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;

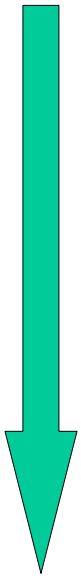
Implant processing steps (Cook, 2000)

- 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);

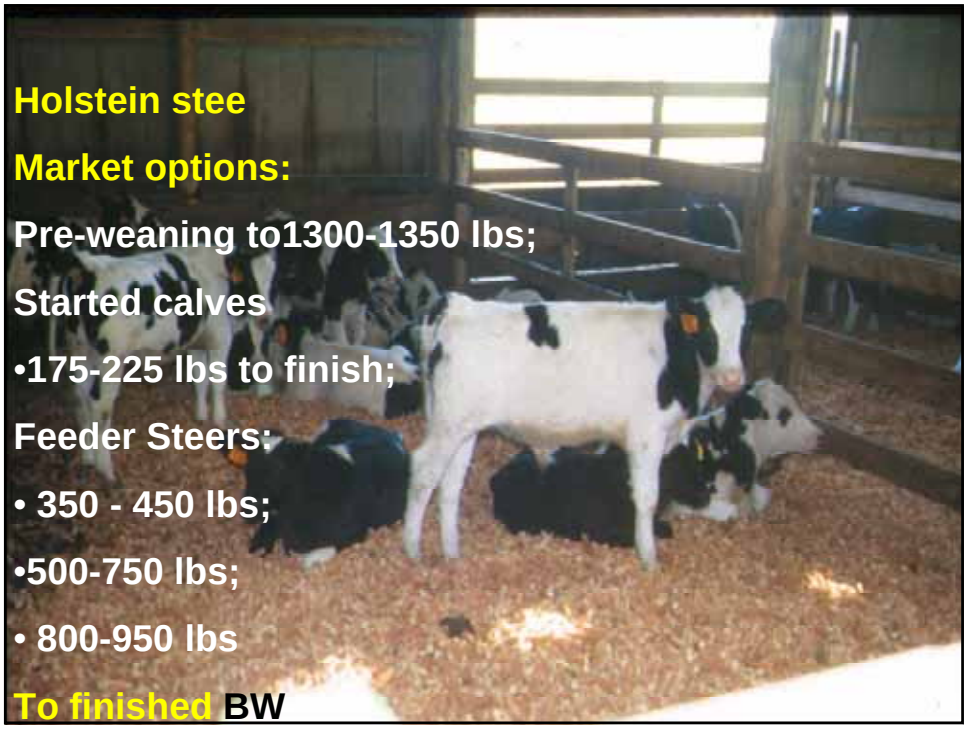
Compudose (E 25.7); Encore (E43.9);

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

High

Beef steer Implant programs

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



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%**

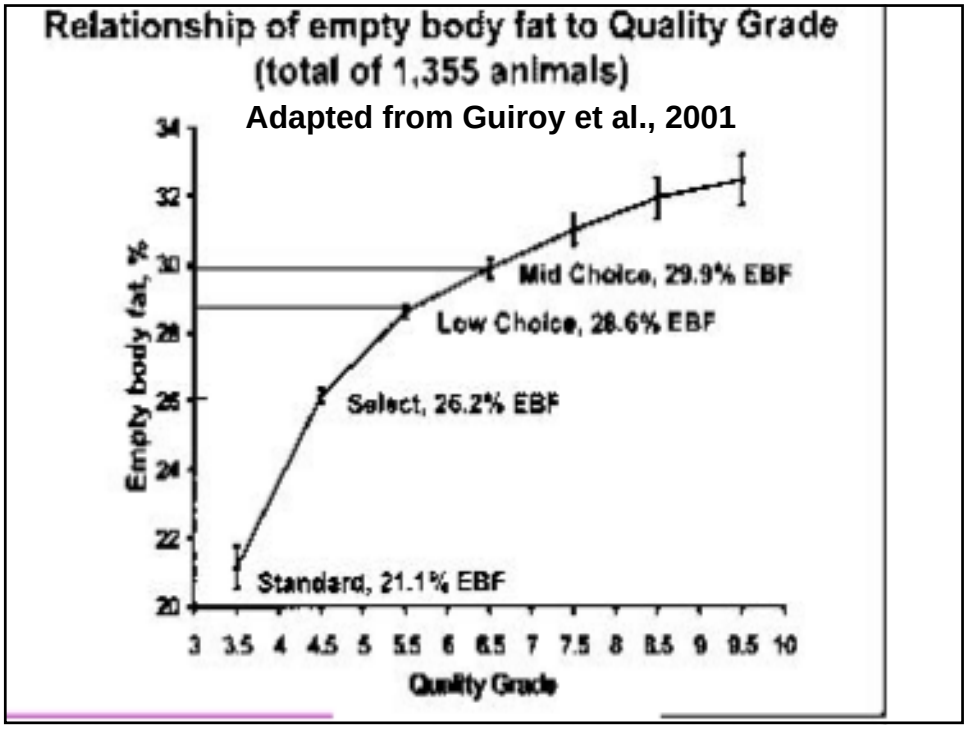
Programmed feeding systems for 600 lbs Angus steers to market (Trenkle, 2002)

- **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

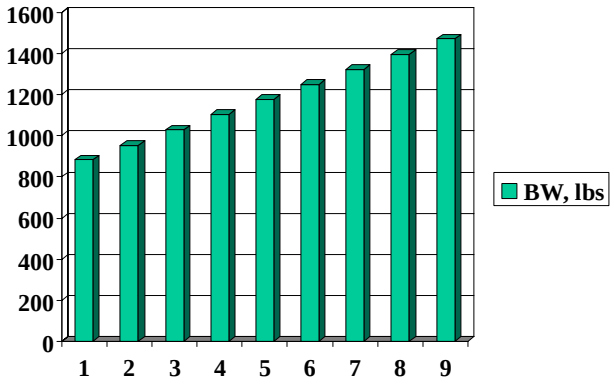
Adapted from Chester-Jones et al., 1998



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

	Frame 9 I	Frame 9 NI	Frame 8 I	Frame 8 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 3moderate 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)

Day 0	Day 60	Day 120	Day 180
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)

	Ral Ral, Syn, Rev	Syn-C Syn, Rev	Syn-C Rev-IS, Rev	Rev-G Rev-IS, Rev	Control
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

	Ral,Ral Syn Rev	Syn-C Syn Rev	Syn-C Rev-IS Rev	Rev-G Rev-IS Rev	Control
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)

	Ral Ral Syn Rev	Syn-C Syn Rev	Syn-C Rev-IS Rev	Rev-G Rev-IS Rev	Control
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*

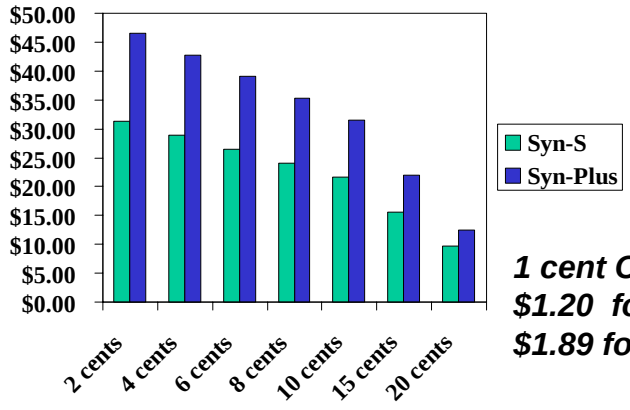
Summary Comments (Fowler et al., 2001)

- 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)

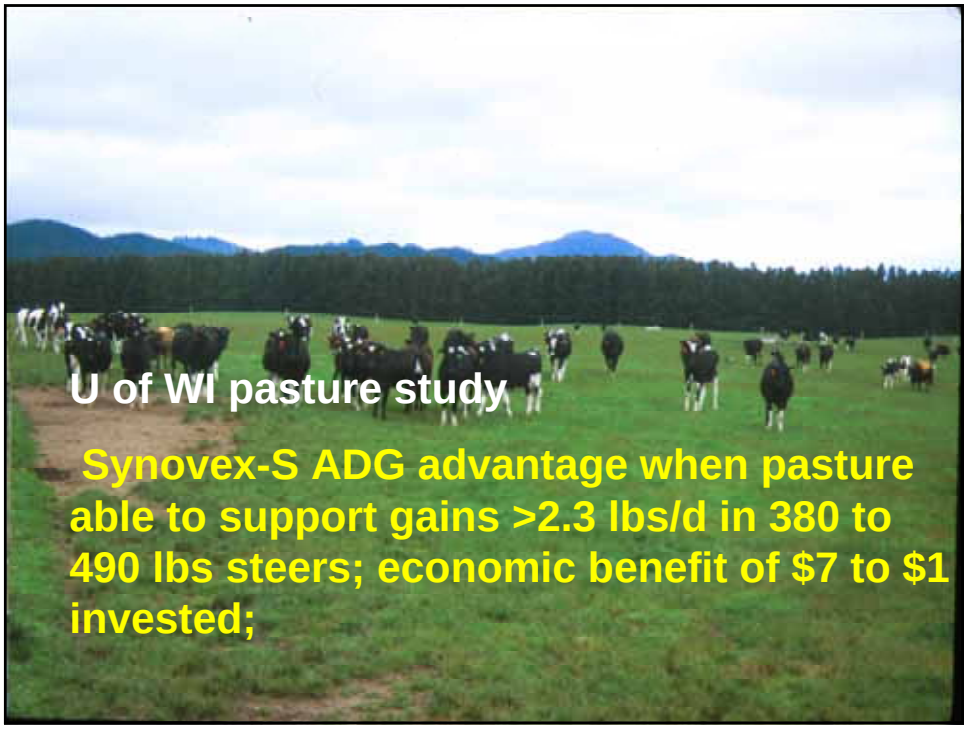
	NI	Syn-S	Syn-P
FW, lb	1439	1510	1572
DMI, lb	25.6	26.9	28.0
ADG,lb	4.09	4.71	5.24
F/G, lb	6.27	5.72	5.36
REA,in^2	12.1	12.3	13.1
Marbling	6.4	5.8	5.8
Maturity	1.5	1.5	1.6

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



1 cent C-S diff
$1.20 for SS;
$1.89 for SP

[a]Adapted 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