PUBLICATIONS

1996

FIELD DAY REPORT - 1996

TEXAS A&M UNIVERSITY AGRICULTURAL RESEARCH and EXTENSION CENTER at OVERTON

Texas Agricultural Experiment Station
Texas Agricultural Extension Service

Overton, Texas

April 18, 1996

Research Center Technical Report 96-1

EFFECTS OF DIETARY FAT AND SEASON ON REPRODUCTIVE PERFORMANCE IN POSTPARTUM BRAHMAN COWS

M. A. Lammoglia, S. T. Willard, J. R. Oldham and R. D. Randel

Background. Even if resumption of ovarian activity occurs by 7-15 days after calving in beef cows, intervals from calving to first ovulation remain long. It has been reported that the number of dominant follicles is negatively correlated with interval to first postpartum ovulation. It was also reported that postpartum cows supplemented with fats had increased numbers and sizes of large follicles and decreased numbers of small follicles. It has been demonstrated that season may influence reproductive performance of Brahman cows. The objective of this study was to evaluate the effects of dietary fat and season on follicular development and postpartum interval (PPI) in Brahman cows.

Research Findings. Thirty primiparous Brahman cows were randomly allotted during the spring or fall to receive 3.74% (Control; n = 6;9) or 5.20% (n = 7;8, respectively) dietary fat. Rations were formulated using Coastal bermudagrass hay, corn, soybean meal, and rice bran. The control ration had no rice bran. The fatty acid content in the control ration was 49.4% linoleic acid and 24.4% oleic acid, while the 5.20% dietary fat ration contained 36.2% linoleic and 34.5% oleic acid. Cows were fed daily starting two weeks prior to expected calving through day 21 after calving. Ultrasonography (Aloka 210 linear array transducer and a 5 MHZ rectal probe) was performed on days 14 and 21 after calving. A sterile bull equipped with a chinball marker was maintained with the cows until 90 days after calving to aid with estrus detection. Across seasons by days 90 after calving, 9 of 15 (60%) of the control cows and 11 of 15 (73.3%) of cows fed diets with 5.20% dietary fat showed estrus behavior. However, postpartum interval was similar ($P > .10$) among groups. Follicular development is shown in table 1.

Table 1. Effects of added fat and season on follicular development in postpartum primiparous Brahman cows (LSM±SEM).

	Spring		Fall		Pr >F	
	3.74% Fat	5.20% Fat	3.74% Fat	5.20% Fat	Diets	Season
*T.N.F.	6.9±.6	9.9±.6	3.0±.7	5.4±.7	.002	.001
**N.S.F.	4.1±.6	5.5±.6	2.0±.7	3.4±.6	.035	.002
& N.M.F.	2.2±.3	3.1±.1	.8±.4	1.7±.3	.006	.001
&&N.L.F.	.6±.1	1.3±.1	.3±.2	.6±.1	.001	.003
@.S.L.F.	8.6±.5	10.7±.5	5.7±.6	8.1±.1	.002	.001

*T.N.F. = total number of follicles, **N.S.F. = number of small follicles (<4 mm), &N.M.F. = number of medium follicles (4-7.9 mm), &&N.L.F. = number of large follicles (>8 mm), @S.L.F. = size of the largest follicle.

Application. Previous reports from this laboratory indicate that diets with 5.20% fat increase follicular numbers and sizes in postpartum and estrous cycling cows, which support the results of this study. Across seasons a diet with 5.20% fat increased numbers of small, medium and large follicles, size of the largest follicle and the percentage of cows returning to estrus by day 90 after calving. Season also influenced follicular populations with cows in the spring having greater numbers and larger follicles than cows in the fall. Therefore, it can be suggested that postpartum cows fed a diet with 5.20% fat during the spring may perform reproductively better than those in the fall.