

impact

of the College of Agriculture and Life Sciences



Competitive Agricultural Systems in Global Economy **Predicting Fertility of Bulls**

Issue

Fertility in a livestock enterprise is 5 to 10 times more important economically than any other production measure. Bulls with identical semen quality in terms of physical assessment vary in actual fertility. Means to identify bulls on the basis of fertility potential could result in higher pregnancy rates, leading to larger calf crops.

What has been done?

University of Arizona animal scientists assisted in developing a color-based diagnostic test to identify a protein on bull sperm. An antibody is used to detect presence or absence of that protein which is referred to as fertility associated antigen (FAA). Bulls with FAA on their sperm are 17

percent more fertile than herdmates lacking FAA over a 60-day breeding season. Heifers inseminated once to bulls with sperm-associated FAA had a 16 percent higher pregnancy rate than herdmates inseminated to bulls without FAA on their sperm.

Impact

A 1 percent increase in fertility in the U.S. beef industry would return a net profit of \$55-60 million to U.S. producers. Obviously, on a global scale, billions of dollars of income could result from identifying higher fertility bulls and males of other livestock species.

The King Ranch in Texas used high fertility bulls in their nucleus breeding herd for eight years and retained

daughters of those bulls as mothers in the nucleus herd. They were bred to high fertility bulls each year. The payoff was clear in 1998, when 83 percent of the calves were born in the first 30 days of the calving season. This resulted in significantly more beef weaned and marketed per cow, which is a direct measure of profit.

The diagnostic test was released for commercial use in 1998, licensed for any rancher or veterinarian in the world to use. Since then it has been adopted by breeders across the U.S., and in at least a dozen countries worldwide, in the Pacific Rim, South America, Canada and Europe.

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