins told tour participants in August. "You can sell one or a few calves at a time."

Performance Blenders' owners Gerry Shinn and his son Geoff have been aggregating loads of cattle at the Jackson, Mo., facility for shipment to National Packing plants at Dodge City or Liberal, Kan., since 2000.

Cattle are weighed, tagged and assembled into load lots with individual identification maintained. Bills are split based on carcass weight percentages, and carcass data can be tracked all the way back to the cow. That allows focused improvement in herd genetics and management.

Gerry Shinn notes one customer improved over the course of 10 years from selling "Yield Grade (YG) 4, Select calves to selling 40% Prime with no discounts. It makes it worth getting out of bed each morning to see someone succeed like that." Although calves from several farms are on each truckload, Shinn's reports block out names while including the numbers.

"Even though they don't get to see any names, they're very competitive, and it's made them raise the bar a little bit," he says. That's evident in the quality trend among all customers. "We started out only qualifying 17% for CAB, but this year we made 44%," Shinn says. That doesn't include a rising share of CAB Prime.

"If you bred and fed them as a producer, I want you to capture the reward," he says. "And I will help fill in a piece of the puzzle that allows you to do that."

What next?

Patterson sees Shinn's example as one that could be replicated around Missouri to provide the marketing opportunity for small producers envisioned in the current USDA grant.

"It's also significant that the MU program ties into well-established marketing channels for high-quality beef that pay dependable premiums," says Larry Corah, CAB vice president.

"When you add up all the components of the Show-Me-Select and related programs, it would be hard to stack any more strategies to empower producers of every size to hit a home run and get paid for it," he adds.

Missouri-source calves represent at least 10% of total CAB supplies today, and perhaps an even-higher share of CAB Prime. That's more than 300,000 cattle yielding nearly 40,000 tons of boxed product for the brand, Corah says. That's based on at least 80% of the state's 2 million cows being Angus-influenced with a CAB acceptance rate of at least 25%.

"We can only imagine how much better this will get for Missouri producers and for our program as a result of the Show-Me Select and Tier Two initiatives," he concludes.

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"I've never been as excited about the opportunities that are out there as what we have right now," Patterson says.

He and MU economist Scott Brown, in a July 2010 USDA grant proposal, hope to further document "the economic benefits to cattle producers from empowering reproductive and genetic technologies." The plan would make use of CAB, Irsik & Doll, and Performance Blenders' databases, along with Eakins' local support.

Meanwhile, the Tier Two heifers will take over an ever-larger share of Missouri herds. To date, there have been a total of 100 Show-Me-Select Replacement Heifer sales at 10 locations across Missouri, with another location starting this fall at Saint Joseph, Mo. Prior to the fall, the sales had generated more than \$22 million in gross sales from 2,500 buyers in 16 states. At least 70% of the enrolled heifers have stayed at home to keep making this model even more successful.

That bodes well for the continued ability of U.S. beef to compete with relative upstarts in South America, says Patterson, who has visited Brazil and hosted foreign

visitors in Missouri. "They're committed to using more Angus genetics and developing grain feeding there," he says. "We've got to keep up our focus, showing the best ways for our producers to use the tools at

hand to meet worldwide demand for high-quality beef."



Editor's Note: *Steve Suther is director of industry information for Certified Angus Beef LLC.*



Veterinary-certified health and reproductive tract scoring and pelvic measurement have set the stage for heifers that showcase the world's most successful AI strategies and move Missouri beef genetics toward predictable calving ease and added value.