

## **Managing Genetic Abnormalities**

What causes genetic abnormalities in cattle? And why do they seem to be occurring with greater frequency? During the 2009 Range Beef Cow Symposium in Casper, Wyo., University of Illinois molecular genetics specialist Jon Beever addressed those questions and talked about technologies available for managing genetic abnormalities such as arthrogyrosis multiplex, neuropathic hydrocephalus, osteopetrosis and others.

While more defects do seem to be showing up, Beever said, they have “been there” for a long time. Caused by a recessive gene, genetic abnormalities can occur when one animal carrying the gene is mated with another carrier. A calf resulting from such a mating will be normal 25% of the time, having received the recessive gene from neither parent. Fifty percent of the time, the calf will receive the recessive gene from one parent and also be a carrier. And there is a 25% chance that the offspring will receive the gene from both parents and exhibit the abnormality.

“The widespread use of animals (sires) of high genetic merit results in more potential carriers among their progeny,” Beever explained. “And with increased intensity of selection there is more opportunity for mating between carriers. When a recessive gene piles up in the population, we can get some surprises.”

Beever said the new DNA technologies allow for management to guide breeding programs away from potential losses due to genetic abnormalities. He likened the use of new DNA tests for abnormalities to the use of vaccines to prevent loss from disease. Several tests to identify carriers of genes associated with specific abnormalities are available, and industry application has been high. Scientifically, the tests are 100% accurate, Beever stated. Functionally, they are as good as the laboratory performing the test.

“Seedstock producers bear the most responsibility for managing abnormalities,” Beever said, “but commercial producers can use the tests to manage the replacement female base.”

The producer’s decision regarding whether or not to use a carrier animal in a breeding program depends on that producer’s risk and level of management.

“We can make the management tools,” Beever told the symposium audience. “You decide how to use them.”

— *Release by Troy Smith for Angus Productions Inc.*