True Effects of Implants on Quality Grade

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Since the advent of growth promotion technology, producers and scientists have been learning how these production tools impact performance and carcass parameters. The conclusion has been made, based on decades of finishing trial research, that implants improve daily gain and feed conversion, but that fat content of the carcass is decreased and marbling score reduced.

The challenge of most finishing studies has been determination of the appropriate endpoint to terminate the study. To draw reasonable conclusions from the study, all treatments need to be fed to a common endpoint. Many studies have determined a common day to terminate the comparisons, but this has lead to extreme differences in carcass fatness. To alleviate these extreme differences, some studies have fed cattle to common external fat thickness. But slaughtering individual treatments at different time endpoints may inadvertently expose the treatments to different environments and cause confounding of apparent treatment differences. Also, if treatments cause large differences in live and carcass weights and cattle are fed to common linear fat thickness endpoints, the total body fat content will be higher in the lighter weight cattle. This will also lead to confounding between the effects of implants on marbling and effects of body fatness on marbling.

The surest way to ensure that cattle are fed to common fat <u>and</u> time endpoint is to slaughter all treatments at multiple time time endpoints. Many such serial slaughter trials have been completed and demonstrated that as cattle reach similar total body fat content, albeit at different days on feed, differences in marbling content between treatments are reduced or eliminated.

Recent research conducted by Guiroy et al. (2001) at Cornell University pooled carcass data from 13 implant studies evaluating 15 different implant treatments including no implant, single implants, and re-implant programs. A total of 9,052 steers and 4,588 heifers were used in these studies and the steers ranged in starting weight from 596 to 948 lbs and heifers from 541 to 651 lbs.

Carcass data from the studies was used to calculate empty body fat percentage (EBF), empty body weight, and shrunk body weight. Shrunk body weight was adjusted up or down to bring all cattle to a common 28% EBF (adjusted final body weight (AFBW)), which is the target for low Choice or small degree of marbling based on the 1996 NRC for Beef Cattle.

Implants were shown to increase final shrunk body weight adjusted to a common 28% EBF in proportion to implant potency or total dosage of hormone.

Implant	Added Weight @ 28% EBF
None	---[a]
Component-ES	23 lbs[b]
Rev-IS	37 lbs[b]
Rev-S	67 lbs[c]
Ralgro/Rev-S	70 lbs[c]
Syn-S/Rev-S	76 lbs[d]
Rev-IS/Rev-IS	77 lbs[d]
Rev-IS/Rev-S	87 lbs[e]
Rev-S/Rev-S	97 lbs[e]

[a, b, c, d, e] differ (P<.01)

These data demonstrate that potency of implant increases finished weight at a common body fatness, but the impact of implant on quality grade at common EBF was also reported.

Implant	% EBF at Low Choice
None	29.3[a]
Component-ES	30.2[b]
Rev-IS	30.2[b]
Rev-S	29.7[b]
Ralgro/Rev	29.7[b]
Syn-S/Rev-S	29.9[b]
Rev-IS/Rev-IS	29.9[b]
Rev-IS/Rev-S	29.7[b]
Rev-S/Rev-S	29.7[ab]

[a, b] differ (P<.01)

This analysis indicates that non-implanted control steers reached low Choice grade at similar EBF vs. Rev-S/Rev-S, the most potent implant strategy, and that all the implanted cattle reached low Choice marbling at equal EBF regardless of implant dosage.

Implants increase the performance and finished weight of feedlot cattle. But based on the recent Cornell University research, if cattle are taken to a common total body fatness endpoint, they will grade similarly, regardless of implant treatment.