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Target Residues

Do you want to be on the violator list?

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An *animal drug residue* is a trace of a substance present in a meat, milk, urine, or feces after administration to and metabolism by the animal. Drug residues become a concern when they are consumed in food products. Antibiotic residues are of most concern because of the concern of transferring resistance of antibiotics to humans. Bacteria can easily mutate, changing their genetic code to develop resistance patterns. In this manner, resident non-pathogenic bacteria normally found in human colon and intestines may become resistant from exposure to very small amounts of antibiotic drug residue in the foods consumed by humans. Unrelated bacteria strains are also very adept at transferring their genetic codes to other bacteria strains. For example, non-pathogenic *E.coli* present in human colons becomes resistant to an antibiotic it can pass its resistant genes onto a *Salmonella* pathogen, creating antibiotic resistant *Salmonella*, which is a food-borne pathogen. Pathogenic bacteria may also acquire resistance as a result of their contact with antibiotic residues in feed or from improper administration of antibiotics to the animal. The well-documented, primary cause of antibiotic resistant bacteria in people is due to the antibiotic treatment of people, not animals. Various efforts are underway to promote the more prudent use of antibiotics by human patients and their physicians.

There are also two ways in which food borne drug residues directly harm humans:

1. *Hypersensitivity to the drug or its metabolites.* For example, penicillin and its byproducts are most famous for their hypersensitivity reactions in people: which range from mild rashes and breathing difficulty to anaphylactic shock to death.
2. *Drug metabolites acting as intoxicants (or carcinogens)* to the liver, kidney or other organs. For example, flunixin meglumine (Banamine) causing fecal blood, gastrointestinal erosions, ulcers and kidney necrosis (death of tissue) in sensitive people.

Just how big of a problem are we talking about? The Animal Health Institute has been tracking the sale of antibiotics by its member companies. In 2006 (most currently available) they reported 26.4 million pounds of antibiotics were sold for use in food producing animals, horses and exotics in the US; 4.6% of this total was sold for growth promotion/nutritional use and 96% for therapeutic use. Of the 26 million pounds of antibiotic product sold, 42% were compounds not used in human medicine nor known to cross select for resistance to human antibiotics.

Human antibiotic sales are **not** readily available. It is estimated that the total volume is much less than that sold for animal use because there are 30 times more farm and companion animals in the United States than humans. Greater than half of the antibiotics produced in the United States are used for agricultural purposes. Seventy-eight percent of meat and meat products produced in the US is derived from animals that have received drugs, which require a withdrawal time. This is where the concern is raised; Animals are receiving more drugs and the potential for violative residues appears great to the public.

According to National Agriculture Statistics Service 2008 data, 33 million cattle (excluding veal) were slaughtered in federally inspected plants. Of these, 879 tested positive for violative residue, representing 0.003% of the cattle slaughtered, which is a very small percentage. Of the 879 cattle testing positive for violative residue, 791 (90%) were primarily Holstein, cull cattle. Of all the dairy cows slaughtered, 0.03% had violative residue. While the percent of violative residues detected in slaughtered dairy cows appears small, it is 30 times greater than the percentage of violative residue detected in slaughtered beef cows. This does however, represent a downward trend for culled dairy cattle; a decade ago culled dairy cattle had a 1.7% rate of antibiotic residue rate, more than double the rate of beef cows. ***When it comes to cattle, not only has residue been defined, it is also described by color: black & white.***

Edible tissues harvested from a carcass may contain a safe, tolerated level of drug residue. This tolerated level is usually reached when the withdrawal time has been met. Prohibited drugs have zero tolerance and therefore no amount of residue is allowed. Illegal residues result when the withdrawal time has not been met. Pharmaceutical companies conduct studies to determine a drug's metabolism from edible tissues, milk and eggs. The slowest rate of elimination from the slowest residue-depleting tissue is used for determining the **suggested** withdrawal time. Keep in mind; healthy animals are used in these studies. Drugs used in a sick animal that is not eating and drinking normally may result in a different duration for the drug to metabolize than suggested by the labeled withdrawal. Treatment using drug combinations often results in an unknown withdrawal time, because very little data is available to determine the withdrawal time. Label withdrawal time does not apply when using the drug in an animal or in a manner not listed on the label. The Food Animal Residue Avoidance and Depletion Program (FARAD) is a national, USDA-sponsored, cooperative project

that provides the best, most current advice to veterinarians regarding drug withdrawal times.

FDA uses surveillance testing of veterinary medical products to determine inappropriate or illegal drug use in food producing animals. A statistical sample of carcasses is screened with highly sensitive, rapid result tests. In addition, inspected that indicate disease tissues samples are also sampled for testing. Confirmation of the positives is performed with slower, specific, more expensive, tests. The first sensitive screen results in many false positives, but confidence is high that a negative result is a true negative. The follow up confirmation gives a numeric value of the residue present, ruling out a false positive. Using both tests determines non-compliance beyond any reasonable doubt.

Slaughter plants handling dairy cows and bob veal are responsible for greater than 90% of the residues violations. Wisconsin currently leads the nation in slaughterhouse residue violations, ahead of California. If this continues, plants may be forced into no longer accepting cattle from producers who were past violators. The dairy industry is slow to recognize the ramifications of this; they are so focused on milk production that they deem the dairy cow's second career in beef sales as inconsequential.

The Food Safety Inspection Service, (inspectors that carry out FDA drug residue policies), is now keeping an online, public list of suppliers whose animals have residue violations at slaughter. This list is available so that slaughter plants can refuse to purchase animals from these suppliers. FSIS is not excusing those plants that can't always trace back all owners of an animal. FSIS will soon be requiring residue testing on 100% of the animals from suppliers that cannot identify the original sources of those animals. It stands to reason that suppliers of these animals will be paid less per pound, because the market is taking on additional testing expenses.

It is imperative that producers work with their veterinarians, who also keep educating themselves about the drugs they use, to establish prudent drug use on their farms. Adherence to responsible use guidelines prevents violative drug residues, minimizes the risk of antibiotic resistance, optimizes the effectiveness and maintains availability of drugs.

Prudent drug use in animals does not mean zero use. *It is our moral and ethical duty to provide drugs to limit the pain and suffering of the animals under our care.* By following withdrawal times, we can do so without creating a human health risk. In 1971, William G. Huber, of the Division of Pharmacologic Sciences, College of Veterinary Medicine, University of Illinois-Urbana stated, "adherence to withdrawal time is cumbersome, inconvenient and an additional expense for the livestock and poultry producer." This is a cost of production we must bear, especially when, as Huber goes on to state, "Withdrawal is essential if the consumer is to have pure and safe meat. Precaution is even more important if meat inspection procedures are not sufficiently sophisticated to routinely detect (all) meat that contains drug residues."

Residues result from a laundry list of reasons: general human error, employee error, problems marking treated cattle, incomplete or non-existent treatment records, error or failure of on-farm drug residue testing, vandalism or sabotage, calves consuming milk or colostrum from medicated cows (including dry cow therapies), insufficient knowledge about drug withdrawal periods, failure to observe withdrawal periods, failure to read the label, extra label drug use by laypersons, inadequate communication between the veterinarian and the producer, etc, etc.

Meat from calves less than 150 pounds is marketed as "bob veal" in the US. Young calves represent much of Wisconsin's drug residue problem. It is important when marketing calves to remember they may be immediately butchered for human consumption. Feeding antibiotic waste milk, colostrum from a dry cow that freshened early or medicated calf milk replacer may have the potential for violative residues.

Neomycin and oxytetracycline can no longer be fed at a 2 to 1 ratio in milk replacers. These two antibiotics may be fed 1) as a treatment level, in prepared formulations, with labeled withdrawal times. 2) At growth enhancer formulations (where the ratio is 1 to 1 neomycin/oxytetracycline); at this level the withdrawal time is 7-14 days.

In July, 2008, the FDA proposed an order prohibiting the extra-label use of cephalosporin in food-producing animals. Ceftiofur (Naxel®, Excenel®) is not used in human medicine; however, cross-resistance among the cephalosporin class of drugs caused FDA to consider its extra-label use. Opposition was overwhelming and FDA revoked its order. The prohibition order may be reissued at any time. Cephalosporin residues at slaughter strengthen FDA's concern of their inappropriate use and increased potential for resistance transference.

There is a bill before congress to restrict the use of antibiotics in food producing animals to reduce the risk of antibiotic resistance to medically important bacteria (bacteria of concern in human health). The Preservation of Antibiotics for Medical Treatment Act of 2009 seeks to withdraw the routine use of seven classes of antibiotics from food animal production (primarily antibiotics added to feed). Violative antibiotic residues strengthen the evidence for passing this bill.

Rather than be legislated into them, available animal husbandry practices must implement management plans to minimize drug use on farms. The Beef Quality Assurance Program (BQA) is the industry's premier program for teaching best management practices in animal husbandry and drug use. Farmers Assuring Responsible Management is the new program required by all dairy processors of their producer patrons. Both these programs have a Veterinary Client Patient Relationship (VCPR) as their cornerstone for prudent drug use on farm.

Animal drugs are labeled “Over the Counter (OTC)”, often labeled as Animal Use Only; or prescription only, labeled as “Under the Use or Direction of a Licensed Veterinarian”. In either case, drugs are to be used as directed by the label: for the animal, condition, administration, dose, duration and withdrawal time listed. Only a licensed veterinarian may use certain drugs in an extra-label manner. Veterinarians are prohibited extra-label use of: medicated feeds, fluoroquinolones and sulfonamides in adult dairy cattle. It is illegal for a layperson to use any drug in an extra-label manner, unless directed to do so by the veterinarian under a VCPR.

A VCPR is one in which a **RELATIONSHIP** exists:

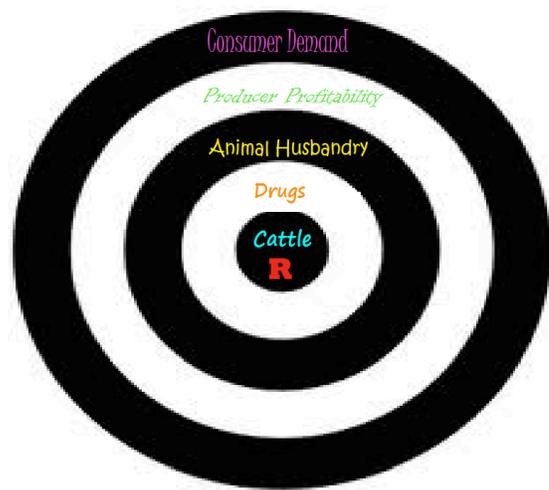
- A veterinarian has assumed the responsibility for making medical judgments regarding the health of the animal and the need for medical treatment and the owner of the animal (or other caretaker) has agreed to follow the instructions of the veterinarian.
- There is sufficient knowledge of the animal by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animal and the practicing veterinarian is readily available for follow-up in case of adverse reaction or failure of the therapy regimen.
- Such a relationship can exist only when the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal by virtue of examination of the animal and/or by medically appropriate and timely visits to the premises where the animals are kept.

Penicillin continues to top the list for residue violations, with flunixin meglumine violations increasing. Flunixin is a non-steroidal anti-inflammatory drug approved for IV administration in cattle (excluding veal calves) and swine. Often, flunixin is given IM, in an extra-label manner. When using flunixin as labeled, the withdrawal time is 2 days. If the route is changed to SQ, metabolism becomes closer to a 30 days withdrawal and if given IM, it is not really known how long residue will remain in the muscle. In addition, when given IM, flunixin causes a large abscess in the muscle, which is large red flag for FSIS inspectors on the slaughter floor. Read the label of the drug you are using!! The label tells you everything you need to know in order to use the drug correctly and avoid a residue at market.

Prevention of disease is more profitable than treatment. Producers must first decide to use drugs only if a measurable benefit exists, otherwise opt for immediate slaughter or euthanasia. Producers must also have a plan to re-condition treated animals before marketing them. This process of

rehabilitation or re-conditioning may require a 40 to 60 day feeding period. Feeding a high grain diet can yield a 3 lb per day gain, increasing the carcass value due to weight and quality, while reducing the risk of violative residues.

The black & white target is used to describe the overall residue problem. R in the center stands for “Residue”. Certain classes of cattle are at greater risk for residues because of the drugs used and animal husbandry practices used. Producer profitability decides when cattle are treated and subsequently sold to market. The consumer envelops the entire food animal production cycle; without the consumer, we don’t have a market. Consumers have the power to dictate our animal husbandry and drug use AND they demand safe, wholesome and drug-free food.



Any Level of Violative Residue is UNACCEPTABLE!

LGM: Livestock Gross Margin Insurance



Brenda Boetel

Livestock Marketing Specialist, University of Wisconsin–River Falls

What is Livestock Gross Margin?

Livestock Gross Margin (LGM) is an insurance product under the federal crop insurance program and is reinsured by the Federal Crop Insurance Corporation. It offers protection against a decline in the feeding margin for cattle and swine.

What is the difference between LGM and LRP?

Livestock Risk Protection (LRP) is an insurance product that covers the risk of price declines for feeder cattle, fed cattle, and swine. It provides producers an indemnity if a regional or national cash price index falls below an insured coverage price. LRP works similarly to buying a put option. Unlike LGM, which protects an expected gross margin, LRP protects a selling price.

Livestock Gross Margin (LGM) is a livestock insurance product that protects an expected gross margin (EGM) rather than a selling price, as is the case with Livestock Risk Protection (LRP).

Neither LGM nor LRP guarantee a cash price received as the producer's actual cash market selling price is not used to determine indemnities. Both LRP and LGM allow small and medium sized producers operations to manage risk even if they do not have the volume or expertise necessary to use Chicago Mercantile Exchange (CME) futures and options contracts. LGM and LRP allow for numbers of cattle to be protected that do not match the specifications of the CME contracts, thus eliminating over or under coverage.

Who is eligible to buy LGM?

Only producers of cattle fed in certain states are eligible for LGM. Wisconsin is one of these eligible states.

What does LGM cover?

LGM provides insurance for the difference between the expected gross margin and the actual total gross margin. This policy does not insure against death or other loss.

Gross margin is the difference between gross revenue and variable costs. Gross revenue is the revenue from selling finished cattle. Variable costs include feed and other costs that occur when finishing cattle. Live cattle futures represent the price used to calculate expected gross revenue for the finishing weights detailed below. Feeder cattle futures represent the price used to determine the expected cost of the feeder animal, and corn futures represent the price

used to determine the expected cost of feed needed to finish the animal. The expected gross margin (EGM) per head is then calculated using the appropriate contract month prices for live cattle futures, feeder cattle futures, and corn futures.

Two types of enterprises can be insured under LGM - calf finishing and yearling finishing. In the calf finishing operation, cattle are assumed to weigh 550 pounds when they enter the feedlot, to weigh 1,150 pounds at slaughter, and to consume 52 bushels of corn. In the yearling finishing operation, the cattle are assumed to weigh 750 pounds when they enter the feedlot, to weigh 1,250 pounds at slaughter, and to consume 50 bushels of corn.

The EGM varies from month to month in an insurance period due to the varying prices in the futures contracts and thus the potential gross margin. A producer can choose a \$0 to \$150 deductible amount, in \$10 increments. The deductible value is the portion of the EGM not insured.

Each insurance period for LGM is eleven months long. No cattle can be insured during the first month of any insurance period. A producer must prepare a Target Marketing Report showing the number of cattle to be covered in each month of the insurance period, i.e., expected sales. The maximum number of cattle that can be covered is 5,000 head in any one insurance period and 10,000 head in any insurance year (July 1 through June 30).

When do I receive an LGM indemnity?

An indemnity is paid if the insured gross margin is greater than the total actual gross margin at the end of the insurance period. Note that the indemnity is not based on actual prices received for livestock or actual prices paid for livestock and corn. The total actual gross margin is based off the futures prices during the price measurement period, as well as the number of marketings.

When is LGM sold and how long do the sales periods last?

LGM for Cattle is sold on the last Friday that is a business day of each month. The sales period begins as soon as the Risk Management Agency (RMA) reviews the data submitted by the developer after the close of markets on the last day of the price discovery period. The sales period ends at 8:00 PM Central Time the following day.

What information is required for the application?

Information required for the application process includes the type of livestock insured, the number of approved target marketings, the number of target marketings during each month of the insurance period, and the deductible. The premium for the initial insurance period must be paid in full at the time the application is due. No premium subsidy is offered to producers.

How do I purchase LGM?

LGM for Cattle is available for sale at your authorized crop insurance agent's office. Crop insurance agents must be certified by an insurance company to sell LGM for Cattle and that agent's identification number must be on file with the Federal Crop Insurance Corporation.

How much is the premium for LGM?

The producer's premium is calculated by a premium calculator program that determines the premium per head of cattle based on target marketings, expected gross margins for each period, and deductibles.

It is possible to get an estimate of the premiums at the Iowa Agricultural Insurance Innovations website, available at <http://205.170.225.22/cattle.aspx>.

2011 Cattle Situation and Outlook

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2010 In Review

Last year saw very small increases of less than 1 percent in the total production of meat, higher prices of livestock, good export demand and a small decline in the consumption of meat per capita in the U.S. However, producers continued to face relatively high and volatile feed costs making production decisions—particularly decisions to increase herds—more difficult.

Beef exports were strong in 2010, up by about 19 percent following the very large decline in beef exports in 2004, just after the BSE event in the cattle sector in late 2003, total meat exports of beef, pork and poultry have nearly doubled in the last 6 years.

The strong export market in meat (and in the feed inputs) has been helped by the decade long decline in the value of the dollar. From an index high of 121 in 2001, it fell to an index low of 71 in 2008. It is currently about 80.

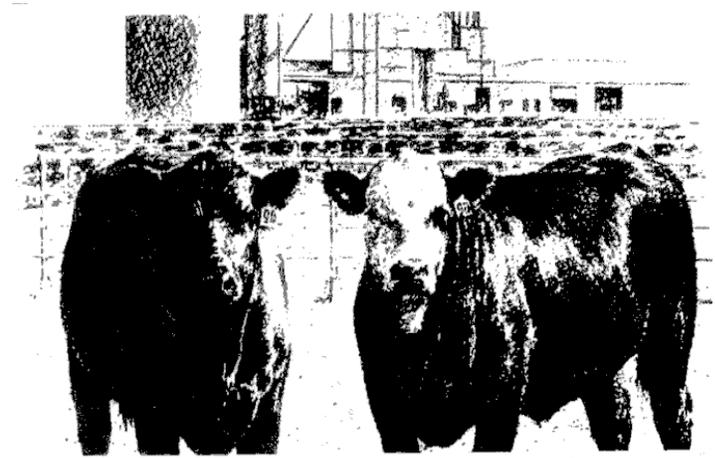
Livestock producers continued to face, for the fifth consecutive year, relatively higher and somewhat volatile feed prices in 2010. In the six calendar years from 1999 through 2005, corn prices averaged \$2.06 per bushel. From 2006 through 2010, corn prices averaged \$4.15 per bushel with monthly averages ranging from \$3.03 per bushel to \$6.56 per bushel. The rapid rise in feed prices during the last few years helped stop any increase in cow inventory.

Cattle prices fared reasonably well in 2010. Average choice cattle prices in 2010 were up more than 12 percent from 2009, exceeding the record high averages reached in 2007 and 2008. Several factors helped increase prices in 2010. Frozen stocks of beef, pork and turkey were well below those of 2009 most of the year. Also, the quality of the wet 2009 corn crop was below normal and resulted in slower gains of some livestock. Weather also played a part. The winter of 2009-2010 was colder and wetter than normal in the cattle feeding area in the Southern Plains, slowing weight gains and helping the surge in cattle prices from an average of \$83.08 per hundredweight in December 2009 to \$98.41 in April 2010.

Cow slaughter rose about 4 percent in 2010, up more than a third from its recent low five years ago. Dairy cow slaughter was down about 3 percent and slaughter of beef and other cows was up about 10 percent. Total cow slaughter in 2010 was the largest in 13 years.

Total slaughter of all cattle, including cows, was up about 2

percent from 2009. It has held in a sidewise trend between 31.8 and 33.8 million head for the last seven years. Cattle slaughter in 2010 was down more than 14 percent from the record high recorded in 1976. However, with increased productivity gains, total beef production in 2010 was slightly larger than in 1976. But, beef output in 2010 was still down 4 percent from the record in 2002.



2011 Forecast

Dairy cow slaughter for 2010 was down about 3 percent from 2009. However, after September, slaughter levels rose above the 2009 levels. In 2009, the CWT herd retirement program accounted for 8 percent of the annual dairy cow slaughter, whereas in 2010, CWT accounted for only 1 percent. This decrease in herd retirements may have contributed some to the decrease in dairy cow slaughter numbers. The increase in dairy cow slaughter numbers in the latter part of 2010 is likely due to higher feed costs and higher cow prices at slaughter. If these factors continue into 2011, expect annual dairy cow slaughter numbers to attain the same level as in 2010.

Beef cow slaughter through June 2010 was up from the same period of 2009 by 13 percent, whereas beef cow slaughter was up only 5 percent in the latter half of 2010. These numbers indicate that the rate of beef cow slaughter is decreasing and in 2011 will likely drop below last year.

If the cow slaughter slows down as expected, prices for slaughter cows will likely have their seasonal high in late spring, and could potentially be 5 percent higher than 2010 for the first several months in 2011. This increase in price would result from fewer cattle coming to slaughter and an

expected increase in demand for domestic lean beef.

Although their cost of production was higher, cattle feeders did have positive margins for much of 2010, due to high cattle prices. Increased profitability in the cattle sector is supportive of a reduction in cow slaughter. If the recent trend continues, herd expansion potentially may begin in late 2011.

Higher feed prices usually have a negative impact on feeder cattle prices. But surprisingly, feeder cattle prices in 2010 were higher than in 2009 despite higher feed prices. Feeder cattle prices will likely remain stable in early 2011, but show some weakness in the latter part of the year. Cattle feeding margins narrowed at the end of 2010 as there was little ability to continue to bid up feeder cattle prices, especially with high feed prices.

The fed cattle supply is decreasing. Cattle feeders have had to bid more aggressively in order to keep their lots full. There was an estimated 6 million head excess capacity in U.S. feedlots at the end of 2010. The industry will likely see some decline in feeding capacity in 2011. Nevertheless, cattle supplies will remain tight. Cattle slaughter will decrease, although cattle weights may increase slightly. Overall beef production will be down for 2011. If herd expansion does begin, overall cattle supplies will tighten further due to related heifer retention. Due to decreased per capita supply of beef, fed cattle prices will be higher in 2011, with the increase potentially reaching a \$5/cwt increase over 2010.

Key Points to Consider When Developing an Implant Program

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Cattle feeders often encounter tight margins that require them to employ strategies to reduce cost of production. Growth implants can be one strategy to reduce cost of production, however matching the cattle and implant strategy can be difficult to decipher. This paper will provide some general management considerations and recommendations for use of implants and additional resources. Producers should work with their UW Extension Agents, nutrition consultants, veterinarians, animal health product representatives, market representatives or other resource people to plan and evaluate an implant program that will best fit the operation and situation.

Producers need to consider these factors when deciding on an implant strategy:

- Genetics of cattle (size, breed type, frame)
- Cost of feed
- Relative importance feedlot performance (ADG and F:G)
- Relative importance of marbling (carcass quality to marketing)
- Tolerance for dark cutting cattle
- Tolerance for behavioral effects (i.e. bulling)
- Projected days on feed
- Ability to reimplant
- Carcass weight considerations
- Nutrition program
- Age or stage of production

Implants are commonly categorized by potency (low, medium, and high) and main active ingredient (estrogenic or androgenic). The potency classification of the implants refers to the effectiveness of the implant on efficiency of muscle growth. The potency of the implant is associated to type and amount of active ingredient in the implant. Low potency implants contain estrogenic compounds as active ingredients; medium potency implants contain either a single ingredient or combination of estrogenic and androgenic; and high potency implants contain higher concentrations of androgenic (most common is trenbolone acetate, i.e. TBA) and in some products is combined with estrogenic compounds.

The natural and synthetic hormones in these products are slowly released into the animal's blood stream, thus elevating the blood hormone level enough to stimulate additional growth. The implants will repartition the energy from feed

toward more muscle growth and away from fat deposition. As a result, the animal will have a greater daily weight gain, leaner carcasses at a given weight, and more efficient use of feed.

The duration of the implant is also another important consideration and refers to the time the implant effective. The duration can vary from 60 to 400 days depending on product. Note: No withdrawal time is needed for implants. The product label is an important reference for information regarding:

1. Effective time (duration of implant)
2. Active ingredients and amounts
3. Class of cattle recommended for use (i.e. nursing, feedlot, breeding, sex)

Management Considerations

1. Genetics

- Breed type: Dairy steers are lighter-muscled than most beef-type cattle. This results in dairy steers requiring more days on feed, overall less efficient feed to gain, and risk of light muscle discounts on the rail.
- Size of animal (weight and frame size): Small framed cattle will reach a desired fat endpoint quicker and at a lighter weight than medium or large framed cattle. Frame size and weight of animal can be used to determine finished weight and estimate days on feed. This is important when deciding on an implant strategy.

2. Days on Feed

Cattle feeders will realize the most return from an implant during the last phase of feeding or ownership. Therefore, estimating slaughter or sale time to determine what implant or implant strategy is important first step. This calculation is also important to ensure the cattle will be marketed shortly after the recommended duration of the implant. If cattle are marketed prior to this date, the return on investment of the implant will be less than if marketed after the recommended duration.

3. Nutrition

Nutrition and other management must provide enough energy to meet the implant demands for energy for the animal. Performance gains from implants will be reduced if energy concentration of the diet, bedding, and general

husbandry are not adequate. Implants will not make up for poor management.

4. Marketing Considerations

- “Finished weight”: In order to reach the same quality grade an animal will have to be heavier if implanted than if not implanted. The greater the strength and duration of the implant program the heavier the animal will have to weigh in order to reach the same quality grade as an un-implanted animal. Typically 50 to 200 pounds of additional live weight are needed for the commonly used programs.
- Marbling: Some research has shown implants can reduce marbling deposition, which would result in lower quality grades. If producers are selling cattle directly to plant on a grid or formula, use of higher potency implants could reduce percentage of cattle grading USDA Choice or higher and thus reduce the gross return to the producer. The effect on quality grade can be reduced by implementing less aggressive implant strategies; delayed implanting; proper nutrition; and timely marketing.
- Dark Cutters: Dark cutting beef is not caused by growth implants, but with high potency, androgenic implants there is a greater risk of dark cutting cattle. This can result in greater discounts on the carcass value and buyers may also discount cattle known to have received higher potency implants due to this increased risk of dark cutters.
- Stags: With higher potency, TBA implants, this can cause steers to have a bull-like appearance (i.e. ‘cresty’ necks), especially in animals that are not castrated properly. This ‘staggy’ appearance can result in discounts in the sale ring as well as on the rail. In addition, these animals can be more aggressive and cause riding in the pens, which can result in injuries and reduced performance.

5. Management/Facilities

- Facilities: Producers should take into consideration the cattle handling facilities when planning your implant program. Do you have adequate facilities to safely restrain a 1000 pound steer (or whatever size the animals are to be implanted) to implant properly without undue risk of injury to both the animals and the people?
- Long Duration Implants: The most recent type of implants to become available for cattle are long duration implants. Long duration implants can contain estrogenic compounds (i.e. Encore®), whereas one product contains a combination product, where the trenbolone acetate portion is in a protective coating that does not release until a later date after implanting (i.e. Revalor XS®). This combination implant is designed to act the same as a milder estrogen like compound followed by a moderate high potency combination implant, while requiring only implanting the cattle once. These implants can be

advantageous for cattle on feed of over 200 days, where producers do not desire to re-implant the cattle.

- Behavior: Increased riding of implanted cattle has been reported, which can be the result of overly aggressive implant programs, improper implant application, or improper castration of animal. If a producer encounters problems with riding, a milder implant program should be considered.

6. Implant strategies and products

- Multiple Implants: If a multiple implant program will be used, start with a mild implant and use a slightly stronger implant for each subsequent implant to maximize effectiveness. If the same product is administered when cattle are re-implanted, the performance may not be as great as if another, more potent implant is used.
- TBA implants: The final implant commonly contains trenbolone acetate (TBA), either a TBA only implant, or a combination implant containing TBA. Research trials report TBA provides the greatest returns through improved feed efficiency and added carcass weight during the final finishing period, when the animals are the least efficient in their growth.

7. Age of Animal

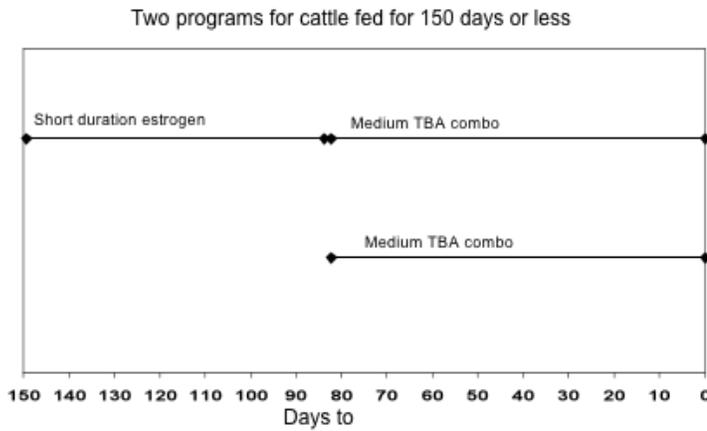
Producers, who are raising and selling younger feeder calves up to 600 pounds will not realize the same rate of return from implants as producers feeding cattle to finished weights. The lower rate of return in younger animals is because a higher proportion of weight gain is muscle than in older animals. This results in added weight at sale time for younger animals, but not as great of improvement in feed efficiency as in older, heavier animals.

8. Implant technique

Producers should use good hygiene practices when implanting cattle to avoid infections and abscesses, which have been shown to render implants useless. Additionally, producers should not crush the implants when applying them or the release rate will be abnormal causing inconsistent response.

Figures 1- 3. Examples of implant programs for cattle fed 150, 200, and 300 days. If a producer desires to reduce the number of implants given in a 200 or 300 day program, dropping the early implants would be recommended. If the later implants would be dropped from the program, the rate of return would be less, especially for feed efficiency benefits.

Figure 1



Additional resources:

Implant study database at Texas Tech University <http://www.depts.ttu.edu/afs/implantdb/dbhome>

Implant resources at Iowa State University's Iowa Beef Center http://www.iowabeefcenter.org/content/feedlot_mgmt_growth.html

Alberta Feedlot Management Guide: Growth Implants for Beef Cattle.

Figure 2

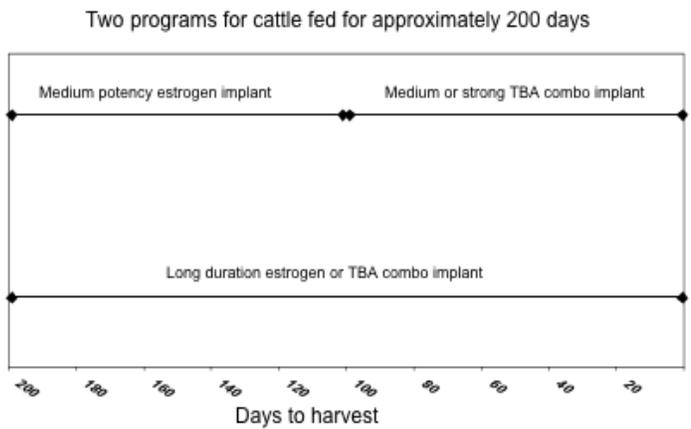
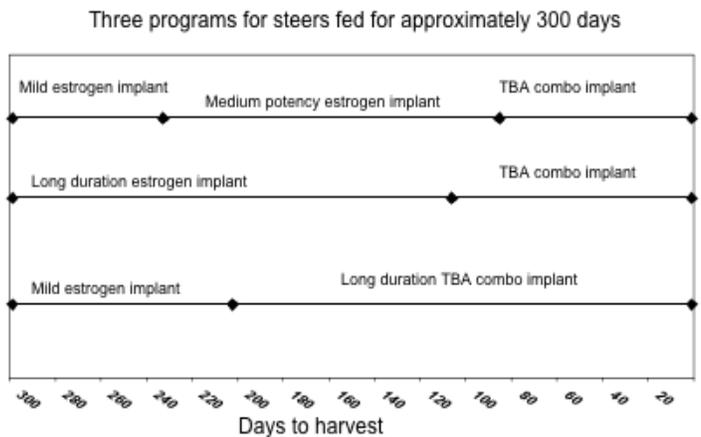


Figure 3



Management Strategies when Feed Prices are High

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Feedlot Cost of Gain Assessment

This is an assessment tool to identify areas of improvement in a feedlot operation to improve cost of gain. These are general recommendations for the average producer and results may differ slightly depending on size of operation and resources. Therefore, it is recommended producers work with UW Extension agent, nutritionist, or other feedlot professionals to identify specific areas of improvement, which best fit a producer's situation.

Instructions: Answer each question and place score in right-hand column. Total the score from the questions to determine how your feedlot operation ranks in maximizing cost of gain.

Question	High Cost of Gain (1 pt)	Average Cost of Gain (3 pts)	Low Cost of Gain (5 pts)
1. When do you inventory your feed supplies?	Not until the cattle are bought	Late summer or shortly before cattle are bought	Monitor throughout the year
2. When do you determine the ingredients in your ration?	We always feed the same ration	Every few years or when corn prices rise	Throughout the year to determine costs and select least cost rations
3. How often do you sample feed for nutrient composition or DM?	Never	1 time per year	1-2 time per month
4. How do you determine how much to feed each day?	We feed as much as they will eat in a self feeder	We feed as much as they will eat in a bunk	We feed to have a clean bunk before feeding 50% of the time
5. What is the source of most of your feed?	Purchased when needed at commodity prices	Contract as needed	Mostly home-grown
6. How do you store your ensiled feeds?	In an uncovered pile or bunker	In a silo or harvester, or bag, not well packed or filled completely	Well-packed, covered bunker or bag
7. What portion of your ration are by-products?	0%	1-30%	>30%
8. How is your corn processed in your ration?	Whole shelled corn	Cracked or ground corn	High moisture corn
9. How are your forages processed for your ration?	For hay: Not at all, feed round or small squares For silages: Coarsely chopped (Large to medium pieces of cob)	For hay: Chopped coarse to medium For silage: Chopped coarse to medium	For hay: Chopped medium to fine For silage: Chopped medium to fine through a processor
10. What growth promoters do you use?	None	Low potency implant	Medium to high potency implants and/or beta anagonists
11. What porportion of forage is in your finishing ration on DM basis?	>50%	50-20%	<20%
12. How do you store your dry feed grain and supplement?	In a pile	Covered pile; timed delivery and usage	Stored in bin or bagged
13. What equipment do you have for feeding your cattle?	Hand-fed or self-feeder	Tractor, loader, with ingredients fed separately	Tractor, feeder/mixer wagon to feed totally mixed ration

Question	High Cost of Gain (1 pt)	Average Cost of Gain (3 pts)	Low Cost of Gain (5 pts)
14. What is the average mortality rate in a group of cattle?	>5%	2-5%	<2%
15. How do you group your calves?	All fed in the same pen and/or cattle added throughout the year as purchased	Purchased and feed as one group from start to finish	Sort cattle into outcome groups when either cattle enter the feedlot or later in the feeding period
Total Score	<25 Reevaluate your management and feeding strategies	26-50 Good job, but need some improvement	>51 Excellent job, just need to fine tune

Other Tools and Resources:

- 2010 Cattle Feeder Clinic Proceedings: Feed management strategies which improve feed efficiency <http://fyi.uwex.edu/wbic/resources/feedlot/>
- UW Extension Enterprise Budget Worksheet <http://fyi.uwex.edu/wbic/resources/decision-tools-and-software/>
- Michigan State University Feed Comparison Tool <http://beef.msu.edu/Resources/Nutrition/tabid/592/Default.aspx>
- Iowa State and University of Nebraska-Lincoln, webinar for updated Sulfur recommendations and Information <http://www.iowabeefcenter.org/sulfur.html>

