



IMPLANT STRATEGIES FOR DAIRY AND BEEF STEERS

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- Implant technology has advanced to enable diverse strategies to be determined from an estimated market date to attain expectations for % Choice within a group
- Reluctance to use aggressive implant programs because of reduction in quality grade;
- To achieve similar marbling need 30 to 90 lb + heavier steers;

- Return to a \$ invested in implants = \$10 to \$30 in feed yards;
- Expectations for +18% ADG; +6% FE; +5% CW; + 4% in REA vs no implant - response cumulative with ionophores;
- What are our options for implant strategies in relationship to nutrient requirements and market niche?



Key points:

- **Correct placement of implant - middle 1/3 of the back side of the ear (last 1/3 if part of ear lost); no abscess or crushed implants;**
- **Cattle fed to requirements for effective response;**
- **Estrogenic (E) implants - > levels of ST and IGF-1 factor to promote growth - varying length of effectiveness;**

Implant processing steps (Cook, 2000)

- **Disinfectant solution in tray in processing area with sponge etc to clean implant needle between animals; Change solution every 50-100 head**
- **Wash wet and dirty ears; remove any manure from implant site**
- **After placing the implant run a thumb over the implant to assure proper placement and close insertion wound**
- **Often implant person wear latex gloves so can clean their hands in disinfectant**

Androgen (synthetic steroid - trenbolone acetate, TBA) - direct effect on muscle cells = > protein accretion, reduce fat deposition;

•Combination TBA + E or zeranol (Z; synthetic E) > growth, feed efficiencies & muscle deposition;

Selected implants available - Estrogen (E); Progesterone (P); Trenbolone acetate (TBA)

Low

Ralgro (EZ36); Syn-C, Component E-C, Calfoid (E10:P100);

Syn-S, Comp-ES, Implus-S (E20:P200);

Finaplix-S, Comp-TS (TBA140);

Revalor-G (E8:TBA40); Rev-IS (E16:TBA80);

Compudose (E 25.7); Encore (E43.9);

High

Magnum (EZ72); Rev-S, Comp-TES (E24:TBA120); Syn-Plus (E28:TBA200); Rev-200 (E20:TBA200);

Beef steer Implant programs



- Steer calves, 600 to finish > 200 days:
- Yearling steers to finish 150+ days;
- Heavy feeders to finish > 60 days

Holstein stee

Market options:

Pre-weaning to 1300-1350 lbs;

Started calves

• 175-225 lbs to finish;

Feeder Steers:

• 350 - 450 lbs;

• 500-750 lbs;

• 800-950 lbs

To finished BW



Feeding Options for Holstein Steers

- **Continuous High Energy diets**
- **High energy diets to feeder BW of 350-500 lbs**
- **Two phase systems - higher roughage (feedlot/pasture) followed by high energy;**
- **Programmed feeding in large commercial feedlots from 600 lbs**

Nutrient interrelationships - overview (NRC, 1996)

- E implants vs NI - 77 lb change in protein content of gain in FSBW;
- TBA + E vs NI - 154 lbs change in protein content of gain in FSBW;
- TBA + E vs NI 82% > protein accretion during 1st 40 days after implanting (Johnson et al., 1996);
- NE gain < by at least 5% with implants

Response to implants vs NI (summary of 13 studies with 9,000 steers -Guiroy et al., 2002):

- < DMI needed for NE_m ; < energy content of gain; > efficiency of absorbed energy use;
- Reduction in % grading low choice;
- Cumulative effect of ionophores + implants;

Response to Protein feeding level and implant vs no implant for 770 to 1245 lbs large-framed steers (DiCostanzo, 1995)

- Maximum effects of implant & CP level = high potency implant strategy with 13.3% CP.
- High vs Medium vs NI - ADG increase 0.13, 0.14, 0.15/lb DMI, respectively;
- ADG Increases 0.10 lb for each % increase in CP; Implanting with TBA-based 14% >DMI;
- Urea as effective as undegradable CP when added < 1%

Programmed feeding systems for 600 lbs Angus steers to market (Trenkle, 2002)

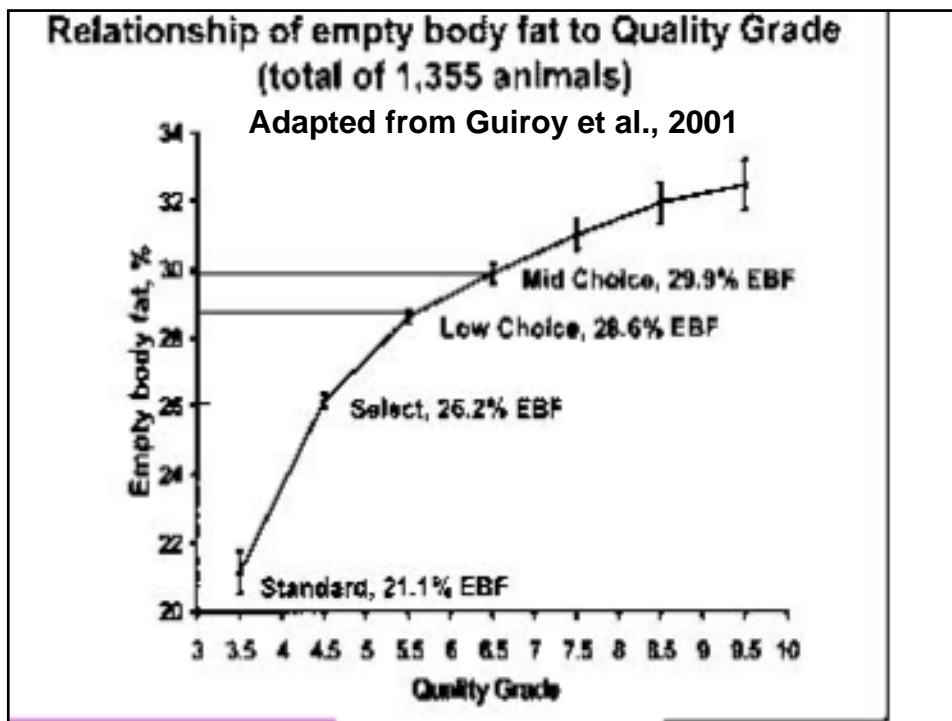
- Program of 13.5% CP for 84 d reduced to 11.85% implanted with Component E-S on day 1 and Component TE-S on d 84 - lowest feed/gain

Holstein Steer Protein Requirements vs BW and ADG

BW,lb	ADG,lb	2.5	2.9	3.3
650	DMI	16.5	16.3	16.0
	CP,lb/d	2.00	2.17	2.33
850	DMI	20.8	20.5	20.2
	CP,lb/d	2.15	2.30	2.46
1050	DMI	22.9	22.5	22.2
	CP,lb/d	2.18	2.31	2.43

Adapted from Chester-Jones et al., 1998

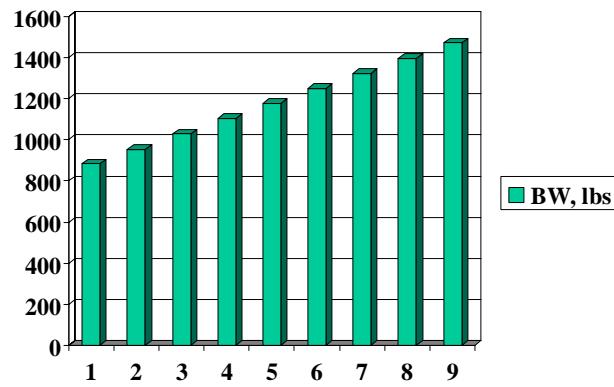




Holstein steer performance by frame size and implant (I) vs no-implant (NI)

	Frame 9	Frame 9	Frame 8	Frame 8
	I	NI	I	NI
FBW	1326	1198	1229	1129
ADG	3.04	2.39	2.89	2.37
F/G	6.23	7.09	6.20	6.64
REA	12.3	11.4	11.2	11.1

Steer Frame Size vs BW at 28% EBF



e.g., Implanted Frame size 5 steers need to be fed to 6-7 BW (Nichols et al., 2001)



Key general points to consider for implanting strategies in beef cattle:

- **Steers implanted in the AM better response to those implanted in the PM;**
- **Timing of re-implantation - not too much overlap before pay out time;**
- **Back calculate from market date;**
- **Implant from low to high potency - gain response to re-implants is decreased**

Key general points to consider for implanting strategies in beef cattle (Pritchard, 1993):

- **200 d on feed - moderate potency and high potency terminal 100 days from market; x 3 moderate 70 days apart more bullers and riding;**
- **100-150 d on feed - 2 moderate potency implants or 1st low to moderate and high potency terminal;**
- **60-80 d on feed - lower potency recommended;**

- Traditional approach in late 1980's 4 lower potency estrogenic implants from weaning to market;

- Later found no benefit of multiple implants early in the feeding period;

- U of MN - 4th implant ADG >18%; F/G 10% vs NI 120 days from market ; NI steers on feed 17 days longer;

- Cornell in 1992 - Ralgro at 350 lbs and Revalor after 98 days (120 d from market) - 18% ADG and 11 % F/G response to implants vs NI;

Step-Wise Strategies for implanting Holstein steers (Fowler et al, 2001)

	<u>Day 0</u>	<u>Day 60</u>	<u>Day 120</u>	<u>Day 180</u>
1.	Ralgro	Ralgro	Synovex-S	Revalor-S
2.	Synovex-C		Synovex-S	Revalor-S
3.	Synovex-C		Revalor-IS	Revalor-S
4.	Revalor-G		Revalor-IS	Revalor-S
5.	Negative Control			

Performance (Fowler et al., 2001)

	<u>Ral,Ral, Syn, Rev</u>	<u>Syn-C Syn, Rev</u>	<u>Syn-C Rev-IS, Rev</u>	<u>Rev-G Rev-IS, Rev</u>	<u>Control</u>
ADG	3.47 ^{bc}	3.36 ^b	3.41 ^b	3.54 ^c	2.99 ^a
DMI	17.16 ^b	16.83 ^b	16.89 ^b	17.51 ^b	15.71 ^a
FG	4.95 ^b	5.00 ^b	4.95 ^b	4.94 ^b	5.26 ^a
Final Wt.	1331 ^{bc}	1300 ^b	1310 ^b	1349 ^c	1186 ^a

a,b,c Means differ (P < .05).

Carcass Traits

	<u>Ral,Ral Syn Rev</u>	<u>Syn-C Syn Rev</u>	<u>Syn-C Rev-IS Rev</u>	<u>Rev-G Rev-IS Rev</u>	<u>Control</u>
HCW	798 ^{bc}	781 ^b	788 ^{bc}	808 ^c	704 ^a
Dress %	60.00	60.00	60.10	59.90	59.00
BFT	.26	.25	.25	.27	.25
REA	11.37 ^b	11.43 ^b	11.69 ^b	11.65 ^b	10.24 ^a
YG	3.00	2.92	2.91	2.93	2.95

a, b, c Means in a row differ (P < .05).

Quality & Yield Grade Data (Fowler et al., 2001)

	<u>Ral</u> <u>Syn</u> <u>Rev</u>	<u>Ral</u> <u>Syn</u> <u>Rev</u>	<u>Syn-C</u> <u>Syn</u> <u>Rev</u>	<u>Syn-C</u> <u>Rev-IS</u> <u>Rev</u>	<u>Rev-G</u> <u>Rev-IS</u> <u>Rev</u>	<u>Control</u>
Marb.^d	4.35 ^{ab}	4.06 ^a	4.26 ^{ab}	4.17 ^{ab}	4.62 ^b	
Pr/Ch	52.8 ^b	26.5 ^a	38.9 ^{ab}	51.4 ^b	57.1 ^b	
%						
YG 1&2	50.0	52.9	58.3	45.7	42.9	
YG	3.00	2.92	2.91	2.93	2.95	

a,b,c. Means in a row differ (P < .05).

d 3.00 = slight 4.00 = small 5.00 = modest

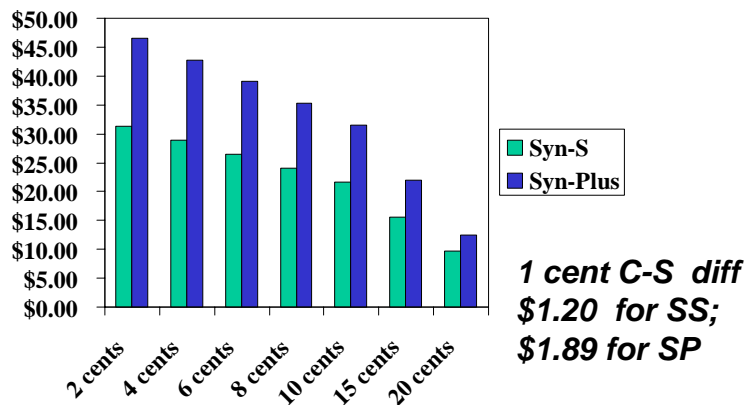
Summary Comments (Fowler et al., 2001)

- Implanting improved all performance variables.
- Utilizing three TBA implants going from low dose to high dose was as good as an four implant strategy.
- Carcass traits did not differ from non-implanted steers when using three TBA implants
- Revalor-IS tended to improve performance with less reduction in quality grade than Synovex

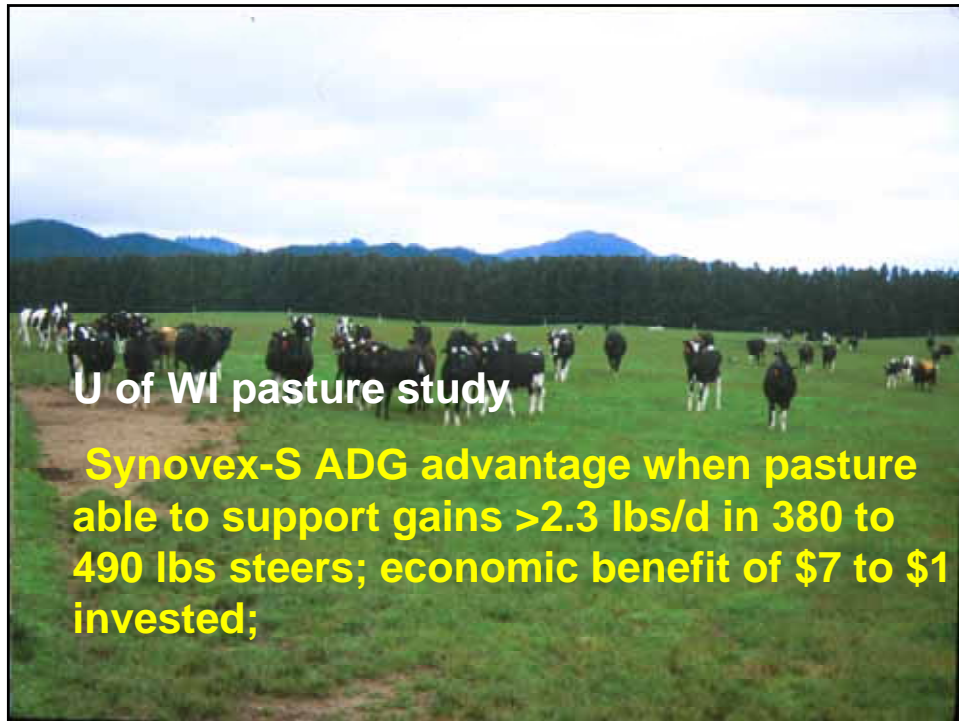
Implant vs No Implant for 965 lb Holstein Feeders fed a for 116-d (Schaefer & Siemens, 1998 U of WI)

	<u>NI</u>	<u>Syn-S</u>	<u>Syn-P</u>
FW, lb	1439	1510	1572
DMI, lb	25.6	26.9	28.0
ADG,lb	4.09	4.71	5.24
F/G, lb	6.27	5.72	5.36
REA,in ²	12.1	12.3	13.1
Marbling	6.4	5.8	5.8
Maturity	1.5	1.5	1.6

Choice vs Select differential and changes in Implant vs No Implant (NI) advantages for 965 lb Holstein steers fed for 116 days^a



^aAdapted from Schaefer and Siemens, 1998



Holstein steer implanting options:

- TBA + E not recommended for high silage and moderate growth rate finishing diets < 80% concentrates;
- Best use TBA + E with high concentrate diets;
- Lower potency estrogenic based if health and environmental stressors;
- Delay 1st implant to 200-300 lb BW if DMI optimum - consider longer pay-out implants if facilities limited;

Holstein steer implanting options:

- Light feeder steers from pre-weaning for sale (120-140 d on feed) 1st implant >45 days on fed - low to moderate potency
- From 400-500 lb to market - usually 2 implants;
- Heavier feeder steers - 700 to 800 lbs to market (100-150 d on feed); 1 or 2 implants;
- Short-fed heavy feeders - low to moderate depending on market

Summary comments

- Many implant options available for dairy and beef steers;
- Feeding systems and market strategy dictate the implant program to be implemented;
- Monitor each strategy closely with good records to be able to adjust to maintain profit potential.

**Implant programs for
grazing beef steers**

