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Effect of Daylength on Reproductive Performance of Brahman Cattle

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EFFECT OF SEASON AND MONENSIN ON SERUM
PROGESTERONE LEVELS IN BRAHMAN COWS

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SUMMARY

The effect of season on serum progesterone, the hormone of pregnancy from the corpus luteum, is shown in this study. Serum progesterone levels were the lowest in January and highest in February in Brahman cows fed either a monensin or a control diet. Including monensin in the diet increased serum progesterone levels in January, February and March. Short daylength and cooler temperatures depressed serum progesterone levels and increasing the energy of the diet increased the levels of serum progesterone. An increased level of nutrition seemed to alleviate the depression due to season.

MATERIALS AND METHODS

Twenty-seven estrous cycling Brahman cows between 2 and 6 years of age were assigned randomly to receive a diet containing either 0 mg monensin (C) or 200 mg monensin (M). Thirteen C and 14 M cows were fed 3 lbs of 75% ground milo and 25% cottonseed meal/hd/day. The cows were maintained in paddocks with access to Coastal bermudagrass hay. To aid in estrus detection, sterile marker bulls were kept with the cows. All cows were placed on feed on the same day (January 3, 1980) and single blood samples were removed via tail vessel puncture from individual animals on days 10, 11 and 12 after each estrus. The cows were continued on this regime for 3 months (until April 6, 1980). The monensin diet was discontinued at that time and approximately one half of the animals from each group were combined to form a single control group and continued on the trial until mid-June.

Blood samples were processed to yield serum and assayed for progesterone content using radioimmunoassay procedures.

RESULTS

Results of these experiments indicate that both monensin and season exerted an effect on serum progesterone levels in the Brahman cows. Comparison using analysis of variance of C and M progesterone values from the first 3 months of trial 2 indicated that M had higher values than C ($P < .001$), and that a seasonal effect was detectable ($P < .10$). Monensin values obtained during February were higher than M values from either January or March, and were greater than all C values. Between groups, M tended to be greater than all C values. Within groups, February values tended to be highest and January values tended to be lowest (table 1). Serum progesterone concentrations in April, May and June were similar in C cows (table 1).

Meteorological readings taken at the Overton Research and Extension Center indicated average and extreme low temperatures for January, February and March to be, respectively, 4 and -2, 2 and -9, 5 and -4 centigrade.

TABLE 1. MEAN PROGESTERONE VALUES OF CONTROL AND MONENSIN FED BRAHMAN COWS BY TREATMENT AND BY MONTH AS MEASURED AT DAYS 10, 11 and 12 OF THE ESTROUS CYCLE.

Month	Progesterone (ng/ml)	
	Control Mean \pm SE ^a	Monensin Mean \pm SE
January	3.49 \pm .73b	5.16 \pm .69b
February	4.71 \pm 1.1 b	7.43 \pm .85c
March	3.60 \pm .54b	5.74 \pm .95b
April	3.25 \pm .45b	
May	4.22 \pm .45b	
June	3.71 \pm 1.29b	

^aStandard error of the mean.

^{b,c}Means \pm SE followed by different superscripts differ ($P < .10$).