Influence of Winter Nutrition on Production and Reproduction in Spring-Calving Cows

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Summary

Winter nutrition requirements for beef cows grazing native tallgrass range in the Flint Hills were studied from 1968 through 1973. Three lb. milo was a better supplement to the basic ration of 3 lb. alfalfa hay than 1 1/2 lb. of soybean meal was. Younger cows performed better when 6 lb. milo was fed with the 3 lb. alfalfa hay. Feeding 3 lb. alfalfa hay or the equivalent until approximately 100 days before the breeding season and 3 lb. alfalfa hay, 6 lb. milo the remainder of the winter did not reduce performance of cows 3 years old or older. Cows that rebred lost less weight over winter and were heavier the next summer when they were bred than cows that did not rebreed.

Introduction

Under most management systems, dry pregnant cows are expected to use considerable cheap, low quality roughage such as dormant winter grass. It is often necessary to supplement the grass to obtain optimum production and reproduction. More supplemental feed than necessary increases cost more than the returns. The objective of this study was to determine minimum feeding which will still obtain satisfactory production and reproduction.

Experimental Procedure

Various levels of energy and protein supplementation were studied during six years. The ten rations fed are given in table 6.1. Ration 1 was fed all years, each of the other rations was fed two consecutive years. Spring-calving Polled Hereford and commercial Hereford cows were allotted randomly by age to winter rations at the beginning of each two-year period. Supplemental feeding was from approximately November 1 to April 20. Breeding was predominantly by natural mating during a 65 day breeding season starting about May 25. Cows grazed year around on native pasture of big and little bluestem, Indian grass and switch grass.

Results and Discussion

Earlier conception and generally higher conception rate for cows fed high energy rather than high protein (ration 1 vs. 3 and ration 6 vs. 2) indicates the importance of energy in reproduction. Higher energy was most beneficial for 2 and 3 year old cows; 3 lb. alfalfa hay (ration 4) did not provide sufficient energy for mature cows as they conceived later than cows getting more energy.

Young cows fed 3 lb. alfalfa and 6 lb. milo (ration 6) had the best reproductive performance however, older cows fed 3 lb. alfalfa and 3 lb. milo performed as well. This indicates the difference in energy requirements due to age and justifies the separation of cows by age for supplementation.

Delaying a part of the winter feed until after calving (ration 7 vs. 1) delayed conception, especially among younger cows; however, delaying a part of the feed until February 10 (approximately 100 days before the start of the breeding season) did not alter rebreeding.

Concentrate mixtures tended to increase cow weights and improve reproduction when compared to the alfalfa hay-milo rations they were intended to approximate (ration 5 and 9 vs. 1 and ration 10 vs. 8). Because concentrate rations contained less bulk, cows on those rations may have grazed more dormant native grass and had greater total intake than cows on bulkier rations.

Calf weaning weights, in general, increased as winter feed provided the dams increased. Heavier calf weaning weights from cows fed the grain-soybean meal mixture than those fed similar alfalfa-milo rations indicate that concentrate rations are superior. However the milo-urea mixture (ration 5) did not follow that trend. Delaying a part of the ration did not adversely affect weaning weights for concentrate rations; however, delaying a part of the alfalfa hay-milo ration decreased weaning weight.

Table 16.1. Rations

Ration	Feed Ingredients (lb.) Soybean meal	Milo	Alfalfa hay	Mix[1]
1	---	3	3	---
2	1½	3	3	---
3	1½	---	3	---
4	---	---	3	---
5	---	---	---	5
6	---	6	3	---
7	---	6 after calving	3	---
8	---	6 after Feb. 10	3	---
9	---	---	---	5
10	---	---	---	3 before Feb. 10 7 after Feb. 10

[1]Mix in table 6.2.

Table 6.2. Mixes Fed in Rations 5, 9 and 10

Feeds	Ration 5 mix Year 1	Ration 5 mix Year 2	Ration 9 and 10 mix
	%	%	%
Soybean meal	---	---	7.0
Wheat	---	15.0	30.0
Milo	85.5	70.5	53.0
Dehy. alfalfa	9.5	---	10.0
Alfalfa hay	---	9.5	---
Urea	1.0	1.0	---
Limestone	2.0	2.0	---
Molasses	2.0	2.0	---

Table 6.3. Least Square Mean Conception Dates And Rates And Cow Weights by Ration and Age

Traits	RATIONS[1] 1	2	3	4	5	6	7	8	9	10
2 year olds (no.)	20	11	9	12	10	10	8	0	0	0
Dec. wt. (lb.)	889	897	893	873	891	913	875			
Feb. wt. (lb.)	862	891	851	851	862	880	862	---	---	---
May wt. (lb.)	783	829	796	803	807	825	794	---	---	---
Sept. wt. (lb.)	970	972	961	933	986	983	959	---	---	---
conception date	Jun 21	Jun 18	Jul 3	Jul 10	Jun 23	Jun 9	Jun 30	---	---	---
conception (%)	83	87	80	56	100	100	81	---	---	---
3 year olds (no.)	33	13	8	10	12	8	7	9	9	9
Dec. wt. (lb.)	944	948	926	908	942	968	942	908	959	922
Feb. wt. (lb.)	904	944	906	889	915	931	906	889	902	889
May wt. (lb.)	860	891	873	858	873	884	860	856	873	856
Sept. wt. (lb.)	1041	1063	1036	1023	1076	1076	1041	1021	1036	1032
conception date	Jun 16	Jun 20	Jun 29	Jul 10	Jun 6	Jun 2	Jun 23	Jun 24	Jul 1	Jun 4
conception (%)	93	88	98	99	85	100	88	100	88	100
4 years & older (no.)	60	8	15	9	26	25	23	25	25	28
Dec. wt. (lb.)	970	1010	972	955	981	994	972	955	968	953
Feb. wt. (lb.)	950	955	933	915	950	977	950	917	966	928
May wt. (lb.)	897	919	891	880	933	931	897	877	891	889
Sept. wt. (lb.)	1067	1100	1080	1067	1083	1091	1069	1065	1083	1065
conception date	Jun 13	Jun 9	Jun 14	Jun 27	Jun 9	Jun 10	Jun 14	Jun 8	Jun 9	Jun 10
conception (%)	99	93	100	100	100	94	96	91	94	88

[1]Rations given in table 1.