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Evaluating the breeding potential of yearling bulls (Progress Report)

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Evaluating the breeding potential of yearling bulls (Progress Report)

Abstract

Although this is based on only one year's results, it indicates that the breeding potential of yearling bulls can be determined before they are run with a cow herd. In this test one bull sired the majority of the calves and generally was the bull predetermined to be the active breeder. Results of the test suggest that a good, active, breeding yearling bull is capable of breeding more than 12 to 15 cows as is normally recommended. In our studies, one yearling bull sired up to 36 calves in a 45-day breeding season. Possible adverse effects of using a yearling bull that much are being evaluated.

Keywords

Cattlemen's Day, 1978; Report of progress (Kansas State University. Agricultural Experiment Station); 320; Beef; Yearling bulls; Breed potential; Reproductive performance

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Evaluating the Breeding Potential of Yearling Bulls (Progress Report)

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Summary

Although this is based on only one year's results, it indicates that the breeding potential of yearling bulls can be determined before they are run with a cow herd. In this test one bull sired the majority of the calves and generally was the bull predetermined to be the active breeder.

Results of the test suggest that a good, active, breeding yearling bull is capable of breeding more than 12 to 15 cows as is normally recommended. In our studies, one yearling bull sired up to 36 calves in a 45-day breeding season. Possible adverse effects of using a yearling bull that much are being evaluated.

Important in evaluating the reproductive performances of a cow herd is the percentage of cows that calve the first 21 days of the calving season. Early born calves are generally the heaviest at weaning time. A goal of 60 to 65% of the cows calving the first 21 days should be feasible for most herds. In the four cooperating herds involved in this study the range was from 45.7 to 76.3%.

Introduction

When a cow herd operator purchases a bull on appearance and performance records, he does not know how active a breeder the bull will be. Producers often try to compensate for poor breeding bulls by using more bulls than would be expected to be needed.

Recent Australian studies indicate that the number of cows a bull is capable of breeding may be determined before the bull is turned out with the cow herd. In their studies a bull is held in a teasing pen for 20 to 60 minutes and then turned in with a heifer in heat or with heifers tied in a stanchion for a period of 10 to 60 minutes. Activities of the bull during this period are observed and recorded. Based on this test the breeding potential of bulls has been fairly accurately determined.

To test that concept, we designed a trial to study if the breeding potential of yearling bulls could be determined. In addition, we wanted to find out how many cows yearling bulls were capable of breeding. The

¹Appreciation is expressed to following cooperating Kansas ranchers: Leonard Robl, Claflin; Melvin Hopp, Marquette; Ed Keller, Zurich and to Wes Ibbetson of SE Branch Experiment Station for his assistance.

study also allowed us to learn more about the level of reproductive performance being achieved on Kansas ranches.

Experimental Procedure

Purebred Hereford, Polled Hereford, Angus, and Simmental yearling bulls raised at the KSU Purebred Beef Unit were used in the study to determine the breeding potential of a group of bulls representing each breed.

The procedure for determining breeding potential was as follows:

1. Semen quality of each bull was determined by electro-ejaculation; and no bull with questionable semen quality was used.
2. The bulls were held in a teasing pen for 10 to 15 minutes before being turned in with a heifer in heat.
3. One bull was turned into a pen with a cycling heifer and the length of time required for mounting and copulation to occur was recorded.
4. When a bull did not breed the heifer in 20 minutes, he was removed and held in an adjoining teasing pen another 20 to 40 minutes, then placed in another pen with a different cycling heifer with his breeding activities again observed and recorded.

Within a month after evaluation, a bull classified as having high breeding potential was paired with a bull of low breeding potential of another breed. Both these bulls were turned out with a herd of 35 to 40 mature cows. Herds on three cooperating commercial ranches and one herd at the Southeast Branch Experiment Station were used in the evaluation.

At three of the four locations, activities of the bulls were checked in the morning and evening to determine which were active breeding bulls and to observe the number of cows actually bred during the first 21 days of the breeding season. To aid in detecting breeding activity, each bull wore a chin ball harness with marking ink.

At calving time the date of birth and sire of each calf was recorded. Bull pairs had been selected to avoid problems in identification of the calves' sire.

Results and Discussion

Time required to mount and breed a cow varied widely among bulls in each breed. Some bulls bred the heifers within minutes of entering the pen when they were evaluated. Other bulls showed no breeding activity during either 20 minute evaluation period.

In each of the four herds, one yearling bull sired most of the calves. One bull sired 36 of 38 calves; another 32 of 34 calves; another 21 of 22 calves; and another 29 of 32 calves in herds 1 through 4, respectively. In three of the four herds, the bull evaluated as having the highest breeding potential sired the most calves. In the fourth herd both bulls were observed to be breeding the cows as they came in heat, but most of the calves (36 or 38) were sired by the bull ranked low at

evaluation time. In general, however, the results were encouraging, indicating that the breeding potential of bulls may be able to be determined before they are run with the cow herd.

The high number of calves yearling bulls were capable of siring (21 to 36) tends to refute current recommendations on yearling bulls. In one herd, only 22 of the 35 cows produced calves from the yearling bulls, which may have resulted from cows not cycling rather than the inability of the yearling bulls to breed the cows.

There, also, was a wide variation that existed in the reproductive performance present in the four herds. In one herd 98% of the cows were observed in heat the first 21 days of the breeding season. In another herd only 35% were observed cycling in the first 21 days and 45.7% produced calves in the first 21 days of the calving season.

Table 2.1. Breeding record on the herd involved in the yearling bull evaluation project.

	Herd 1	Herd 2	Herd 3	Herd 4
Number cows	41	40	40	48
Length of breeding season	45 days	107 days	135 days	
% Observed bred by:				No
Dominant bull	22.5	84.0	35	Heat
Less dominant bull	7.5	5.4	54	Check
Both bulls	70.0	11.0	?	Data
% Cows observed cycling by:				
21 days of breeding season	98	45	35	
30 days of breeding season	98	58	50	
45 days of breeding season	100	58 (stopped checking at 30 days)		
% Actually calving 1st 21 days	76.3 (29/38)	70.5 (24/34)	45.7 (16/35)	60 (24/40)
No. cows left to calve	41	39	35	40
No. calves sired by yearling bulls	38	34	22	32
No. calves by dominate yearling bull	36	32*	21*	29*
No. calves by less dominate yearling bull	2*	2	1	3

*Evaluated to be the dominant sire.