

The Evidence MOUNTS

The presence of fertility-associated antigen may help predict how many calves a bull will sire.

by *Becky Mills*

Roy Ax knew there was something in sperm — or rather not in sperm — that accounted for those mystery bulls. You know the ones. They have a perfect semen test and are aggressive about breeding cows, but they just don't put as many calves on the ground as their herdmates.

In 1992 the University of Arizona reproductive physiologist uncovered the missing link. A protein, fertility-associated antigen (FAA), is produced in the seminal vesicles, prostate, and Cowper's glands and binds to the sperm during ejaculation. (See "The Fertility Protein," page 46 of the March 2002 *Angus Journal*).

Since 1992, Ax has been testing bull after bull for the presence or absence of FAA, and the results are hard to ignore.

In a recent California trial, he and his colleagues tested 62 bulls bred to 3,100 cows. Eighty-one percent of those bulls tested positive for FAA, while 19% tested negative. By DNA testing the calves, Ax discovered the FAA-positive bulls sired 30% more calves

than the FAA-negative bulls. "The FAA-positive bulls won out," Ax says.

Last spring, the professor/sleuth hit the road. He and his laboratory technicians took semen samples from 900 bulls in 18 herds in Arizona, Nebraska, Iowa, Missouri, Oklahoma and Arkansas. Angus bulls, as well as bulls from the rest of the major beef breeds and composites, in purebred and commercial herds, were tested.

"Twenty-five percent of the bulls were FAA-negative," Ax says. "It had been running a little less than 20%, but we had never gone into straight commercial herds. We had been going into the elite herds."

His six-state road trip confirmed another hunch. "The trend with FAA in families, or sire lines, is very real even though the heritability of fertility traits is generally very low," he says.

Earlham, Iowa, seedstock producer Steve Radakovich agrees. Ax tested 80 of Radakovich's Angus and composite bulls. "Our results were very similar to what Dr. Ax was getting overall," he states. "I believe around 20% of the bulls were questionable on the presence of FAA, and it was highly correlated with a certain sire line."

The breeder says he doesn't have the follow-up numbers from the bulls yet to see exactly how many cows they settled this past breeding season, but he wants to see the results.

"We probably will test our bulls again for FAA, but I don't know exactly what kind of selection pressure to put on it," Radakovich says. "There are already so many things to select for. ... If we used them all, we wouldn't have a bull."

Ax says the beneficial effects

of FAA apparently also show up in females sired by FAA-positive bulls. From 1992 to 1998, he followed a herd of Santa Gertrudis cows at the King Ranch in southern Texas. The cows were bred only by FAA-positive bulls. At the start of the trial, 43% of the calves were born in the first 20 days of the calving season. Ax says, "At the end of the seven years, 61.5% of the calves were born in the first 20 days. In the first 30 days, 83% of the calves were born. By 45 days, 93% were born." Overall, the cows had a 97% calf crop after a 60-day breeding season.

Find out for yourself

If you're interested in running an FAA test on your own bulls, you don't have to wait. Due out this month, ReproTec in Tucson, Ariz., is introducing ReproTest for Bulls — a chute-side test for FAA.

Tim Jackson, a partner in ReproTec, says, "The ReproTest for Bulls works about the same as a home pregnancy test."

Jackson recommends using the test cassette when the bulls are undergoing a semen test as part of a basic breeding soundness exam (sometimes referred to as a BSE). "We very strongly recommend the bull pass the BSE. You need a viable semen sample to run the test."

He adds, "The FAA test is one more filter or measure to ensure your bulls are highly fertile." He also says FAA doesn't show up in the semen until the bull reaches puberty, but shouldn't change over time.

Jackson says the veterinarian or reproductive specialist who is doing the breeding soundness exam simply transfers a drop or two of semen to a mixing vial, dilutes it, then places the sample into a little well in the cassette. The semen travels across a membrane. If the sample is positive for FAA, a line will appear. If it is negative, no line will appear.

"There is also a control line. It is always visible — if not, the whole test kit has failed," he explains.

Jackson adds, "The test normally takes between 5 and 10 minutes, but can take up to 20 minutes. That's why you have to add the buffer. If the semen is too thick, it doesn't want to migrate down the membrane."

He estimates the kit, which is sold in six-packs, will cost \$30-\$35 at the producer level. "At 25 cows bred to one bull per year for four years, that is 35¢ per cow exposed. That's in line with a lot of vaccines."

For more information on the ReproTest for Bulls, contact Tim or Barb Jackson, ReproTec Inc., 3301 N. Freeway Rd., Tucson, AZ 85705-5015; office: (520) 888-0294; bsj@animalhealthexpress.com.



PHOTO BY SHAUNA ROSE HERMEL

► University of Arizona reproductive physiologist Roy Ax discovered that bulls testing positive for the presence of FAA sired 30% more calves than the FAA-negative bulls.

