FEEDLOT MANAGEMENT

Implant Strategies for Grid Marketed Cattle

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INTRODUCTION

With the introduction of grids back a few years ago, the job description of the feed yard manager/owner changed. For sure, the duties and responsibilities didn't decline. Along with the duties and responsibilities you had back in the 80's and early 90's, you were also given the task of maximizing cattle profitability based on what you thought a set of cattle looked like under the hide. A want ad for a feed yard manager 20 years ago may have gone something like this:

Feedlot Manager Wanted:

Must work well with cattle, order buyers, feed salesmen, and packer buyers. Salary will be commensurate with experience. Call 970-554-9012.

A possible want ad for today's feedlot manager may look something like the following:

Feedlot Manager Wanted:

Must work well with cattle, order buyers, feed salesmen, and packer buyers. Must be able to differentiate cattle of diverse genetic backgrounds and environmental upbringings by primarily phenotypic means of evaluation. Manager must then fit those cattle into various marketing avenues based on this phenotypic evaluation. Manager must know optimum management strategies to maximize individual animal profitability by manipulating live cattle performance via nutritional, immunological and animal husbandry means. These same nutritional, immunological and animal husbandry techniques must not reduce, and in most cases, should enhance carcass merit depending market environment and preconceived ideas of the cattle owner. Must be able to sort cattle into outcome groups based on phenotypic characteristics unless said manager can fit round pegs into square holes. Other duties will be assigned as determined by cattle owner. Salary will be commensurate with experience and ability to fit round pegs into square holes. Call 970-554-9012.

The bottom line is that today's feedlot manager has to be so much more knowledgeable than yesterday's manager. Factors that affect quality grade and implant strategies can influence the ability of cattle to "fit" various grids. However, in many cases, what makes cattle the most profitable when marketed in a cash market are also the same things that make cattle most profitable in a grid.

FACTORS AFFECTING QUALITY GRADE

A whole host of factors influence how a set of cattle will grade. Probably first and foremost is genetics. Think back to high school or college genetics class. You probably learned that an animal's phenotype, or how he looks, is determined by two things; Genetics and Environment. You

and I can't change a steer's genetics and we can only influence his environment during the time he is in the feedlot. I don't know how many times I've heard the statement "I fed the same calves last year". This is usually in reference to the fact that the feeder's calves this year didn't grade as well or perform as well as last year. Often times the comment I will get is "The only thing I changed was the implant". Something has changed from last year to this year, either the genetics of the calf or its environment. Even though the genetic base of the cowherd may have stayed intact from the calves you bought last year, are the bulls the same? Was the environment of these calves the same from last year? If the answer is yes, that means that everything was exactly the same from the time that calf was born until it was harvested and graded. The implant you put in a calf's ear can influence how it grades and performs, but it is only one small piece of the puzzle. When we look at a steer in a feed yard, we can have an idea of its genetic background, but we can't change half of what affects its marbling potential. You and I can influence his environment from the time he hits the feed yard until he is harvested. Again, once he leaves the feed yard, we have no influence over his environment.

So much can happen to the calf before you receive him in the feed yard to influence his marbling. The nutrition and health of the calf while on the cow has a major influence. We have learned in the last few years that marbling is laid down in calves much sooner in that calf's life than we once thought. We used to think that marbling was laid down the last 100 - 120 days on feed. I don't believe that to be the case today. Any time that calf has a "bad day", it affects its ability to grade at the packing plant. We have seen that calves that are fed an energy-based creep feed or ones that remains healthy prior to reaching the feedlot have a better chance of grading than one that has been sick a couple of times throughout its life.

Let's think back a little further to grade school. Remember how most of the girls in your class were taller than you, and probably acted more mature than you? Girls at the same age tend to mature faster than boys. It is the same in cattle. At the same age, heifers will be further along on their growth curve than steers. Thus, at the same age, heifers will tend to be fatter than steers. As much as we would like to get away from the correlation, more fat usually means more marbling. Which is why heifers tend to grade better than steers, and why we tend to be more aggressive with our implant strategies in heifers.

I do think that adequate protein available for the rumen microbes can help maximize marbling potential by maximizing energy production in the rumen. The longer the castration of bull calves is delayed past weaning, the less likely steers have to grade. Deworming cattle has been show to improve the quality grade. Even the packing plant has an influence over the quality grade of cattle. A USDA grader calling yield grade and quality grade is a very subjective measure. I would bet that even the same USDA grader doesn't call grades the same on Monday morning as he does Friday afternoon. Chill factors also influence quality grade. The longer the carcass has to chill, the more "bloom" shows up on the ribeye, giving the impression of more marbling. I made reference to it earlier, but cattle have to be fed to grade. I agree that there are genetics out there than can produce a prime, yield grade 1 carcass, but those are rare. Data reported by Dr. Mike Hubbert (Ganado Technologies) looking at 9,000 head of Northern calves showed that for the most part, calves needed to be fed to a yield grade 3 before they would grade choice or prime. Kansas State University reported similar results (Lawrence et al., 2001; Figure 1).

Finally, implants do affect quality grade. Over the past few years, as grid marketing became more prevalent, we learned, and continue to learn, how to minimize the negative attributes of implants and we have developed new implants that may fit better in a grid marketing program.

IMPLANT STRATEGIES FOR GRID BASED MARKETING

The currently approved cattle implants are shown in Table 1.We know that implants improve feedlot performance. The Texas Tech implant database would say that on average, estrogen only implants like Synovex® S increase average daily gain (ADG) by about 12% and reduce feed to gain ratio (F/G) by about 7% over non- implanted steers. Duckett and Andrae (2001) reported similar numbers and also reported that estrogen only implants increase hot carcass weight (HCW) by about 3% over non-implanted cattle. Trenbolone Acetate (TBA) in combination with estrogen, as in Revalor®-S and Synovex Plus®, results in a synergistic effect in cattle performance. Summarizing data from the Texas Tech implant database would suggest that estrogen/TBA implants improve ADG and F/G by 20% and 7% over non-implanted steers. Again, those numbers agree with the summary of Duckett and Andrae (2001), who also reported that estrogen/TBA implants increase HCW by 4.75% over non-implanted cattle. The downside with implants is they can also influence marbling and quality grade in cattle. Summarizing the data from the Texas Tech database would suggest that estrogen only implants reduce percent choice carcasses by approximately 9 percentage points, while estrogen/TBA implants reduce percent choice carcasses by approximately 11 percentage points.

The question becomes then: is the performance observed with estrogen and estrogen/TBA implants enough to offset the reduced quality grade seen with implants. Definitely, under a cash marketing arrangement, more performance means higher profits. A more aggressive implant strategy means improved daily gain, improved cost of gain, and generally increase sale weight. Under a grid marketing arrangement, the answer to that question is YES, under most situations.

In the cattle business, whether you are a cow/calf operation selling calves, a stocker operation selling feeders or a feedlot selling fats, you are selling weight. Even in a gridmarketing program, you are selling weight. Carcass weight is a major determinant of profitability for those marketing cattle on a grid. Cattle Fax, back in March of 2002 stated, “Carcass weight is another determinant and tends to be overlooked by many…Weight is still the primary driver in the ultimate carcass value received.” From an industry standpoint, putting more weight on cattle may not be the best thing, but from an individual feedlot standpoint, more weight usually means more profit. This is especially true with low feed prices. I think that the packing industry has also accepted this. Over time, carcass weights before discounts were applied have gone up. In some grids now, carcass weights up to 1000 pounds are accepted before being discounted.

Even though under most situations more performance means more profitability, the norm is a more moderate implant strategy where performance is compromised in order to make sure a set of cattle will grade or to maximize quality grade. In too many cases, I have seen a feed yard give up performance at the expense of chasing quality grade. Most of this is probably the result of packer buyer. Granted, you as a feedlot owner/manager have to provide the packer with what he wants in regards to carcass merit, but it also has to make financial sense to the feedlot. I think there is a perception that the premiums and discounts associated with a grid will affect cattle profitability more so than cattle performance. Again, under most cattle feeding situations, this is not the case.

University researchers and implant companies have made a lot of progress in understanding how implants work, and how implants interact with the ability of cattle to deposit marbling. Today, we are closer to having the best of both worlds. We are working toward maximizing live cattle performance and minimizing the negative effects of implants on quality grade.

With work conducted by South Dakota State University, the University of Nebraska (Funston et al., 2002; Table 2.), and work by Fort Dodge Animal Health, we have learned that delaying the initial implant in the feedlot until cattle are acclimated to a higher plain of nutrition and consuming more feed can have positive effects on quality grade without hurting feedlot performance. Since calf-feds tend to be revaccinated at 10-21 days in the feedlot, this is easier to implement than it would be in yearling cattle that typically are not brought back through the processing facility for a revaccination. I think there is a place for a low-dose estrogen implant (Synovex C, Ralgro, Synovex Choice) up front in a yearling program. Yearlings coming into the feedlot for the most part don't face the challenges that newly received calves do. Getting intakes, and more specifically energy intakes, into newly received yearlings is typically not a problem. Therefore, I think there is an opportunity to use a low-dose estrogen product up front in a yearling to improve performance, without hurting quality grade.

We (Fort Dodge Animal Health and Intervet) have also developed new intermediate dose TBA implants (Synovex Choice, Revalor-IS and Revalor-IH) that can help fine-tune the implant strategy for cattle destined for a grid-based marketing system. These products can help improve cattle performance over that of estrogen only implants while maintaining the grade of estrogen only implants. In terms of quality grade, it is the thought of this author that we probably put too much blame on the TBA content of the implant, and not enough blame on the estrogen content. I used to attribute the grade reduction we see with full dose TBA implants (Revalor-S, Synovex Plus) on the fact that these products contain TBA, and really didn't think about the fact that these products also contain higher estrogen contents than a Synovex S (Table1.).

Keeping the pay-out window of implants in mind can not only maximize cattle performance, but can also minimize the negative effects of implants on grade. My suggestions on implant payout windows is in Table 3. Use these as guidelines based on your marketing strategies, feed prices and the anticipated choice/select spread at harvest. Letting an implant "run out" is more detrimental at the end of the feeding period when cattle are least efficient than it is toward the beginning of the feeding period when cattle are still relatively efficient and energy intakes are lower. The better the bunk management, the sooner a feed yard can get cattle eating, the higher the energy density of the diet and the better the overall cattle management, the more aggressive a feed yard can be with the implant strategy. Implants require energy to work. Using too aggressive of an implant for the energy intake of the cattle can result in an unhappy packer buyer with little or no additional benefit in terms of performance over a less aggressive implant strategy. When I get a call from a feedlot asking what implant strategy to use on a specific set of cattle, I am usually at a disadvantage, because I have no idea of the management capabilities of the feed yard to handle a more aggressive implant strategy that may net him a higher return. Work with your nutritionist and/or veterinarian to develop an implant strategy that best fits your objectives and management capabilities.

CONCLUSIONS

Implants are only one factor that influences the quality grade of a set of cattle. The biggest single determinant of how a set of cattle will grade is genetics. As much as we would like to, we can't change the genetics of a set of cattle coming into the feedlot. All we can do is influence its environment while it is in the yard. Genetics, age, health, nutrition, days on feed, weather, gender, the packing plant are only some of the factors affecting cattle marbling. If given an opportunity, performance should be the main focus of every pen of cattle. Feedlot performance is where the profitability is. Circumstances may dictate a less aggressive implant strategy, but don't give up any more performance than needed to pick up quality grade. Today, we are closer to having the best of both worlds: performance and grade. Research into how implants affect the deposition of muscle and marbling, along with the development of newer generation implants has resulted in the ability to maximize cattle performance without giving up quality grade.

LITERATURE CITED

Cattle Fax. 3/2002. Special Edition. Marketing and Trading.

Duckett, S. and J.G. Andrae. 2001. Implant Strategies in an integrated beef production system. J. Anim. Sci. 79(E. Suppl.):E110-E117.

Funston. R. N., D.C. Adams, R.L. Davis, J.R.Teichert. Delayed Implanting Improves Quality Grade in Steer Calves. 2004. Nebraska Beef Reports.

Lawrence, T.E., D.A. King, T.H. Montgomery, and M.E. Dikeman. 2001. Kansas State University Cattlemen's Day. Report of Progress 873.

Texas Tech Implant Database. http://idb.asft.ttu.edu.

Table 1. Currently Approved Cattle Implants [1]

Implant	Zeranol	Estrogen	Estradiol Benzoate	Progesterone	Testosterone Propionate	Trenbolone Acetate	Approved Animals
Ralgro®	36 mg						Calves, Stockers, Feedlot
Ralgro®Magnum™	72 mg						Feedlot Steers
Duralease™		14.5* mg	20 mg				Feedlot Steers & Heifers
Compudose®		24 mg					Steers, Feedlot Heifers
Encore®		43.9 mg					All Steers
Synovex® C		7.2* mg	10 mg	100 mg			Steers, Heifers
Synovex® S		14.5* mg	20 mg	200 mg			Steers > 400 lbs.
Synovex® H		14.5* mg	20 mg		200 mg		Heifers > 400 lbs.
Synovex® Choice		10.1 * mg	14 mg			100 mg	Feedlot Steers
Synovex Plus®		20.3* mg	28 mg			200 mg	Feedlot Steers & Heifers
Component™ E-C		7.2* mg	10 mg	100 mg			Calves < 400 lbs.
Component™ E-S		14.5* mg	20 mg	200 mg			Steers > 400 lbs.
Component™ E-H		14.5* mg	20 mg		200 mg		Heifers > 400 lbs.
Finaplix®–S/ Component™ T-S						140 mg	Feedlot Steers
Finaplix®–H/ Component™ T-H						200 mg	Feedlot Heifers
Revalor®-S/ Component™ TE-S		24 mg				120 mg	Feedlot Steers
Revalor®-H/ Component™ TE-H		14 mg				140 mg	Feedlot Heifers
Revalor®-200/ Component™ TE-200		20 mg				200 mg	Feedlot Steers & Heifers
Revalor®-IS/ Component™ TE-IS		16 mg				80 mg	Feedlot Steers
Revalor®-IH/ Component™ TE-IH		8 mg				80 mg	Feedlot Heifers
Revalor®-G/ Component™ TE-G		8 mg				40 mg	Stockers

*Estradiol Benzoate contains 72.35% Estradiol 17β. [1]Refer to manufacturer's label for the most accurate claims.

Table 2. Effect of Delaying the Initial Implant (Synovex S) on Performance and Grade[1]

	Delayed*	Not Delayed	Significance
Initial weight, lb.	475	477	
30 day weight, lb.	591	618	**
Final weight, lb.	1266	1273	Not Significant
Overall ADG, lb.	3.73	3.75	Not Significnat
Choice, %	92	68	**

[1]Funston et al. (2004)

*Synovex S at day 0 or day 30 followed by Synovex Choice at day 112. Four hundred fifty-four pounds in weight.

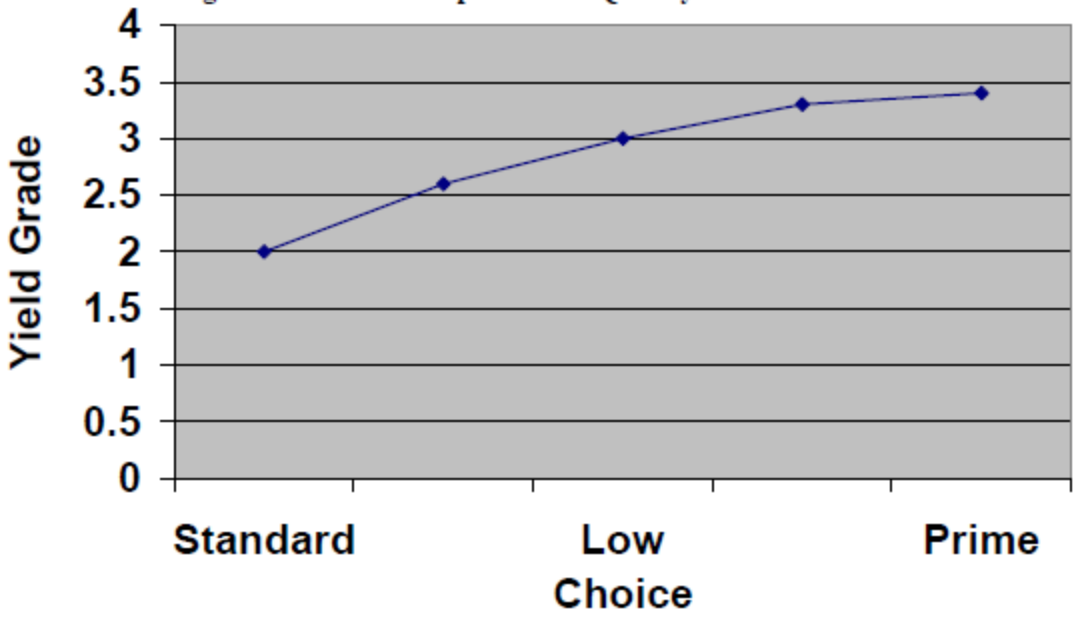
[abcd]Means in a row with different superscripts differ (P<.05).

Table 3. Suggested "Pay Outs" for Various Implants Used with Moderate Implant Strategies[1]

	Pay-Out
Synovex® C	70-90 Days
Ralgro®	45-60 Days
Synovex® S/H	60-110 Days
Synovex® Choice	80-110 Days
Revalor®-IS/IH	80-110 Days
Synovex Plus®	100-140 Days
Revalor®-S	80-120 Days
Compudose®	150-180
Encore®	Up to 350 days

[1]Use these as guidelines only. Actual days should vary depending on feed yard management and marketing strategies.

Figure 1. Relationship between Quality Grade and Yield Grade



Lawerence et al.. 2001. 60.625 steers and heifers.

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