PROPER IMPLANTING PROCEDURES FOR GROWTH PROMOTERS IN BEEF CATTLE

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INTRODUCTION

Surveys have shown that improperly administered implants are responsible for reductions in the absorption of the active ingredients contained in each implant. Reduced absorption causes decreased performance resulting in lower economic returns. A 1987 survey of 2,573 head of cattle in the southern Great Plains region of the United States revealed that 33.7 percent (range of 4.6 percent to 62.2 percent) of implants administered were problem implants. The estimated economic loss was found to range from $0.18 to $10.09 per head. Problems included abscess formation, bunching and/or crushing of pellets, part or all of the implant missing, extensive fibrosis around the implant, the implant placed in the ear cartilage rather than subcutaneously, and the implant placed in the low-base site of the ear (Table 1). Operator error was a major contributing factor in this study.

IMPLANT LOCATION AND DELIVERY

The U.S. Food and Drug Administration has withdrawn the low-base implant site (base of the ear). All implants must be placed in a site that approximates the middle third of the ear (Figure 1). Such placement is intended to insure that any remaining implant at time of slaughter is discarded with the offal. This implant location also causes less tissue damage from infections resulting in better absorption of the active ingredient thus a better anabolic (growth) response.

Recommended procedure for implant delivery is to insert the sterile needle completely into the middle third or no closer than 1 1/2 to 2 inches from the base of the ear, withdraw needle approximately the length of the actual implant, and depress the trigger to deposit the implant. The most common operator error is failing to retract the needle as implants are deposited.

![Figure 1. Proper site for placing growth promoting implants in beef cattle.](image)

TABLE 1. Problem implants observed in seven feedlots

<table>
<thead>
<tr>
<th>Problem</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abcessed</td>
<td>572</td>
<td>22.2%</td>
</tr>
<tr>
<td>Bunched</td>
<td>18</td>
<td>0.7%</td>
</tr>
<tr>
<td>Crushed</td>
<td>15</td>
<td>0.6%</td>
</tr>
<tr>
<td>Missing</td>
<td>193</td>
<td>7.5%</td>
</tr>
<tr>
<td>Pellets missing</td>
<td>16</td>
<td>0.6%</td>
</tr>
<tr>
<td>Walled off</td>
<td>31</td>
<td>1.2%</td>
</tr>
<tr>
<td>In cartilage</td>
<td>10</td>
<td>0.4%</td>
</tr>
<tr>
<td>Improper site</td>
<td>12</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

*Adapted from Hollis, 1989.
2573 head checked.

POST-IMPLANT PROEDURE

A post-implant thumbcheck of the implant site is recommended by running the thumb over the implant immediately after deposition in the ear. This self-check post-implant technique can also tell the operator whether a blank has been fired. Blanks usually result from operator error such as failure to
advance the implant cartilage to next dose after implanting of the last animal; or shoving the needle through the ear cartridge and depositing implants on the ground or in the ear canal; or retracting the implant gun too fast, depositing the implants outside the ear. Other errors observed by the self-check system include, the implant being deposited in the cartilage rather than subcutaneously, or only a portion of a multiple pellet implant being deposited in the ear. After the self-check, pinch the needle insertion hole closed to reduce the possibility of the implant being ejected if the calf shakes its head vigorously after processing. The pinching process also reduces the possibility of retrograde infection migrating from the needle insertion hole to the implant and causing abscess formation from an initially cleanly placed implant.

Most of these corrective actions depend on the person responsible for implant care and for performing the implant procedure. Producers who process calves in the traditional method of heeling calves and dragging them to the fire should be aware that the roper and calf holders are key members of the implanting crew. Proper restraint of the head while the implant operator performs the implant process is essential. Keeping the rope tight to eliminate loose kicking hind feet without dragging the calf during the process is essential for proper implanting. Holding the animal and head steady is a responsibility placed on the ground crew holder. For producers who process calves or feeders through the squeeze chute, the head catch operator is a key member of the implant crew. The chute operator insures that each animal is caught for implantation (thus eliminating one source of missing implants) and, by catching animals properly, also facilitates the implanters job. If the squeeze chute operator catches cattle long in the chute, their head can swing making it difficulty for the implanter to work. This situation also posses a safety problem to the operator especially when cattle are horned. Cattle caught short in the chute are adequately restrained for proper implanting.

Adequate equipment is a must to properly restrain cattle for all chute processing. Overhaul or replace inadequate equipment. A common alteration to squeeze chutes is an implant bar. A four inch bar is welded vertically on both exterior sides of the head catch position on the chute. This allows the animal to be caught in the normal fashion, but due to the extension of chute, their head is held in a stationary position for implanting and other processing to the head area such as ear marks, tags etc.

Correction of technique related problems can usually be accomplished through education of the implanting crew on the economic impact of problem implants. Slowing the processing crew down and providing training on the proper procedures of implanting and general chute processing will maximize animal response and minimize animal stress and tissue damage. A well educated processing crew with low fatigue, good concentration and paid by the hour, day, or month, rather than by the head, has proven to be the far superior method of processing cattle.

SANITATION PRACTICES IN REDUCING IMPLANT ABSCESSES

Improper sanitation during the implanting process is the major cause of most abscesses. More abscesses are observed when implanting takes place during wet, sloppy weather. An abscessed injection site will affect the absorption of the implant and resulting response.

It is economically wise to assign the job of implanting to one qualified individual who has the time, knowledge and ability to insure proper sanitation before and after implanting. Many of the sanitation procedures that will be discussed in this paper may sound extreme and unrealistic to the reader, but, if the producer desires maximum benefit from implanting with minimum stress and abscess formation to the animal, these procedures are a must. The process of implanting cattle may very well be the most time consuming procedure of cattle processing, however, if
done properly may yield the greatest return on investment.

Improper storage results in implants being covered with dirt or rodent and insect excrement before use. Store implants in a cool, dry place, such as a closet in a temperature controlled office or old refrigerator. Unused implant cartridges that have been removed from the original package should be stored in a sealable (i.e., plastic zip-lock bag) container for protection from dirt and moisture.

The handling of implants at chuteside and at calf branding time is of critical sanitation concern. Placing implants on a dirty table at chuteside or on the ground when branding calves in the traditional head and heel fashion, exposes implants and equipment to filth and windblown dirt and feces. Implants should be protected at chuteside or branding time by storing them in a plastic zip-lock bag or covered tray. The implant gun should be placed in a protected area away from this same contaminate source.

Handling implant cartridges and guns with dirty, manure-covered or bloody hands results in contamination of the implants directly or via the contaminated inner mechanism of the implant gun. Hands and implant guns should be cleaned regularly; filth should not be allowed to accumulate.

Implant needles should be disinfected between use by means of a sponge and disinfectant. Dipping the needle in antiseptic can disinfect and wiping the needle with a sponge can remove any physical debris. The sponge and the tray on which it rests, should be cleaned and the disinfecting solution changed when it becomes dirty. This prevents the needle-disinfecting process from becoming self-defeating.

The sponge and the disinfectant are critical to contamination associated with “skipping off” the back side of the ear. Skipping off is when the needle slides down the back of the ear as the operator is attempting to insert the needle subcutaneously. The sliding motion commonly causes the bevel areas of the needle to be filled with debris from the surface of the ear. If the implant gun operator is successful on subsequent attempts to insert the needle in to the ear, a wad of debris in front of the implant is also inserted. Dragging the needle across the sponge with the beveled side down allows the sponge to physically clean out the needle bevel. The tendency to skip off the back side of the ear can be reduced with a sharp needle, proper restraint of the animal, and slowing down the gun operator.

Although it is desirable to place the implant in the same position in the ear each time, the operator should strive to avoid implantation through clumps of manure on the ear. If the ears are wet or dirty it is wise to wipe the ear with a disposable disinfected paper towel or to scrape the site dry with the back edge of a knife blade before inserting the needle into the ear.

**BUNCHING AND CRUSHING**

When the pellets of a multi-pellet implant are deposited in a cluster rather than in a line, the surface area of the pellets in direct contact with the subcutaneous veins or capillaries can be reduced. This process is commonly called bunching. When this occurs, absorption rate of the product is decreased.

Crushing of implants occurs when the operator fails to retract the implant needle as the trigger is being depressed. Properly administered, the trigger depression deposits the implant pellets in the subcutaneous groove formed from the needle’s insertion. If the needle is not retracted approximately the length of the actual implant prior to the trigger release process of the gun, pellets are bunched and or crushed against the extreme front portion of the needle formed groove. Crushing greatly increases the exposed surface area of the pellets and results in an increased rate of absorption of the active ingredients. Accelerated ingredient uptake is a potential cause of such side effects as bullers in steers.
Bunching and/or crushing of implants with a forced injector type gun can be eliminated by properly retracting the needle or by switching to a retractable needle implant device. Such a gun allows the needle to be inserted to the hub and held as the trigger is depressed. Depression of the trigger pushes an implant into the needle, and a spring inside the gun automatically retracts the needle from around the implant. No pressure that could result in bunching or crushing is placed on the implant.

Bunching and/or crushing can occur also when an animal is improperly restrained and able to swing its head from side to side while the implant needle is held in position. The skin is undermined by the needle; a triangular pocket is formed rather than a linear tract into which the implant pellets are normally deposited. Uneven absorption of the active ingredient results.

**SUMMARY**

Properly implanted calves and stockers have an increased growth rate of five to fifteen percent. Educating the processing crew on proper administration of implants is essential to get maximum anabolic (growth) response from implant products.

**REFERENCES**

