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EFFICACY OF ELECTRONIC IDENTIFICATION IN BEEF CATTLE

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Summary

To evaluate the potential of using electronic implants (transponders) for maintaining identity from birth to slaughter, calves born and implanted in Montana were followed through the feedlot phase to their ultimate slaughter at commercial packing plants. At spring branding, 138 calves were implanted with electronic identification transponders positioned underneath the scutiform cartilage at the base of the ear. Four steers died prior to weaning. After weaning, 109 steers were transported to a commercial feedlot in Kansas (group 1) and the remaining 25 steers (group 2) were maintained at the Montana ranch for 1 year and then placed in a commercial feedlot in Colorado. Following the two feeding periods, steers were slaughtered at commercial packing plants in Colorado or Kansas under Food Safety Inspection Service authority. From implanting to weaning (156 days), retention was 100%, and 98.5% of the implants remained operable. Of the 106 steers that survived in the first group, implant retnetion was 98.1%, and all implants were recovered at slaughter. Of the 25 steers in the second group, identity was maintained on 20 steers up to slaughter, 661 days postbranding. This study illustrated that electronic implants will maintain identity on a very high percentage of cattle from birth to slaughter and that the implants can be recovered at the time of slaughter.

(Key Words: Electronic Identification, Identification System.)

Introduction

In order to assure food wholesomeness and maintain consumer confidence in beef products, a consistent and diligent effort must be put forth by all sectors of the beef cattle industry to use approved drugs and other animal products correctly and to maintain strict adherence to established withdrawal periods. Cattlemen are eager to exercise prudent and responsible drug usage, but need rapid and convenient record keeping systems to improve the management of their health programs and assist in decision making. Additionally, modern cattle management systems require effective means to identify individual animals. Over the years, many different methods have been used, but the need for a permanent, reliable identification system still persists in the industry.

Approximately 10 years ago, electronic identification of animals was just starting to be evaluated by animal scientists and allied industries. Initial progress was slow because of FDA's requirement of all manufacturers of implantable electronic identification systems that such devices be harmless to the animal and be removed successfully at slaughter. Initial work at Kansas State University in 1992 evaluated the placement of electronic identification transponders and their subsequent removal at a commercial slaughtering plant under guidance and supervision of the Food Safety Inspection Service (FSIS). The objectives of this experiment were to evaluate further the recovery potential of electronic identification implants at commercial slaughter facilities and to determine their retention and function in steers from birth to slaughter.

Experimental Procedures

Spring-born crossbred calves (n=138) in Montana were implanted at 2 to 3 months of age with Destron[1] 20mm injectable transponders. Figure 1 shows the transponder unit. Figure 2 shows the implanting tool and the

reader. The implant was positioned underneath the scutiform cartilage at the base of the ear. At weaning, all live calves (n=134) were scanned for functional, retained implants and were divided into two groups. Two calves had non-functional implants at weaning. One group of the weaned calves was sent to a Kansas feedyard (n=l09), whereas the second group (n=25) remained in Montana on grass for approximately 1 year. Steers in the second group subsequently were sent to a Colorado feedyard. Following the feeding periods, the steers were slaughtered at commercial packing plants under the authority of FSIS. Implants were dissected from all steers at slaughter. Data were collected regarding the number of implants retained and the number of implants that remained functional for the duration of the trial.

[1]Destron • Fearing, 490 Villaume Ave., So. St. Paul, MN 55075.

Results and Discussion

Data are shown in Figure 3. Of the 138 steers originally entering the trial, eight died throughout the testing period because of extreme weather conditions. All remaining steers (100%) retained the electronic identification implant from implanting to weaning (phase I), with 98.5% of the implants remaining functional. Group I steers had 98.6% retention, and 98.1% of the implants remained functional through the weaning to slaughter period (phase II). Group II steers had 84% retention, and 80% of the implants remained functional from weaning to slaughter. Overall, 97.4% of the implants were retained, and 95.4% remained functional. Although the system is not perfect, it can maintain continuous identity from owner to owner, which should assure herd security. Ultimately, electronic identification should increase consumer confidence in the cattle industry s ability to produce a high quality and safe food product.

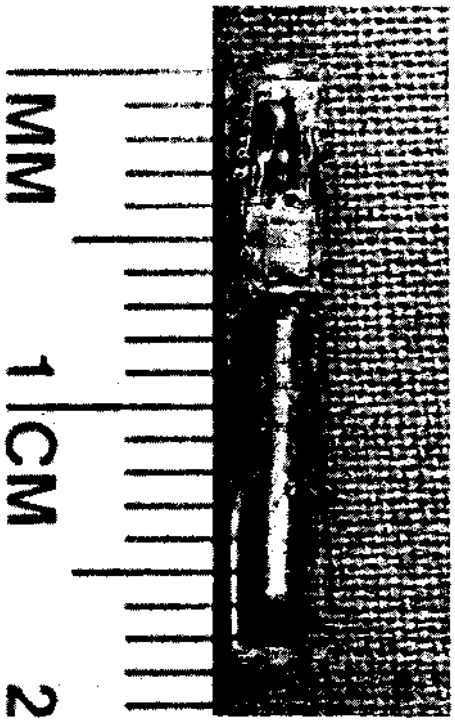

Figure 1. Electronic Identification Implant (Transponder)

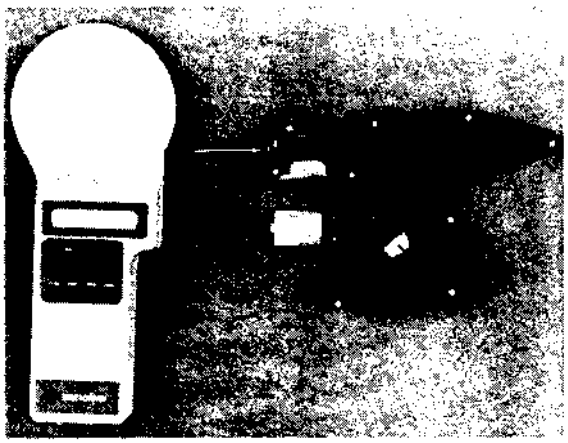

Figure 2. Implanting Tool (L); Reading Tool (R)

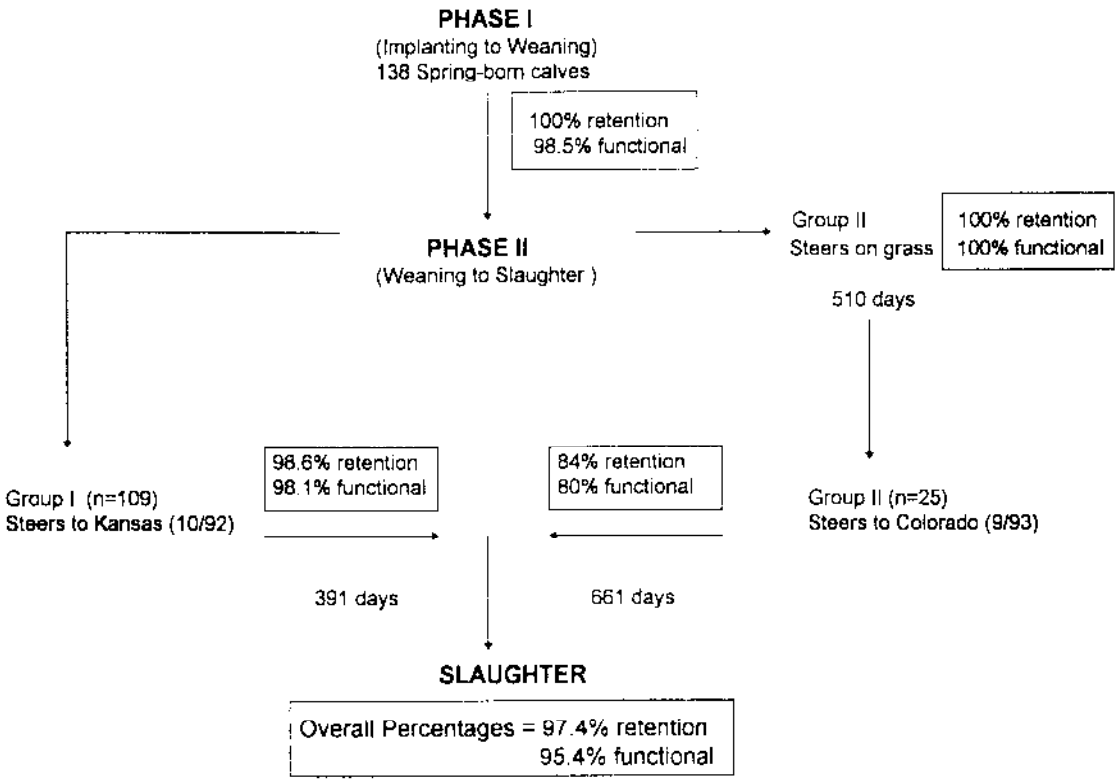

Figure 3. Percentages of Implant Retention and Function through All Phases