IMPACT OF IMPLANTS ON CARCASS YIELD GRADE TRAITS AND CUTABILITY

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ABSTRACT

For the past 25 years producers have capitalized on the benefits of anabolic implants to increase rate of gain and enhance feed efficiency for feedlot cattle. This added weight greatly improves the efficiency of production and provides additional pounds to sell on the commodity market. Life was less complicated in the days when there were fewer breeds and breed combinations as well as fewer implants to choose from. Times have changed; today the number of breeds exceeds 100 with breeds and breed combinations differing in size, weight, muscling, condition, quality, and health. Numerous implant types (estrogenic and androgenic) with variable dosage levels are now available and several marketing alternatives have evolved. More than ever, managers today must match cattle type with an appropriate implant strategy to enhance their market return. Few marketing alternatives remain viable without risking severe discounts for quality grade, yield grade, and(or) weight defects. This manuscript reviews the effects of anabolic implants on the carcass traits used to estimate cutability, closely-trimmed box beef yield, and box beef value.

Quantitative Carcass Traits of Steers

A recent review by Duckett et al. (1996) summarized research publications from 1971 through 1994 regarding implant effects on carcass traits. Implanted steers produced heavier ($P < .01$) carcasses with larger ($P < .05$) ribeye areas; they had similar ($P > .05$) dressing percentages, fat thicknesses, percentages of internal fat and yield grades as nonimplanted steers (Table 1).

Among the implants, type and frequency of administration also affected carcass weight and ribeye area (Table 2). Increases were smallest for steers receiving only an estrogenic implant initially and(or) as a reimplant. A single combination (estrogen + androgen) implant initially or an estrogenic/combination implant strategy (initially and as a reimplant) was intermediate. A combination implant used both initially and as a reimplant produced the greatest increase in weight and in ribeye area.

Table 1. Dress and carcass characteristics of implanted and nonimplanted steers[a].

Trait	Control	Implanted	Change
Dressing %	62.0	61.9	-0.1
Carcass weight, lb	679.0	716.3	+37.3**
Ribeye area, sq in	11.8	12.2	+0.4*
Fat thickness, in	0.47	0.48	+0.01
Kidney, pelvic & heart fat, %	2.2	2.1	-0.1
Yield grade	2.8	2.8	0.0

[a]Adapted from Duckett et al., 1996.
* $P < .05$
** $P < .01$

Table 2. Advantages for implanted over control steers in carcass weight and ribeye area[a].

Implant	Carcass weight, lb	Ribeye area, sq in
Estrogenic (E)	10.0	0.14
E/E	18.7	0.40
E+Androgen (A)	13.6	0.54
E+A/E	20.6	0.90
E/E+A	25.5	0.71
E+A/E+A	26.2	1.05

[a]Adapted from Duckett et al., 1996.

Table 3. Carcass traits for implanted steers compared at a constant fat percentage[a].

	Implant treatments[b]				
Trait	Con	Ral – –	Ral Ral	Syn – –	Syn Syn
Carcass weight, lb	697.1	720.2	724.4	746.0	735.0
Ribeye area, sq in	12.65	12.73	12.95	12.79	12.93
Fat thickness, in	0.39	0.39	0.44	0.44	0.36
KPH fat, %	2.74	2.63	2.49	2.63	2.48
Yield grade	2.61	2.69	2.71	2.87	2.56

[a]Adapted from Loy et al., 1988; constant carcass fat = 32.9%; total days fed = 189.
[b]Con = nonimplanted control; Ral/-- = Ralgro on day 1; Ral/Ral = Ralgro administered on days 1 and 84; Syn/-- = Synovex-S on day 1; Syn/Syn = Synovex-S administered on days 1 and 84.

Loy et al. (1988) compared carcass traits at a constant fat percentage for Charolais-cross steers receiving various implant treatments (Table 3). Carcasses from implanted steers were heavier in weight but had fat thickness, internal fat, and yield grade similar to control steers. Ribeye areas were largest for the reimplanted groups.

In a study using Limousin-cross steers fed 119 to 126 days, Foutz et al. (1990) concluded that steers receiving both estrogen and trenbolone acetate produced heavier ($P < .05$) carcasses with larger ribeyes ($P < .05$) and slightly ($P < .05$) more masculine carcass characteristics than control or Synovex-S implanted steers (Table 4). Again, no differences among implant groups for fat thickness, internal fat, and yield grade were detected ($P > .05$).

In a recent four-trial summary, Pritchard (1995) detected distinct differences in the percentage of U.S. Choice carcasses depending on the type and timing of the initial implant (Table 5). However, quantitative traits for implanted and nonimplanted steers were similar.

Two recent trials (Johnson et al., 1995 and Mader et al., 1996) included the latest combination implants approved for use in the U.S. Using exotic-cross steers in a serial slaughter design, Johnson et al. (1995) reported sizable ($P < .05$) increases in weight and ribeye area as well as slight ($P < .05$) differences in dressing percentage, fat thickness, internal fat, and carcass bullock score among implant treatment groups (Table 6). Carcasses from implanted steers were fatter externally, trimmer internally, and more pronounced in bullock characteristics. Differences in yield grade or ribeye area expressed per hundred pounds of carcass weight were not significant ($P > .05$).

Table 4. Carcass traits for steers that received different implants[a].

	Implant treatment[b]					
Trait	Control	Syn-S	Rev-S	Syn+Fin	S+F/F	Effect[c]
Hot carcass weight, lb	751	740	763	767	771	CT, ST
Adjusted fat thickness, in	0.59	0.61	0.53	0.55	0.57	
Ribeye area, sq in	12.8	13.0	13.7	13.8	13.8	CI, CT, ST
KPH fat, %	2.1	2.0	2.1	2.1	2.0	
Yield grade	3.2	3.1	2.8	2.8	2.8	
YG 4, %	7.1	14.2	0	7.7	10.7	
Bullock score[d]	4.6	4.6	4.3	4.4	4.1	CT, ST, EL

[a]Adapted from Foutz et al., 1990.
[b]Control = no implant; Syn-S = Synovex-S on day 1; Rev-S = 20 mg estradiol benzoate + 140 mg trenbolone acetate on day 1; Syn+Fin = Synovex-S + finaplix-S on day 1; S+F/F = Synovex-S + finaplix-S on day 1 with a reimplant of finaplix-S on day 58.
[c]Contrast effects ($P < .05$): CI = control vs. all implants; CT = control vs. treatments with TBA; ST = Synovex-S vs. treatments with TBA; EL = early vs. late TBA administration.
[d]Carcass bullock score: 5 = no evidence; 1 = severe bullock characteristics.

Table 5. Four trial summary on carcass traits of implanted steers[a].

	Implant treatment[b]						
Trait	Con	Syn Rev (50)	Ral Rev (50)	Mag Rev (50)	Syn Rev (75)	Ral Rev (75)	Mag Rev (75)
Carcass weight, lb	729	778	777	780	776	777	779
Ribeye area, sq in	12.8	13.5	13.5	13.7	13.5	13.4	13.5
Fat thickness, in	0.49	0.53	0.50	0.51	0.50	0.55	0.52
Yield grade	2.8	2.9	2.8	2.8	2.8	3.0	2.9

[a]Adapted from Pritchard, 1995.
[b]Con = nonimplanted control; Syn = Synovex-S initially; Ral = Ralgro initially; Mag = Magnum initially; Rev (50) = Revalor-S reimplanted at day 50; Rev (75) = Revalor-S reimplanted at day 75.

Mader et al. (1996) reported similar trends in weight, internal fat, and yield grade; however, neither ribeye area nor fat thickness were different ($P > .05$) among implant treatment groups (Table 7). It seems surprising that ribeye size did not increase with the carcass weight. The steers used in this trial were predominantly of British breeding.

Quantitative Carcass Traits of Heifers

Anabolic implant effects on carcass traits in heifers are similar to those of steers; carcass weight and ribeye size generally are increased compared to nonimplanted heifers while fat thickness is not changed when compared after a finishing period of specified lengths. However, response to implanting changes if heifers are supplemented with melengestrol acetate (MGA).

Research by Trenkle (1993) investigated several implant strategies with and without supplemental MGA during a 124 day finishing period (Table 8). Heifers fed MGA were heavier, fatter, lighter muscled, and less desirable in yield grade with a lower percentage of yield grades 1 and 2 and a higher percentage of yield grade 4 carcasses. Nichols et al. (1996) reported similar effects of MGA feeding in a serial slaughter heifer implant study (Table 9). Heifers receiving MGA either alone or in combination with implants were fatter, and similar in muscling, but were fatter and had less desirable yield grade than nonimplanted controls. Also, heifers supplemented with MGA produced a higher percentage of yield

grades 4 and 5 than either control or implanted heifers not fed MGA. The results of these two studies suggest that heifers supplemented with MGA during the finishing phase of production should be marketed at an earlier date to achieve a level of carcass fat comparable to heifers administered anabolic implants alone.

Box Beef Subprimal Yields

Carcass fabrication data similarly reflects the effect of implants on carcass yield grade traits. Implanted steers harvested on a time - constant basis yielded more ($P < .05$) pounds of boneless, closely-trimmed boxed beef subprimals and more ($P < .05$) total bone, but amounts of fat trim while comparable ($P > .05$) to that of nonimplanted steers (Table 10). These yields correspond the implant effects on ribeye size and carcass weight at a constant external fatness. Carcasses from implanted steers yielded a slightly higher ($P < .05$) percentage of boxed beef subprimals and a lower ($P < .05$) percentage of trimmable fat than carcasses from nonimplanted steers.

Table 6. Carcass traits for steers given different implants after 148 days on feed[a].

	Implant treatment[b]				
Trait	Control	Plus	Syn/Plus	Plus/Plus	Effect[c]
Slaughter weight, lb	1187.0	1263.2	1280.4	1288.3	CI. EL
Hot carcass weight, lb	762.8	809.3	826.0	838.8	CI. EL. ST
Dressing %	64.3	64.1	64.5	65.1	EL, ST
Adjusted fat thickness, in	0.62	0.65	0.66	0.68	CI
Ribeye area, sq in	12.13	13.05	13.25	13.37	CI
Ribeye area/cwt	1.60	1.62	1.61	1.60	
KPH fat, %	2.94	2.72	2.68	2.69	CI
Yield grade	3.65	3.57	3.60	3.64	
YG 1, %	2.4	3.9	5.4	3.8	
YG 2, %	17.6	27.6	18.6	27.0	
YG 3, %	50.4	39.4	47.3	41.3	
YG 4, %	23.2	20.5	19.4	18.3	
YG 5, %	6.4	8.7	9.3	9.5	
Bullock score[d]	4.6	4.3	4.2	4.0	CI, EL. ST

[a]Adapted from Johnson et al., 1995.

[b]Control = no implant; Plus = 28 mg estradiol benzoate and 200 mg trenbolone acetate on day 0; Syn/Plus = 20 mg estradiol benzoate plus 200 mg progesterone on day 0 and Plus reimplanted on day 70; Plus/Plus = Plus implanted on days 0 and 70.

[c]Contrast effects ($P < .05$): CI = control vs. all implants; EL = early vs. late TBA administration (Plus vs. Plus/Plus); ST = Syn vs. Plus as the initial implant (Syn/Plus vs. Plus/Plus).

[d]Carcass bullock score: 5 = no evidence; 1 = severe bullock characteristics.

Table 7. Carcass traits for control and implanted steers[a].

Trait	Control	Synovex-S	Revalor-S	Synovex-Plus
Carcass weight, lb	721[d]	735[c]	749[b]	755[b]
Fat thickness, in	0.39	0.41	0.43	0.37
Ribeye area, sq in	13.1	13.1	13.0	13.0
KPH fat, %	2.4[b]	2.4[bc]	2.3[cd]	2.2[d]
Yield grade	2.4	2.5	2.6	2.4

[a]Adapted from Mader et al., 1996; total days-fed = 112.

[bcd]Means in the same row with a common superscript letter are not ($P > .05$) different.

Table 8. Carcass traits for implanted heifers fed or not fed MGA[a].

Trait	Implanted[b] only	Implanted[b] +MGA	MGA Change
Carcass weight, lb	671.7	692.9	+21.2
Fat thickness, in	0.35	0.46	+0.11
Ribeye area, sq in	13.83	13.47	-0.36
Kidney, pelvic & heart fat, %	2.70	2.77	+0.07
Yield grade	2.03	2.52	+0.49
% Yield grade 1's & 2's	88.9	74.1	-14.8
% Yield grade 4's	1.9	5.6	+3.7

[a]Adapted from Trenkle, 1993.
[b]finaplix-H (day 0)/finaplix-H (day 71); Synovex-H (day 0)/Synovex-H (day 71); Synovex-H + finaplix-H (day 0)/Synovex-H + finaplix-H (day 71).

Table 9. Carcass traits for control and implanted heifers fed or not fed MGA[a].

Trait	Control	Revalor-H	MGA	Revalor-H + MGA	finaplix-H + MGA
Carcass weight, ib	705.5[d]	743.0[b]	729.8[c]	747.5[b]	738.7[bc]
Fat thickness, in	0.49[c]	0.50[c]	0.57[b]	0.57[b]	0.55[b]
Ribeye area, sq in	13.4[c]	14.2[b]	13.4[c]	13.5[c]	13.4[c]
KPH fat, %	2.1	2.0	2.1	2.0	2.1
Yield grade	2.57[c]	2.43[c]	2.84[b]	2.86[b]	2.85[b]
% Yield grade 4's & 5's	3.4[c]	1.7[c]	11.7[b]	14.2[b]	9.2[b]

[a]Adapted from Nichols et al., 1995.
[bcd]Means in the same row with a common superscript letter are not ($P > .05$) different.

Table 10. Weight and percentage yields for closely-trimmed boxed beef, fat trim, and bone of steers with different implants after 148 days on feed[a].

	Implant treatment[b]				
Trait	Control	Plus	Syn-S/Plus	Plus/Plus	Effect[c]
Boxed beef, lb	507.6	552.6	559.8	567.7	CI
Fat trim, lb	146.2	140.2	148.4	148.6	
Bone, lb	108.6	118.9	117.4	120.7	CI
Boxed beef, %	66.63	68.32	67.90	67.92	CI
Fat trim, %	19.20	17.27	17.88	17.65	CI
Bone, %	14.25	14.69	14.22	14.44	

[a]Adapted from Al-Maamari et al., 1995.
[b]Control = no implant; Plus = 28 mg estradiol benzoate and 200 mg trenbolone acetate on day 0; Syn-S/Plus = 20 mg estradiol benzoate plus 200 mg progesterone on day 0 and Plus reimplanted on day 70; Plus/Plus = Plus implanted on days 0 and 70.
[c]Contrast effect ($P < .05$): CI = control vs. all implants.

Table 11. Closely-trimmed boxed beef, fat trim, and bone weights of steers with different implants at a constant slaughter weight of 1225 lb[a].

	Implant treatment[b]				
Trait	Control	Plus	Syn-S/Plus	Plus/Plus	Effect[c]
Boxed beef, lb	523.9	531.7	533.3	540.2	CI
Fat trim, lb	155.8	134.4	133.0	135.0	CI
Bone, lb	113.0	112.9	111.0	114.6	

[a]Adapted from Al-Maamari et al., 1995.
[b]Control = no implant; Plus = 28 mg estradiol benzoate and 200 mg trenbolone acetate on day 0; Syn-S/Plus = 20 mg estradiol benzoate plus 200 mg progesterone on day 0 and Plus reimplanted on day 70; Plus/Plus = Plus implanted on days 0 and 70.
[c]Contrast effect ($P < .05$): CI = control vs. all implants.

Currently, a majority of feedlot cattle are fed for a specified number of days prior to harvest. Anabolic implants effects on fat deposition are more pronounced among cattle fed to a constant weight. Differences in fat trim yields increased dramatically when comparisons were made on a weight constant basis (Table 11). Carcasses from implanted steers yielded approximately 2.5% less trimmable fat, 2.2% more closely-trimmed subprimals, and similar percentages of bone (approximately 14.4%).

Do the anabolic implants alter muscle distribution within carcasses? Wood et al. (1986) used twins to study the effects of a combination (estrogenic + androgenic) implant on muscle weight distribution in bulls versus steers. They concluded that implanted steers were similar to bulls in shoulder and neck muscle percentages (especially the splenius or crest muscle), but implanted steers had a higher percentage muscle in these regions than nonimplanted steers did. Similar results were reported by Al-Maamari et al. (1996); steers receiving a combination implant during the first half of the finishing period yielded a higher ($P < .05$) percentage of chuck roll, the box beef subprimal in the U.S. that includes the splenius muscle. Percentage yields of all other major box beef subprimals were similar between implanted and control steers.

Table 12. Denuded subprimal yields as a percentage of total subprimal weight[a].

	Implant treatment[b]			
Subprimal	Control	Plus	Syn-S/Plus	Plus/Plus
Tenderloin	4.60	4.44	4.47	4.51
Strip loin	8.33	8.35	8.41	8.28
Ribeye, lip-on	10.52	10.27	10.81	10.20
Top sirloin butt	8.18	8.04	8.24	8.04
Inside round	15.01	14.57	14.79	14.77
Knuckle	7.82	7.84	7.56	7.72
Chuck roll	14.17[e]	14.91[cd]	14.58[de]	15.15[c]
Gooseneck	17.48	17.66	17.91	17.71
Shoulder clod	13.87	13.93	13.85	13.63

[a]Adapted from Al-Maamari, 1996.
[b]Control = no implant; Plus = 28 mg estradiol benzoate and 200 mg trenbolone acetate on day 0; Syn-S/Plus = 20 mg estradiol benzoate plus 200 mg progesterone on day 0 and Plus reimplanted on day 70; Plus/Plus = Plus implanted on days 0 and 70.
[cde]Means in the same row with a common superscript letter are not ($P > .05$) different.

Table 13. Carcass traits and profitability for control and implanted small, medium, and large framed heifers[a].

Trait	Control	Synovex-H + finaplix-H
Carcass weight, lb	708.6	728.6
Fat thichness, in	0.46	0.48
Ribeye area, sq in	12.4	12.9
% U. S. Choice	85.0	75.0
Yield grade (YG)	2.96	2.88
% YG 1's & 2's	51.1	58.3
Grade & yield, $/hd[b]	$4.36	$14.13
Premium market $/hd[c]	$32.05	$45.03

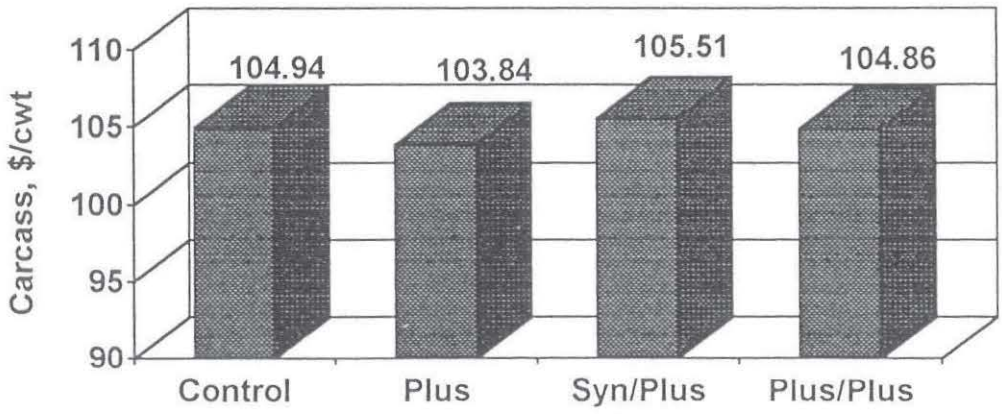
[a]Adapted from Trenkle and Iiams, 1996.
[b]Base carcass price = $108/cwt.; U.S. Choice/U.S. Select spread = -$10/cwt.; Yield grade 4's = -$15/cwt.
[c]Premium for yield grade 1's and 2's = $8/cwt.

Changes in Carcass and Box Beef Values Associated with Implanting

Carcass and box beef value differences associated with implanting are highly dependent on the price spreads in both quality and yield grades. Trenkle and Iiams (1996) calculated monetary returns for control versus implanted yearling heifers for two different marketing systems. Using a traditional grade and yield marketing method with a $10/cwt. spread between U.S. Choice and U.S. Select and a discount of $15/cwt. for yield grade 4's, they estimated return would be $9.77 per head greater for implanted heifers. If a premium for yield grade 1's and 2's (+$8/cwt.) was available, implanted heifers would have netted $12.98 per head more.

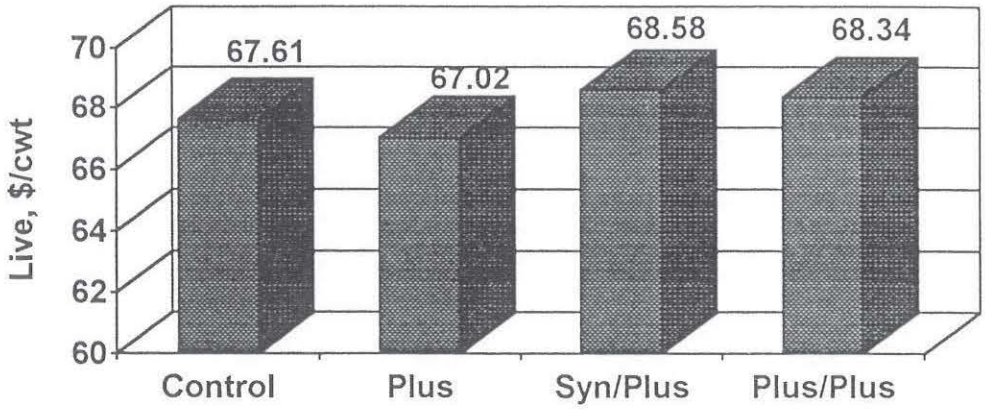
Carcass data for the Johnson et al. (1995) implant trial were used to compute individual carcass and live values based on the average 1995 prices for 25 closely-trimmed box beef items of either U.S. Choice or U.S. Select quality. Despite sizable variation in quality grade percentages, both carcass and live values ($/cwt.) were similar among implant treatment groups (Figures 1 and 2). However, implanted steers still had a sizable monetary advantage compared to controls ($51 to 69/head; Figure 3) due to heavier carcass weight at similar overall yield grade. Unfortunately this method of marketing, on a boxed beef subprimal yield basis, is still not available in the industry.

Figure 1. Carcass values for implant treatments based on 1995 close trim box beef cut-out[a].



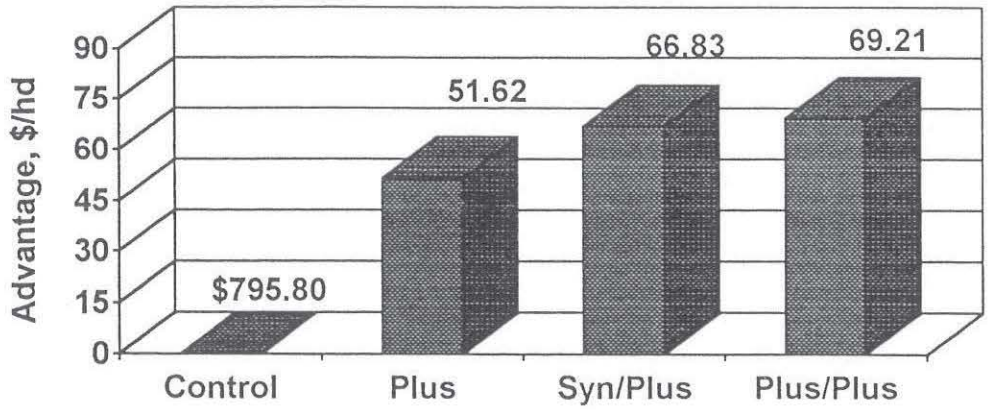
[a]Based on 1995 average wholesale box beef subprimal prices for U.S. Choice vs. U.S. Select; drop credit = $8.87/cwt; processing costs in $/head: YG1 = $86, YG2 = $94, YG3 = $102, YG4 = $120.

Figure 2. Live values for implant treatments based on 1995 close trim box beef cut-out[a].



[a]Based on reflects 1995 average wholesale box beef subprimal prices for U.S. Choice vs. U.S. Select; drop credit = $8.87/cwt; dressing % = 63.75; processing costs in $/head: YG1 = $86, YG2 = $94, YG3 = $102, YG4 = $120.

Figure 3. Monetary advantage for implant treatments over controls based on 1995 close trim box beef cut-out[a].



[a]Based on 1995 average wholesale box beef subprimal prices for U.S. Choice vs. U.S. Select; drop credit = $8.87/cwt; dressing % = 63.75; processing costs in $/head: YG1 = $86, YG2 = $94, YG3 = $102, YG4 = $120.

CONCLUSION

For feedlot steers and heifers marketed on a time constant basis, anabolic implants (especially combination implants) increase carcass weight and ribeye area but not ribeye area expressed per hundred pounds of carcass weight. Implants may slightly lower the percentage of kidney, pelvic, and heart fat, but they have minimal effects on external fat thickness and mean USDA yield grade. Carcasses from implanted steers yield more pounds of closely-trimmed box beef products as a result of heavier carcass weights at a similar mean yield grade than carcasses from nonimplanted cattle. Implants extend the tissue compositional growth curve, allowing steers and heifers to attain heavier carcass weight while maintaining a similar carcass fat percentage to that of nonimplanted controls. Accordingly, implanted steers and heifers produce carcasses with less trimmable fat and more pounds of closely-trimmed box beef than

control when the marketing endpoint is at a constant weight.

Androgenic implants tend to increase slightly the percentage of carcass lean by increasing the size of the splenius muscle in the chuck roll. This increase is similar to the effects of testosterone on the development of the crest in young bulls.

Implanted heifers receiving MGA produce carcasses with more external fat, smaller ribeyes, and less desirable yield grades than implanted heifers without MGA when marketed after a similar time on feed. Apparently, use of MGA in the latter half of the finishing phase accelerates the fattening process. Therefore, implanted heifers fed MGA should be marketed sooner with fewer days on feed to achieve a comparable fat end point to that of implanted heifers without supplemental MGA.

Live (cash) and carcass values ($/cwt.) are similar or may be slightly lower for implanted cattle compared to controls, depending on the quality grade consist and the U.S. Choice/U.S. Select price spread. For producers, profit per head still favors implanted cattle due to an increased carcass weight at a similar yield grade. Close trim box beef cut-out values ($/hd) are higher for carcasses from implanted cattle than controls. More realistic signals (premiums) are needed to reward carcasses of acceptable quality with higher red meat yields.

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QUESTIONS & ANSWERS

Q: Brad made a comment early about the implants and the wide spread patterns or made out some significance that a number of cattle were killed and the days on feed may change grades. Are the factors converted in yield grade ones and twos in the box and then put ones, twos, and threes all in the same box?

A: A lot of this is driven by their marketing demand, but we tend to think that for the most part packers prefer to convert yield grade ones and twos to the extent possible to close trim products and then those will be mixed in a box. Yield grade threes are most efficacious in most scenarios if they convert those to their commodity line but they will have various lines. You still could have mixes of ones, twos, and threes in any of the products and that was one of the frustrations that hurts the beef industry relative to consistency. Now that the demand is increasing for close trim, we think they tend to cram their coolers with ones and twos for the close trim product within choice and separately within select and convert most with yield grade threes to commodity.

Q: Comments were made about the effects of implants on bone maturity, what about lean maturity?

A: We have noticed in steers that if you have a 20% increase in skeletal maturity because of advantages in more youthful lean maturity we often times end up backing up the overall maturity from 20% to 12%. Therefore, the overall effects are not going to be quite as harsh. The "B" maturity quality grade change is based on overall maturity which is a balancing of skeletal and lean, not just bone maturity itself. So what I am saying is in most instances with feedlot steers and heifers lean maturity if they are approaching "B" is usually still on the advantageous side where they are into "A" and so the lean pulls some of them back. The overall result will not be as harsh as looking at the bone maturity by itself. Instead of 20% I anticipate about 12% impact on the average in steers. But as you mentioned, it is going to be highly dependent upon biological type that you are considering.

Q: If with this experiment in control versus implanted and you use synovex plus, would you anticipate any difference in your score on lean maturity?

A: No. In the 13 years that I've been at OSU, No. Now, again we've managed cattle the way they should be handled. We did not take them the night before forget about them until noon the next day and go in and harvest them and then get carcass data 24 hours later. We shipped them, had them slaughtered within 6 hours in most occasions and we have not really picked up substantial dark cutters nor significant differences in lean maturity score due to implanting.

Q: When we look at carcass data, we always group all the prime and high choices into one category with all the choices. Do you have any thoughts on what implants do to the prime and the high choices versus all the choices?

A: Good point, Brad had I am sure in his article the data that we have available, again we are relying in many cases on some of the more recent text summary's. Allen Trenkle again does a good job, of showing you numbers of each category, he's got some data on that and there tends to be a further depression in prime in many instances, especially if you use an aggressive program, and if you've cut the final feeding windows short.

Q: If you went into the cooler and you had the opportunity to sit down and look at your evaluations of the lean and skeleton maturity and average that and come up with your total maturity versus what a grader can do, what do you think the difference is going to be between those two evaluations?

A: That would be interesting in a poll for all the scientist in the audience, Russell's here, Jeff's here, and Brad's here. I think it would be a lot like real grade. Many of you that have collected individual carcass data, the ribeye, the backfat, all of that data versus change speed assignment of yield grades and usually find that your percent yield grade fours will elevate 5 to 10%. I think you have more time to spend on individual factors in that you are less apt to miss a few, so I think that I would find more if I had all the time in the world, they were not moving at 7 seconds per head, and I would decide on not only yield grade but also maturity, skeletal and lean. I think on line you would miss more than if you really went out and searched the coolers. Again in the audit we found more than they tend to, we only do 1 out of every 10. Their chains have more space to get

all the measurements on that 1 out of every 10 so they are moving by pretty fast. A lot of preliminary elements are going on not only among packers but also within the USDA. Again, the numbers that they are coming up with are not as high as the 95 audit numbers but they are still high. It is going to be a lot like dark cutters, you might sit there for six hours and not see a "B" bone that is affected by this change since January 31st and then you come back about 15 minutes later and here comes a lot of head and ten of them are "B" bone. I see it much like the dark cutter deal, if you try to sneak something through you are going to get caught.

Q: Do you expect the number of implants for a calf you received in July from birth right to slaughter have any effect on carcass quality?

A: That is a good question, and I am not aware of a lot of information to follow through with detail on the carcass part. I really can not say right off because I have focused here more recently on the finishing phase instead of the system all the way from birth to slaughter. I do not really have any data to say one way or the other that would be as important, more important or less important than say 140 days to the finishing.

Q: Would it matter if the cattle came in as steers versus bulls? Then would the implant have a difference?

A: There is a lot of data out reflecting that age at castration will affect or impact carcass quality. I think yes if they were castrated that late you would still see some depression in the % choice .

Q: Brad showed us some work on slaughter with the greater carcass effect. What would you have with a TBA reversed and estrogen alone used terminally on grade quality?

A: So your saying a combination for the first 70 days and estrogen the last 70 days. Don Gill and I have had that discussion ever since 1985 but we can't convince an endocrinologist like Jerry Rains that it makes sense in the living animal. We had some break up on combination implants use in Limousin cross steers that received a combination up front and then 56 days later just received a Synovex s as opposed to the treatment of Synovex up front and the combination the last 56 days or a both times. The data on that one study as in some work by John Wagner at South Dakota State reveal the balanced approach relative to not substantially depressing performance and remaining very competitive with nonimplanted trials relative combination carcass quality and yield.

Q: Well just a couple of comments, there was in the new synovex plus data, there is a data set that looks at that and there is others in here that have been working on it too, but by putting the combination up front and then following up by the estrogen versus the estrogen followed by the combination the effect on grade was essential. In that time period realize which goes back to your question at least in some of our opinion on what Dr. Mader said this morning there may not be how many they have all the way through but it is the low dose that appears, the low dose, the high dose, that is what the animal can respond to as well as the interval of the implant, the overlap time period or maybe the time of the overlap of the implants themselves with the additive effect of things like that have also been named in the conference in relationship or added onto the implants and that is particularly going to happen possibly prior to feedlot. I think the management scheme refers to the slaughter or the relationship. We really have to look at those additive effects before we deal with multiple implant programs and we have to relax with each other for multiple systems of mineral intake and power plus intake and feedstuffs plus the implants in what we are really dealing with.

A: And then trying to balance that act of biological type of each class of cattle differences, that's what keeps all of us in research and in the field and talking on the phone.

Q: Dr. Morgan did an excellent job in his presentation and I think we ought to give you both a very big hand for that. We did not really look at or he did not really look at what happened prior to feedlot. As you might say today that we also know that we worry about cattle that go into a feedlot. We do not know what happened prior to feedlot. We have to look at those things though and make a recommendation back to the prefeedlot people on what they are doing, because what they are doing is definitely going to have in impact on what is happening in the feedlot.

A: The other thing that gets you on trying to relate back to some of the earlier, and that is what we tried to concentrate on in the late 80's and the first half of the 90's, Synovex plus followed by Synovex will not be the same as Synovex + finaplix followed by Synovex either. Will it Jerry?

Q: Probably not.

A: Don Gill will try to tie in our lifeline data tomorrow as far as pricing. Impact of feed costs on controls versus implants and going only no cash basis as well as carcass basis with Dr. Jim Trapp.