The Whiteface

HEREFORDS — THE EFFICIENCY EXPERTS NOVEMBER 2006

# A Refresher in Heterosis


The advantages of planned crossbreeding are well documented; yet, many cattle producers and beef marketing systems across the country are limiting themselves to one breed, largely Angus. The AHA and California State University, Chico are creating a refresher course in heterosis by testing the effects of using Hereford bulls versus Angus bulls on the Angus-based Lacey Livestock cow herd of central California.

If one thing should stick in the mind of the college freshman who has completed his or her first animal science course, it is that planned crossbreeding provides significant benefits to the livestock industry. Committed to memory is the definition of "heterosis" or "hybrid vigor" — the amount (percent) by which the crossbred average exceeds the average of the two (or more) parental purebreds for a measured trait.

Through mindful attention in class and practical application on the ranch, the student realizes the many opportunities to capitalize on breed complementarity and to make genetic improvement in lowly heritable traits via carefully designed crossbreeding systems.

Still, Dave Daley, California State University (CSU), Chico Animal Science Department program coordinator, says that the cattle industry has largely strayed from these important lessons in the last 15-plus years. Vertically coordinated beef marketing systems have become breed specific, generally Angus. He says that the unfortunate result of ignoring crossbreeding is the diminish of the positive effects of heterosis.

Research Review

"As we turn the corner in the cattle cycle and begin to experience somewhat lower prices, I am confident that we can no longer forget how to reduce input costs, and heterosis has to be part of that equation," Daley told listeners at the 2006 Beef Improvement Federation (BIF) Convention in April.

To help the cattle industry get back on track, Daley has taken the role of lead researcher in a project with Lacey Livestock and Harris Ranch Beef Co., a premier integrated beef alliance in California, studying the head-to-head, gate-to-plate effects of using Hereford bulls versus Angus bulls on an Angus-based cow herd.

The project is jointly funded by an American Hereford Association (AHA) research grant and the CSU, Chico Research Foundation – Agricultural Research Initiative. John and Mark Lacey of Lacey Livestock have volunteered their commercial cow herd for three years of study.

Six hundred mature Angus-based cows were mated randomly to 12 Hereford bulls and 12 Angus bulls of comparable genetics. Each resulting calf has been DNA tested to a sire, and Hereford-sired calves will be compared to Angus-sired calves from weaning through the feedlot phase and all the way to the rail. Replacement females will also be followed through their first year of calving.

"The literature is clear, overwhelming and consistent regarding the benefits of capturing heterosis in beef production systems," Daley says. Yet, a refresher course never hurts, and real-life application is the best way to prove that crossbreeding generates economic returns.

"The AHA is proud to support this study that has the potential to interest more commercial cattlemen in crossbreeding, a production tactic that when executed correctly creates industry-wide gains," says Jack Ward, AHA chief operating officer and director of breed improvement. "The Hereford-Angus pairing is a great example of breed complementarity, and we're excited to see the results."

Weaning weights and blood samples were taken on Laceys' calves in early September. Calf data is collected and recorded via electronic identification (EID) tags and a Gallagher scale head.