

Implant Usage by U.S. Feedlots

Implants have been used to enhance beef production for many years. Typically, they are small pellets impregnated with specific growth promotants designed for slow, sustained release of the active ingredients. Some implants also contain an antimicrobial intended for a local antibacterial effect. Therefore, an implant contains active growth promotants, inert compounds, and possibly an antimicrobial. Implants are administered under the skin (subcutaneously) mid-way between the tip and the base on the back (caudal aspect) of the ear.

Label use of implants enables producers to cost effectively improve animal growth rates, feed efficiencies, and lean muscle mass. Economic advantages of implanted versus nonimplanted cattle vary but are generally accepted to be between \$15 to \$40 per animal. However, implants have been associated with negative affects, such as rectal and vaginal prolapse, buller steer syndrome, and decreased marbling scores and tenderness of the end product. These negative effects can be amplified with breakage or crushing of the implant.

In 1999, the USDA's National Animal Health Monitoring System (NAHMS) conducted a study of feedlots with 1,000-head or more capacity within the 12 leading cattle feeding states¹. These feedlots represented 84.9 percent of United States feedlots in 1999 with 1,000-head or more capacity and contained 96.1 percent of the U.S. feedlot cattle inventory on January 1, 2000, on feedlots with 1,000-head or more capacity.

Enumerators from the National Agricultural Statistics Service (NASS) administered questionnaires to the 520 feedlots enrolled in the Feedlot '99 study.

Feedlots were grouped into two size categories based on animal capacity: less than 8,000 head and 8,000 head or more. Within each size category, raw data were weighted to be representative of the feedlot industry in the 12 states.

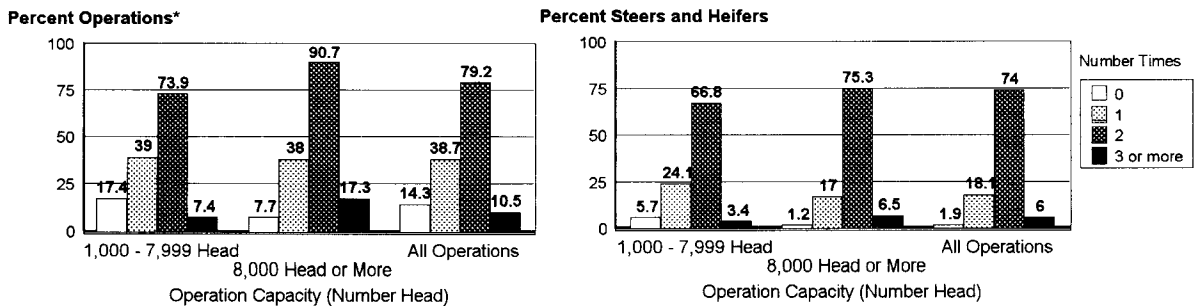
Most data collected regarding implant use referred to management of placements during the year ending June 30, 1999. Implants containing trenbolone acetate (TBA) alone or in combination with other active compounds were classified as androgenic, whereas all others were classified as estrogenic in action.

Of those feedlots that processed cattle as a group after arrival, 89.5 percent with less than 8,000-head capacity and 99.6 percent with 8,000-head or more capacity implanted at least some cattle. In large feedlots, 97.5 percent of all placements were implanted compared to 88.9 percent of placements in small feedlots. Overall, 96.1 percent of placements were implanted at least once.

Cattle Less than 700 lbs

For those feedlots that placed any cattle weighing less than 700 lbs. at arrival, a greater percentage of large feedlots (92.3 percent) than small feedlots (82.6 percent) implanted these cattle at least once. Large feedlots were also more likely to implant these cattle two or more times (Figure 1). A greater percentage of placements in small feedlots were not implanted or were implanted only once compared to large feedlots.

Figure 1 Percent of Operations* that Implanted Any Steers and Heifers Weighing Less than 700 lbs. (and Percent of Steers and Heifers Implanted) by the Number of Times and by Operation Capacity



*Values do not add to 100% as some feedlots may have implanted some cattle multiple times.

¹ Arizona, California, Colorado, Idaho, Iowa, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Washington.

A greater percentage of steers and heifers weighing less than 700 lbs. on arrival were implanted two or more times on large feedlots than on small feedlots (81.8 percent compared to 70.2 percent). These percentages might indicate large feedlots realized a greater benefit from implants than small feedlots because placements on large feedlots were exposed to growth promotants for a greater proportion of their time on feed.

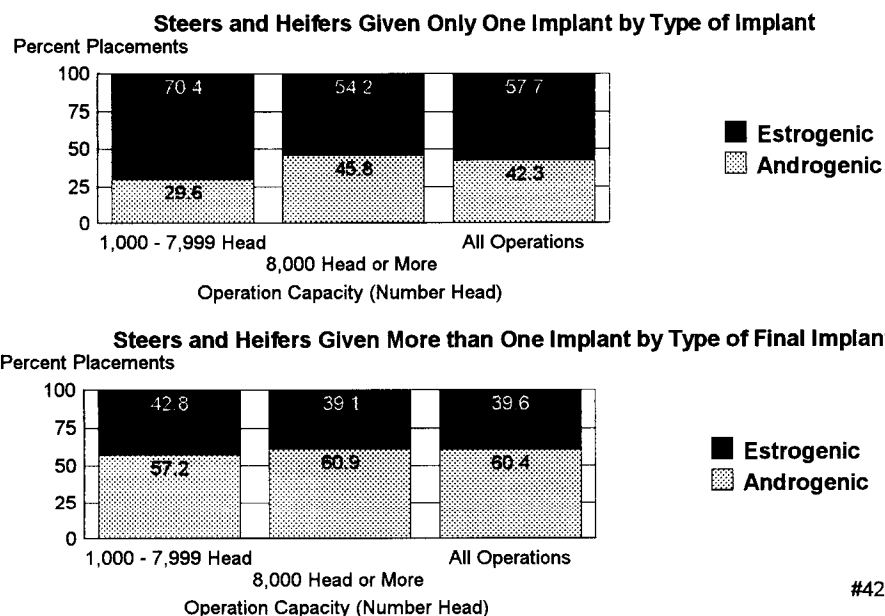
For operations that implanted cattle weighing less than 700 lbs. only once, small feedlots were more likely to have used an estrogenic implant than large feedlots (77.3 percent compared to 63.4 percent, Table 1). Large feedlots were more likely to have implanted cattle with an androgenic implant than small feedlots. For those operations that implanted cattle more than once, a greater percentage of operations implanted for a final time with an androgenic implant on large feedlots (Table 1).

A greater percentage of steers and heifers weighing less than 700 lbs. at arrival that received only one implant were administered an estrogenic implant (57.7 percent) compared to an androgenic implant (42.3 percent, Figure 2). The difference between placements receiving an estrogenic implant over an androgenic implant was greater for small feedlots than for large feedlots. In both small and large feedlots, the majority of placements that received more than one implant were implanted for a final time with an androgenic implant (a product containing TBA, Figure 2).

Cattle Weighing 700 lbs. or More

For those operations that placed steers and heifers weighing 700 lbs. or more at arrival, a lower percentage of small feedlots implanted compared to large feedlots (Figure 3 on the next page). Whereas most feedlots implanted some cattle weighing less than 700 lbs. more than once, the majority of feedlots implanted heavier cattle only once. This difference, in practice, is primarily due to lighter cattle taking longer to attain a desirable harvest weight than heavier cattle. For all operations combined, approximately two-thirds of the placements 700 lbs. or more were implanted once (Figure 3).

Figure 2 Percent of Steers and Heifers Weighing Less than 700 lbs. at Arrival by Number and Type of Implants Received and by Operation Capacity



#4258

Table 1. Percent of operations that used implants in cattle weighing less than 700 lbs. at placement by operation capacity, number of times implanted, and type of implant.

Type of Final Implant	Percent of Operations		
	Operation Capacity (Number Head)		
	1,000 - 7,999	8,000 or More	All Operations
Operations that gave placements weighing less than 700 lbs. only one implant:			
Androgenic	49.0	62.3	53.2
Estrogenic	77.3	63.4	73.0
Operations that gave placements weighing less than 700 lbs. more than one implant:			
Androgenic	63.1	72.2	66.3
Estrogenic	60.9	57.3	59.6

Table 2. Percent of operations that used implants in steers and heifers weighing 700 lbs. or more at placement by operation capacity and number of times implanted.

Type of Final Implant	Percent of Operations		
	Operation Capacity (Number Head)		All Operations
	1,000 - 7,999	8,000 or More	
Operations that gave placements weighing 700 lbs. or more, only one implant:			
Androgenic	61.7	69.4	64.6
Estrogenic	58.0	52.5	56.0
Operations that gave placements weighing 700 lbs. or more, more than one implant:			
Androgenic	71.3	79.7	74.5
Estrogenic	50.8	42.8	47.7

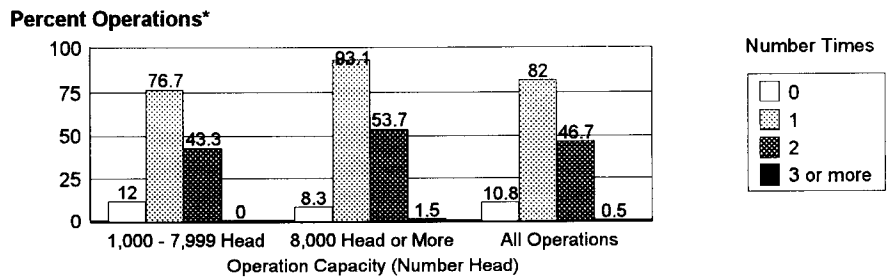
For operations that implanted steers and heifers 700 lbs. or more at placement with only one implant, approximately two out of three feedlots used an androgenic implant (64.6 percent for all operations, Table 2). When feedlots administered more than one implant, 74.5 percent of all feedlots gave an androgenic implant as the final implant.

For all operations, a greater percentage of steers and heifers weighing 700 lbs. or more that were implanted only once received an androgenic implant (59.1 percent) compared to an estrogenic implant (40.9 percent, Figure 4). The difference in percentages between those placements that received an androgenic compared to an estrogenic implant increased for the final implant when cattle received more than one implant.

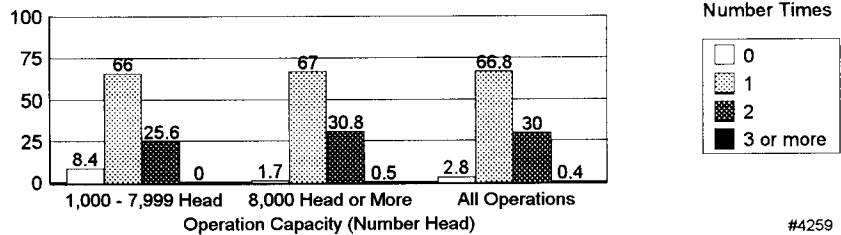
Interestingly, 32.3 percent of feedlots reported reimplanting at least some cattle within 30 days of arrival at the feedlot. The percentage of large feedlots performing this practice (44.5 percent) was greater than for small feedlots (25.2 percent). This result is puzzling since the normal reimplantation time period varies with implant formulation but is at least 65 days for those containing TBA and 40 days or greater for some estrogenic implants. Reimplanting too soon may result in increased behavioral, medical, and carcass problems. Although the questionnaire was designed to minimize confusion, some feedlots may have responded that they reimplanted if an

Figure 3

Percent of Operations* that Implanted Any Steers and Heifers Weighing 700 lbs. or More (and Percent of Steers and Heifers Implanted) by the Number of Times and by Operation Capacity



Percent Steers and Heifers

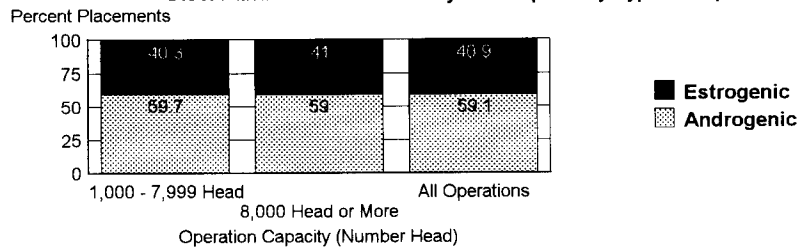


*Values do not add to 100% as some feedlots may have implanted some cattle multiple times.

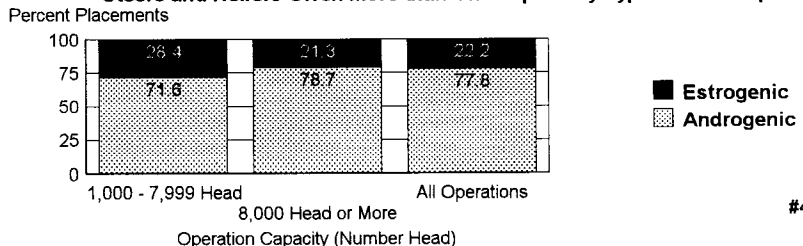
Figure 4

Percent of Steers and Heifers Weighing 700 lbs. or More at Arrival by Number and Type of Implants Received and by Operation Capacity

Steers and Heifers Given Only One Implant by Type of Implant



Steers and Heifers Given More than One Implant by Type of Final Implant



#4260

initial implant was given prior to arrival. If this was the case, the time period between implant administrations would have been greater than indicated by the initial interpretation.

It is generally thought an implant strategy that includes only TBA in the final implant will decrease the likelihood of inducing animal health and carcass problems. Feedlot '99 results suggest that, in general, most feedlot placements were administered an androgenic implant as their final implant. The exception was cattle weighing less than 700 lbs. that received only one implant.

Appropriate implant strategies are a cost-effective way for producers to improve production efficiencies. Animal

health and carcass problems can be encountered with proper and improper use of implants. Additionally, implants can and are being used as a non-tariff trade barrier. Still, it appears that a large proportion of feedlots find implant use beneficial.

For more information, contact:

Centers for Epidemiology and Animal Health
USDA:APHIS:VS, attn. NAHMS
2150 Centre Ave., Bldg. B, MS 2E7
Fort Collins, CO 80526-8117
(970) 494-7000

E-mail: NAHMSweb@aphis.usda.gov
<http://www.aphis.usda.gov/vs/ceah/cahm>

#N330.0500