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IFAS EXTENSION

Molasses - Supplements for Mature, Lactating Beef Cows Grazing Range ¹

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In Florida, about 3.5 million acres of range are used in cow-calf production systems. After calves are weaned in late summer or early fall, dry and pregnant cows are usually moved from bahiagrass (*Paspalum notatum*) pasture onto range where they calve. In late winter, cow-calf pairs are usually moved from range onto bahiagrass pasture for breeding. Because of the low nutritive value of native grasses, cows have large weight losses during the winter, and this loss leads to poor reproduction.

Supplementation of cows grazing range with molasses-based feeds is a practical method to provide energy and crude protein to reduce cow weight loss. Cane molasses is readily available in Florida, is favorably priced, and is easy to transport and mix with protein sources. Urea has been used most often to increase crude protein of molasses; however, there has been concern that range forage may be too low in energy to support effective use of urea as compared to the use of natural proteins such as cottonseed meal.

This publication discusses research that measured the performance of mature, lactating cows supplemented with either molasses-urea or molasses-cottonseed meal-urea while grazing south

Florida range. Results of these studies are reported in more detail in the *Journal of Animal Science* (Kalmbacher et al., 1995)



mature, lactating cows.

Methods and Materials

Approximately 1000 acres of range at the Range Cattle Research and Education Center at Ona was divided into 16 units. Range was roller-chopped for saw palmetto (*Serenoa repens*) control in February and March 1988. Forage dry matter (DM) available for grazing averaged 1800 lb/A when cows began grazing range in each of the three years (1989, 1990, and 1991). Desirable grasses such as bluestems (*Andropogon* and *Schizachyrium* spp.), indiagrass (*Sorghastrum secundum*), and maidencane (*Panicum*

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hemitomom) made up 42% of the available range forage.

In September 1989, 56 Braford cows, four years of age or older, were randomly allotted by age to eight groups of seven head each. Four cow groups were assigned randomly to one of two molasses-based liquid supplement treatments. One supplement used urea as the sole source of supplemental crude protein and contained (as fed basis) 95.5% cane molasses, and 4.5% urea. The second supplement contained 80% cane molasses, 18% cottonseed meal, and 2% urea. Both supplements were formulated to contain 20% crude protein (as fed basis). From December until the end of the range utilization period cows were fed twice weekly to provide, on as fed basis, 5.0 lb/cow/day of the respective supplements. A total of 350 pounds of molasses-based supplement was fed per cow. Each group grazed two range units described above from September through February. One of the two units was burned in October of alternate years (beginning in October 1990). Cows grazed unburned range from September to December, then had access to burned and unburned range until March. Cows were moved from range at the end of February, weighed, dewormed, and assigned a body condition score ranging from 1 to 9, with 1 = emaciated, 5 = moderate, and 9 = extremely fat. Cows and calves were then placed on bahiagrass pasture (80 acres) as one group.

Bahiagrass was fertilized in early March with 50 lb of nitrogen/acre. Cows were exposed to Braford bulls from March 1 to May 31, during which time all cattle were fed 5 lb/cow/day of the molasses supplement containing cottonseed meal and urea as described above. A total of 480 pounds of molasses-based supplement was fed per cow. Calves were weighed and weaned at 8 months of age in September. At weaning, cows were pregnancy-tested and scored for body condition. Open cows, old cows, and cows with physical defects were culled and replaced with pregnant cows over 4 years of age. Replacement cows and pregnant cows that were in the study previously were returned to range units within two weeks postweaning for each of three consecutive years.

Results and Discussion

Initial weight of cows going onto range in September of each year was similar for both treatments (Table 1). Initial weight was heaviest the first year (1100 lb), and became progressively lighter for year 2 and 3 (1050 and 1030 lb, respectively). Change in initial weight of cows going onto range over time resulted from a greater weight loss during the range period than was regained during the subsequent summer when cows grazed bahiagrass. The 12% weight loss during the range period was typical for mature cows having access to range in winter. Cows fed either supplement lost a similar amount of weight.

Cows supplemented with molasses-urea during the range grazing period weaned 17 pound heavier calves than did cows supplemented with molasses-cottonseed meal-urea (Table 1). However, cows fed molasses-cottonseed meal-urea had a slightly higher pregnancy rate. Estimated calf production/cow, a product of pregnancy rate and calf weaning weight, was similar for cows fed both supplements.

The overall pregnancy rate of 83% was high for lactating cows grazed on range during the winter. Previous studies at the Range Cattle Research and Education Center (Kirk et al. 1974; Peacock et al. 1971) showed that mature, lactating cows grazing range and supplemented either with molasses, sugarcane, or cottonseed meal, or grazing a combination of range and clover pasture, had pregnancy rates of 50 to 65%.

Part of the reason for the high pregnancy rate was that cows in poor to fair body condition at the start of the breeding season bred equally well, and as soon after calving, as did cows in moderate to good body condition. Over the 3-year study there were 48 cows with a condition score of 2 or 3 at the start of breeding, and they had an 85% pregnancy rate and an average breeding date of March 27. That performance is compared to 66 cows with a condition score of 4 that had an 80% pregnancy rate and an average breeding date of March 25, or 45 cows with a condition score of 5 or greater that had an 84% pregnancy rate and an average breeding date of April 3.

The good reproductive performance of cows in this study may be due to the feeding of a molasses mixture containing natural protein during the breeding season. A comparison of natural protein and urea as a crude protein source in molasses-based supplements fed to thin, lactating cows being bred after grazing winter range is under study at the Range Cattle Research and Education Center.

Implications

Mature, lactating brood cows grazing range in winter, which supplies a low nutritive value forage, require supplemental energy and crude protein. Wintering cows in this study responded equally well to molasses-based liquid supplements formulated with either urea or natural protein-urea. Both supplements were fed at a rate of 5 lb/cow/day and contained 20% crude protein. Liquid supplements formulated with urea are priced more favorably than are supplements containing natural protein, and their use as supplements fed to cows while grazing range would be economically advantageous.

Literature Cited

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Table 1.

Item	Crude Protein Source	
	Urea	Cottonseed meal + urea
Cow wt going on range, lb	1065	1058
Cow wt change on range, lb	-123	-121
Cow condition going on range	5.4	5.5
Cow condition coming off range	4.1	3.8
Cow wt change from end of range to weaning, lb	77	79
Pregnancy rate, %	81	85
Average date bred	March 26	March 30
Calf weaning wt, lb ¹	436	419
Estimated calf production per cow, lb/year ²	353	356
1 Difference between supplement treatments (P = .09). Calf weight adjusted for sex. Calves were 8 months of age at weaning.		
2 Estimated calf production/cow = weaning weight x pregnancy rate/100.		