

EFFECTS OF PARITY ON POSTPARTUM FOLLICULAR DEVELOPMENT AND ENDOCRINE PROFILES IN THE BRAHMAN FEMALE

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Background. Production losses incurred annually as a result of low reproductive efficiency have a major economic impact on the United States beef industry. One key aspect in improving reproductive efficiency involves the timely resumption of estrous cycles in postpartum beef cows. The interval from parturition to initiation of estrous cycles is generally longer for first-calf heifers than for mature cows and levels of energy intake before or after calving have been shown to alter the interval from calving to rebreeding. The status of follicular development affects the response to synchronization of the estrous cycle, ovulation rate, and pregnancy rate. The objective of this study was to determine the effect of parity on postpartum follicular development and hormone profiles in mature and first calving Brahman cows.

Eight mature Brahman cows and six first calving Brahman cows, bred to Angus sires and suckling male calves, were selected to receive 9 lb per head per day of 4:1 corn:soybean meal supplement. The mature cows had a body condition score of $6.4 \pm .7$ and weight of 1109 ± 79 lb, while the first calving cows had a body condition score of $6.2 \pm .4$ and weight of 1019 ± 62 lb. All animals were placed on Coastal bermudagrass (14% CP) pastures overseeded with ryegrass (24% CP) and group-fed.

Research Findings. Parity status did not affect change in body weight or body condition score during the first 42 days after calving or at first estrus. Body weight change through weaning was greater in the first calving cows, which was probably due to the fact they had not reached mature size at calving. From day 14 to 49 after calving, the mature cows had more medium sized (4.1 to 6 mm) follicles and developed larger follicles when compared to the first calving cows. Intervals to development of an 8 mm or 10 mm follicle, as well as the interval to resumption of follicular waves, were shorter in the mature cows.

Follicular development during the postpartum period in first calving cows was significantly delayed compared to mature cows. Resumption of follicular wave activity appears to be a limiting factor in the first calving cow. Since the period from resumption of follicular wave activity to estrus was similar between first calving cows and mature cows. In cows exhibiting an abnormal first estrous cycle, the size of the ovulatory follicle was smaller and the number of follicles in the cohort was lower when compared to cows exhibiting a normal first estrous cycle. The first calving cows also exhibited slightly elevated serum concentrations of prostaglandin $F_{2\alpha}$ during the first 21 days

of the postpartum period when compared to the mature cows.

Application. The early development of medium-sized follicles in the mature cows, and the resultant estrogen production, may be triggering the hypothalamic-pituitary axis to regain competence, while the elevated prostaglandin $F_{2\alpha}$ concentrations level in the first calving cows may be inhibiting the development of medium to large follicles early in the post-calving period.