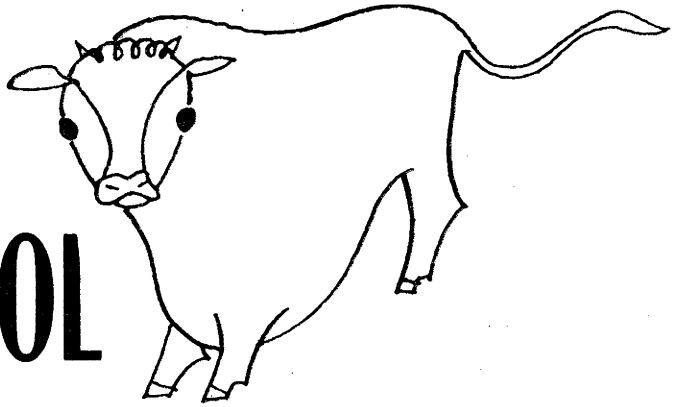


STILBESTROL



boosts gains on pastured steers

● by George A. Rogler and George E. Strum

RESULTS OF 1957 GRAZING EXPERIMENTS AT NORTHERN GREAT PLAINS FIELD STATION.

Use of seeded pastures as supplements to native range and proper range management can do much to increase gains and increase returns per acre of land. Recent studies on the use of stilbestrol implants have indicated that here also may be a method of increasing gains on pasture.

A study was conducted at the Northern Great Plains Field Station in 1957 as part of the grazing experiments underway there to determine what effect stilbestrol implants would have on gains of yearling Hereford steers grazing native grass during the summer season. No feed supplements, other than salt, were provided while the steers were on grass.

The steers used in the experiments were numbered with neck chain markers and weighed individually throughout the entire season. Weights were obtained on three consecutive days, May 13, 14 and 15, at the start of the experiment. Average weights were calculated and steers allotted to four experimental pastures so that the average beginning weight for the implanted steers per pasture would be as close as possible to that of the non-implanted steers. On May 15, five steers from each pasture were implanted with two 15 milligram pellets of stilbestrol applied under the skin of the ear giving a total dosage of 30 milligrams for each animal. Five steers from each pasture were not implanted.

Three of the pastures were 70 acres in size, giving a moderate intensity of grazing of 7 acres per head. There was an abundance of grass on these pastures throughout the entire grazing season of 140 days. These moderately grazed pastures were considered replicates so that the data obtained could be analyzed statistically. The fourth pasture was heavily grazed. It contained 23 acres giving only 2.3 acres of grass per head for the 10 steers. This pasture had been heavily grazed each year for a period of 40 years prior to 1957 and was extremely

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RESULTS

low in production. Grass cut on the first of August at a 1-inch height in an area not grazed in 1957 yielded only 166 pounds of dry matter per acre. The vegetation in the heavily grazed pasture consisted primarily of blue grama and thread-leaf sedge. In the moderately grazed pastures it was primarily western wheatgrass with some needle-and-thread, junegrass, blue grama and thread-leaf sedge. Other species made up a small portion of the total forage.

The steers were removed from the heavily grazed pasture Sept. 13 after 120 days of continuous grazing. The grass was almost completely utilized and the steers were beginning to lose weight. Weights were obtained at 15 or 30 day intervals on all pastures throughout the season and the experiment was completed Oct. 3 after a 140-day grazing period. Final weights were averages of weighings on three consecutive days.

The accumulated gains per head throughout the 140 day season are shown in Table 1. It is interesting to note that for both the moderately and heavily grazed pastures the gains during the first 15 days of the season were approximately the same for the implanted and non-implanted steers. Even after 30 days of grazing there still was no great difference between the gains of the two groups of steers.

The first indication of a marked advantage in gain due to stilbestrol was shown by weights taken June 30 after the steers had been on pasture 45 days.

Gain differences in favor of implanting became more marked after each succeeding weighing as the season advanced. This spread in gain from the beginning of the season May 16 to the close of the season Oct. 3 for a grazing

Table 1. COMPARATIVE GAINS OF STILBESTROL IMPLANTED (30 MG. AT START OF SEASON) AND NON-IMPLANTED YEARLING HEREFORD STEERS PASTURED AT MODERATE AND HEAVY RATES ON NATIVE GRASS AT MANDAN IN 1957.

	Pasture 1		Pasture 2		Pasture 3		Pastures 1-2-3 Average		Pasture 4	
	Implant	Non-Implant	Implant	Non-Implant	Implant	Non-Implant	Implant	Non-Implant	Implant	Non-Implant
Size of pasture	70		70		70		70		23	
No. of steers	5	5	5	5	5	5	5	5	5	5
Acres per head	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.3	2.3
Initial wt. May 16	549	550	548	548	549	549	549	549	550	550
Final wt. Oct. 3	809	773	831	782	852	794	831	783	748	712
Total gain per head after:										
15 days	15.8	14.0	31.0	30.0	16.0	18.0	20.9	20.7	6.0	5.0
30 days	55.8	55.0	74.0	69.0	72.0	69.0	72.7	64.3	28.0	26.0
45 days	94.2	81.0	130.0	117.0	132.0	97.0	118.7	98.3	70.0	58.0
75 days	158.3	133.0	171.1	148.0	175.0	144.0	168.1	141.7	120.0	106.0
90 days	—	—	—	—	—	—	—	—	168.0	153.0
105 days	220.8	195.0	264.0	224.0	260.0	209.0	248.3	209.3	174.0	147.0
120 days ^{1/}	—	—	—	—	—	—	—	—	176.0	145.0
135 days	249.2	219.0	289.0	242.0	299.0	231.0	279.1	230.7	190.0	155.0
140 days	260.0	223.0	283.0	234.0	303.0	245.0	282.0	234.0	198.0	162.0
Average daily gain per head	1.9	1.6	2.1	1.7	2.4	1.8	2.0	1.7	1.4	1.2
Pounds increase per head for implanted steers	37.0	—	49.0	—	58.0	—	48.0	—	36.0	—

^{1/}Steers on No. 4 (heavy grazed) pasture were removed after 120 days and placed on a pasture with surplus grass.

period of 140 days is shown graphically in figures 1 and 2. Figure 1 shows the average gain on the three moderately grazed pastures. The average of 48.0 pounds per head gain increase on these pastures due to implanting was shown by analysis to be statistically significant.

Gain data from the heavily grazed pasture could not be analyzed statistically because there was no replication. It was quite evident however, that the implanted steers gained more rapidly than those that were not implanted. Figure 2 shows the gain differences after 45, 75 and 90 days of grazing to be quite similar. After that time the favorable spread in gains due to stilbestrol became greater with each successive weighing. This held true at a time when the grass was extremely short and the steers were barely maintaining their weight. The non-implanted steers actually lost weight from the middle of August until they were removed from the pasture and placed on a pasture with surplus grass Sept. 13 after 120 days of grazing.

Gains per head for each weighing period throughout the 140 day season are given in Table 2. The highest gains on the moderately grazed pastures were made by both the implanted and non-implanted steers in June with daily gains of 3.26 and 2.59 per head, respectively. July gains were down but August gains were again high. Daily gains in September were only 1.06 for the implanted steers and 0.71 for the non-implanted steers.

On the heavily grazed pasture the best gains were made in June with lower gains in July and August. During the last half of August and first half of September when grass became extremely short the implanted steers gained only a total of 8 pounds per head for the 30 days compared with an actual loss in weight of 8 pounds per head for the

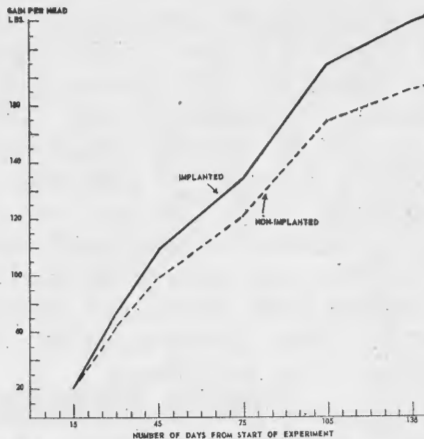


Fig. 1.—Average gains of yearling Hereford steers implanted with 30 mg. of stilbestrol at start of season compared with those of non-implanted steers when grazed on native grass at a moderate intensity (7 acres per head).

non-implanted steers. After the steers were removed from the heavily grazed pasture Sept. 13 to a pasture with plenty of grass, gains increased.

Discussion

Gains of steers implanted with stilbestrol were considerably higher than those of the steers not implanted, on both moderate and heavy grazed native pastures. However, gain differences due to moderate grazing compared with heavy grazing were much greater than those due to stilbestrol.

The average gains of implanted steers

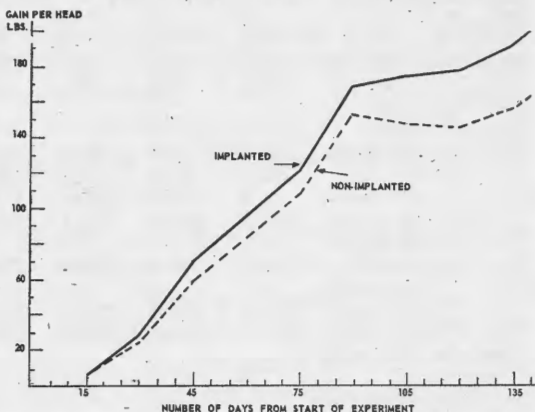


Fig. 2.—Average gains of yearling Hereford steers implanted with 30 mg. of stilbestrol at start of season compared with those of non-implanted steers when grazed on native grass at a heavy intensity (2.3 acres per head).

were 282 pounds per head for the season on the moderately grazed pastures and only 176 pounds on the heavily grazed pasture, a difference of 106 pounds in favor of moderate grazing. For the non-implanted steers the difference in favor of moderate grazing was 89 pounds.

A few of the implanted steers showed side effects of raised tail-heads and low areas in front of the hips. There is some possibility that cattle showing these effects would be discriminated against at the time of sale but it is beyond the

scope of this report to cover that phase of investigation.

It was noted from the weights of individual steers that there was some variation in the reaction of certain animals to stilbestrol. In a few cases some of the implanted steers gained less than some of the non-implanted steers on the same pasture. This variation was not great enough, however, to offset the marked average increase in gain of 21 percent for implanted steers on the moderately grazed pasture and 22 percent on the heavily grazed pasture. ■ ■ ■

Table 2. GAINS BY PERIODS, OF STILBESTROL IMPLANTED (30 MG. AT START OF SEASON) YEARLING HEREFORD STEERS COMPARED TO THOSE OF NON-IMPLANT STEERS AT MODERATE AND HEAVY RATES OF GRAZING ON NATIVE GRASS AT MANDAN IN 1957.

	Pasture 1		Pasture 2		Pasture 3		Pastures 1-2-3 Average		Pasture 4	
	Non-Implant	Implant	Non-Implant	Implant	Non-Implant	Implant	Non-Implant	Implant	Non-Implant	Implant
Size of pasture	70		70		70		70		23	
Number of steers	5	5	5	5	5	5	5	5	5	5
Acres per head	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.3	2.3
Initial wt. May 16	549	550	548	548	549	549	549	549	550	550
Final wt. Oct. 3	809	773	831	782	852	794	831	783	748	712
Gain per head:										
May 16 to May 31,										
15 days	15.8	14.0	31.0	30.0	16.0	18.0	20.9	20.7	6.0	5.0
June 1 to June 15,										
15 days	40.0	41.0	43.0	39.0	56.0	51.0	46.3	43.7	22.0	21.0
June 15 to June 30,										
15 days	38.3	26.0	56.0	48.0	60.0	28.0	51.4	34.0	42.0	32.0
June 1 to June 30,										
30 days	78.3	67.0	99.0	87.0	116.0	79.0	97.8	77.7	64.0	53.0
July 1 to July 30,										
30 days	64.2	52.0	41.0	31.0	43.0	47.0	49.4	43.3	50.0	48.0
July 31 to Aug. 14,										
15 days	—	—	—	—	—	—	—	—	48.0	47.0
Aug. 15 to Aug. 29,										
15 days	—	—	—	—	—	—	—	—	6.0	—6.0
July 31 to Aug. 29,										
30 days	62.5	62.0	93.0	76.0	85.0	65.0	80.2	67.7	54.0	41.0
Aug. 30 to Sept. 13,										
15 days	—	—	—	—	—	—	—	—	2.0	—2.0
Sept. 14 to Sept. 28,										
15 days ^{1/}	—	—	—	—	—	—	—	—	14.0	10.0
Aug. 30 to Sept. 28,										
30 days	28.3	24.0	25.0	18.0	39.0	22.0	30.8	21.3	16.0	8.0
Sept. 29 to Oct. 3,										
5 days	10.8	4.0	—6.0	—8.0	4.0	14.0	2.9	3.3	8.0	7.0

^{1/}Steers on No. 4 (heavy grazed) pasture were removed on Sept. 13 and placed on a pasture with surplus grass.

This was a cooperative investigation of the Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture, the Extension Service, North Dakota Agricultural College and the Animal Industry Division, North Dakota Agricultural Experiment Station. Cattle used in the experiment were loaned by the Patterson Land Company, Bismarck, North Dakota.