# 2014 LARS Implant strategy comparison when feeding heavy Holstein steers

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## Introduction

Wisconsin is home to more than 1.2 million dairy cows, which provide a generous amount of dairy steers to be fed for beef production. Holstein steers are known for their predictable gain and efficiency which makes them attractive for feeders not only in Wisconsin, but across the country.

The list of technologies available to enhance beef production is large and continuously growing, however, one technology continues to be highly utilized. Implants have been available for use in feedlots since the 1950's, but the genetics of the dairy industry have undoubtedly changed.

The objectives of this trial were to evaluate performance and carcass composition of larger framed heavy Holstein steers when administered differing implant regimens.

## Materials and Methods

Holstein steers were procured from a single source at 500 lbs in April 2014 and allowed to graze, or fed hay when pasture forage was limited from procurement to late August. Animals were moved to a feedlot where veterinary practices were uniformly administered and transitioned to a high concentrate diet (56 % dry corn, 20% DDG, 20% corn silage, and 4% supplement on a DM basis). Treatments administered were Control (non-implanted), Encore (implanted on d 0) and E/S/S (implanted with Encore, Revalor-S, and Revalor-S on days 0, 109, and 169 respectively) and fed for 244 days. Steers were blocked by weight and fed in 6 group pens, each containing 10 steers where treatments were balanced within each pen. Due to this design DMI could not be measured for each steer, but previous data was used to assign an intake for each steer given the pen DMI (Encore = 105.7% and E/S/S = 107.9% DMI vs controls, respectively). The pens had concrete floors, outside exposure to the south, and manure packs bedded with corn stalks.

## Results and Discussion

Both implant regimens increased steer overall ADG (> 20%) compared to the Control treatment (Fig. 1). Growth rate was increased additionally for E/S/S from days 109 to 195 and 196 to 244 compared to steers only receiving Encore. Performance and intake over the entire feeding period (Fig. 2) was as expected, with the exception of the last two feeding periods (last 2 data points). Steer ADG was greater than expected (3.3 lb/d observed vs 2.3 lb/d expected) and intakes were adequate which resulted in favorable F:G ratios despite typically being the most inefficient period. These two periods aligned with the months of March and April, and the unseasonably warm weather (10$^{o}$ F above average) could explain 0.25 lbs/d; however, the remaining 0.75 lbs/d is unaccountable.

**Figure 1. Interaction between ADG and feeding period when administered differing implant regimens.**

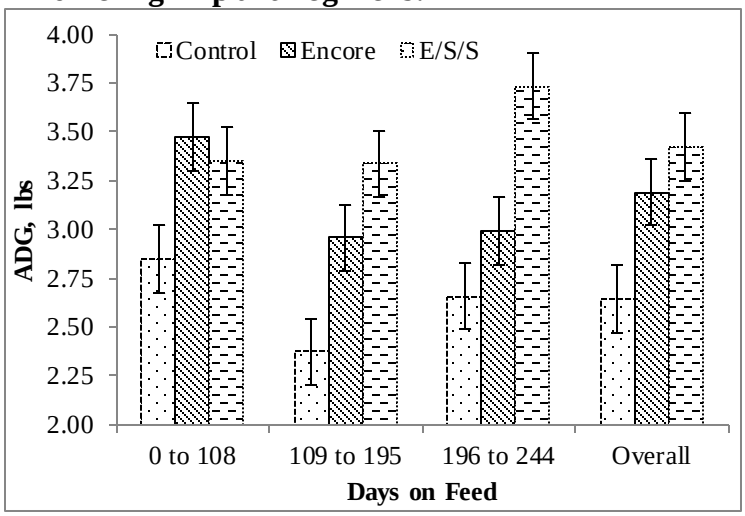
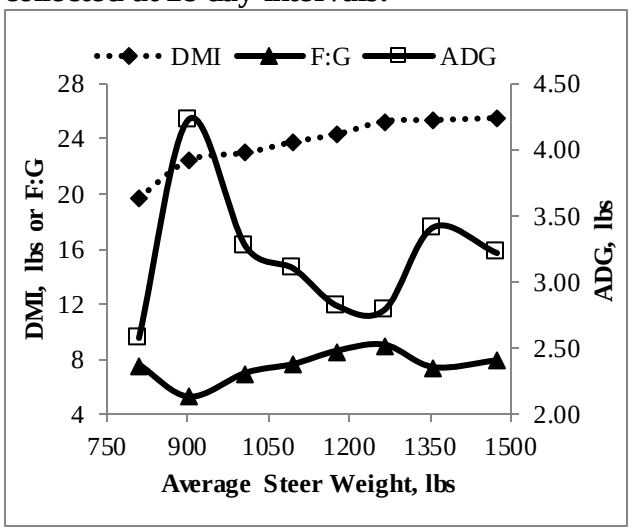


**Figure 2. Group Holstein steer performance during the feeding period, data were collected at 28 day intervals.**




Administering a single Encore implant increased final BW and HCW by 139 and 82 lbs, respectively, compared to the Control treatment. Utilizing additional implants in the E/S/S group tended to increase final BW and HCW. Marbling score numerically decreased with intensifying implant regimen, but was not statistically different than the Control treatment. All carcasses in this dataset graded USDA Choice or Prime, highlighting the quality of beef attainable by Holstein steers.

Implanting Holstein steers continues to be a sustainable technology by increasing weight gain without negatively affecting carcass quality grade.

**Table 1. Holstein steer performance when administered various implant regimens and fed a high concentrate diet for 244 days.**

| | Implant Regimen[1] | | | | *P*-Value | |
|---|---|---|---|---|---|---|
| Item | Control | Encore | E/S/S | SEM | Treatment | Encore vs. E/S/S |
| No. of steers | 19 | 20 | 20 | - | - | - |
| Initial BW[2], lbs | 772 | 776 | 773 | 28 | 0.80 | 0.66 |
| Final BW, lbs | 1416[a] | 1555[b] | 1607[b] | 19 | 0.01 | 0.09 |
| ADG, lbs | 2.64[a] | 3.19[b] | 3.42[b] | 0.12 | 0.01 | 0.06 |
| pDMI[2], lbs | 22.8 | 24.1 | 24.6 | - | - | - |
| F:G | 8.6 | 7.5 | 7.2 | - | - | - |
| HCW, lbs | 833[c] | 915[b] | 954[a] | 13 | 0.01 | 0.04 |
| REA, in$^2$ | 11.6[b] | 11.7[b] | 13.0[a] | 0.3 | 0.01 | 0.01 |
| BF, in | 0.18 | 0.21 | 0.20 | 0.02 | 0.14 | 0.58 |
| Marbling[4] | 700 | 680 | 660 | 20 | 0.34 | 0.39 |
| Yield Grade | 2.9[a] | 3.2[b] | 2.9[a] | 0.08 | 0.01 | 0.01 |
| Dressing Percentage | 58.8 | 58.8 | 59.3 | 0.3 | 0.16 | 0.15 |

[1]Control = non-implanted, Encore = administered Encore (E) on d 0, and E/S/S = administered E on d 0, Revalor-S (S) on d 109 and 196.

[2]All live body weights (BW) collected were shrunk 3%.

[3]pDMI = predicted dry matter intake based upon observations of Beckett (2002) which estimated Encore and E/S/S to be 105.7 and 107.9% of Control, respectively.

[4]600= modest[0] and 700 = moderate[0].

[a, b, c] Means in a row with unlike superscripts are different (P<0.05).