BEEF CATTLE RESEARCH UPDATE

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Effects of Ralgro at Branding and Revalor-G at Weaning on Growth Performance of Steer Calves

Research over the last 50 years has clearly demonstrated the efficacy and cost effectiveness of growth-promoting implants in beef cattle. A 1997 review of research trials (mainly from the 1980s) that evaluated the effectiveness of implanting nursing beef calves showed that implanting steer calves with zeranol (Ralgro, Merck Animal Health; 23 trials reviewed) or estradiol-progesterone implants (13 trials reviewed) increased average daily gains by approximately 0.1 lb/day from the time of implant insertion to weaning.[1] Hence, implanting suckling calves typically increase weaning weights by approximately 15 to 25 pounds. However, a 2007-08 USDA survey of U.S. beef cow operations (2,872 cow/calf operations from 24 states) found that only 9.8% of operations implanted some of their beef calves prior to weaning.[2] In a more recent study, using data from more than 5 million beef calves sold through a video livestock auction service from 1995 through 2009, the percentages of lots of beef calves that were implanted decreased from 64.3% in 1995 to 26.5% in 2009.[3]

Most of the studies evaluating the impact of implants on nursing calves were completed over 30 years ago. Yet, beef cattle genetics have changed dramatically during this time period as illustrated by the steady increase in weaning weight EPDs since the 1990s (Figure 1).[4] Thus, Oklahoma State University researchers revisited the issue of implanting suckling calves to determine if the response to growth implants has changed over time.[5] The objectives of this experiment were to determine (1) the effect of a Ralgro implant administered at 30 to 90 days of age on suckling-phase growth rate and weaning weight and (2) the effect of reimplanting with a Revalor-G implant (Merck Animal Health) at weaning on post-weaning performance. In this experiment, a total of 194 suckling steer calves weighing 245 lb at branding (approximately 30 to 90 days of age) from 3 locations were used.

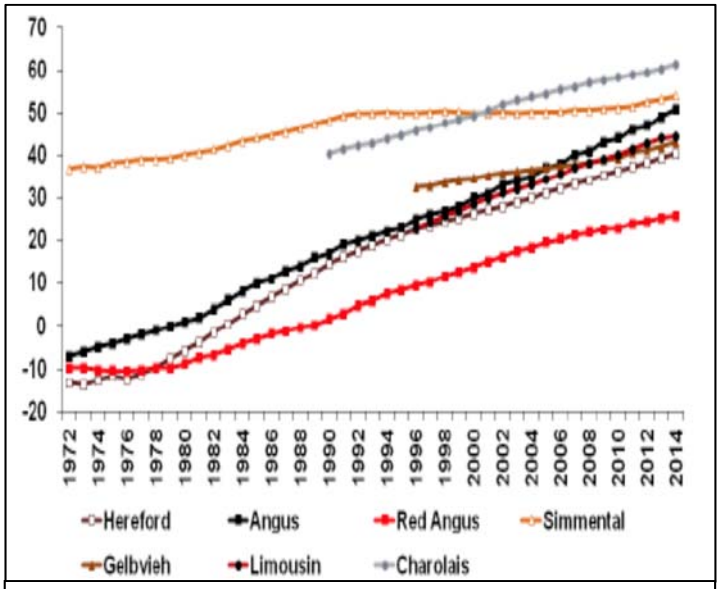

Figure 1. Relative genetic trends for weaning weight (lb) of the seven most highly used beef breeds adjusted for birth year 2014 using the 2016 across-breed EPD adjustment factors. Source: Kuehn and Thallman, 2016.

At each location, steer calves were randomly assigned to two experimental treatments: implanted with Ralgro at branding and Revalor-G at weaning or not implanted. The steers were weighed at the time of branding and at weaning. At one of the locations after weaning, the steers (40 head) were preconditioned for a 44 day period and then grazed winter wheat forage for 98 days. Steers from the other two locations were combined and preconditioned for 49 days and then sold.

These authors reported that the Ralgro-implanted steers gained more body weight ($P < 0.01$) between the branding and weaning dates compared with non-implanted steers. Average daily gain (ADG) was 5.7% greater ($P < 0.01$) for implanted than non-implanted calves during the suckling period (2.47 vs. 2.34 lb/day). The increase in ADG of 0.13 lb/day is similar to the 23-study average

(0.10 lb/day) reported in the 1997 review. As a result, implanting resulted in a 17 lb increase ($P < 0.01$) in actual weaning weight compared to non-implanted steers (564 vs. 547 lb, $P < 0.01$).

At one of the locations, ADG was not different between the 2 treatments during the preconditioning phase (due to a planned low plane of nutrition during the preconditioning period). However, in a wheat stocker phase at this location, implanting increased ADG by 17.5% over non-implanted steers (3.55 vs. 3.02 lb/day, $P < 0.001$) which accounted for nearly 49 lb of additional weight gain over the wheat-grazing stocker period, in spite of the preconditioning period. Final pay weight was increased by 68 lb by implanting ($P < 0.01$). In the preconditioning period for the other two locations, implanting increased ADG by 35.7% (0.84 vs. 0.62 lb/day, $P = 0.01$).

These researchers concluded that pre-weaning and post weaning weight gain improves when beef steer calves are implanted at branding time and again at weaning. These results indicate that Ralgro growth-promoting implants remain an effective and economical method to increase performance of suckling steer calves, and the response is similar to research results previously reviewed (1997). Even though, the use of implant technology has declined in cow-calf operations, growth-promoting implants appear to be as efficacious as they were over 30 years ago. They also noted that the cost of implants has increased only slightly compared with other inputs, while the value of added weight gain has increased. The cost of an implant is about $1 to $1.50 per head. Yet, weaning weight is typically increased by 15 to 25 pounds.

Effect of Suckling Phase Implants on Weaning Weight, and Post-Weaning Performance of Steer Calves

The effective payout period for most of the nursing calf implants is generally around 90 to 120 days. However, the time elapsed between implanting a suckling calf and weaning can exceed 150 days. Recent research from South Dakota State University (SDSU) determined the effect of a conventional implant (Synovex C, Zoetis Inc.), and an extended release implant (Synovex One Grass, Zoetis Inc.) on weaning weight, and post-weaning performance of steer calves.[6]

In this SDSU study, implants were administered to predominantly 30 to 60 day old steer calves during the process of branding, castration, and vaccination. Three implant treatments were evaluated: 1) No implant (Control), 2) Synovex C, and 3) Synovex One Grass. These calves were weaned and shipped 365 miles to the SDSU Ruminant Nutrition Center Feedlot 176 days later. The steers were processed the following morning and fed a receiving diet for 44 days. The arrival processing body weight was used as the weaning weight.

These researchers reported that weaning weight was greater ($P = 0.04$) for Synovex-C compared to Control (642 vs. 629 lb) and greater ($P = 0.02$) for Synovex One Grass to Synovex-C (656 vs. 642 lb). The greater weaning weight of the calves implanted with Synovex One Grass could be attributed to the extended release period (200 days). Post-weaning average daily gain at both 21 and 44 days was not different between treatments (2.33, 2.37, and 2.37 lb at 44 days, respectively, for Control, Synovex-C, and Synovex One Grass). These authors noted that it was unclear why Synovex One Grass did not cause an increase in post-weaning gains since it has an established pay out of 200 days. In conclusion, implanting suckling steer calves in this study increased weaning weight by 13 to 27 lb which is comparable to that reported in other trials.

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