

LOW COST COW/CALF PRODUCTION

The Bulletin For Alumni Of The School

December 1997

Gravidness

Florida researchers introduced a report¹ of a study on age of pubertal estrus in heifers by saying "Breed, nutrition and season (photoperiod) are --- factors that have been shown to affect age at puberty in heifers." We do not know about breed but certainly recognize frame size as being a factor. In the School, we attempt to quantitate the impact of both nutrition and photoperiod on pubertal estrus. Recall the second Key to the Low Cost Cow/Calf Program - Time of Calving. The heifer born closest to the longest day of the year will experience pubertal estrus at a younger age than one born near the shortest day of the year. We also note that the heifer bred on her third estrus is 20% more likely to conceive than on her first cycle. Thus, if the heifer is to have her first calf by the time she is two years of age, her calendar must correspond with the following schedule:

Weighting in Florida

Heifer calving by her second birthday.	
Function	Age, d
Calving	730
Breeding	450
First Cycle	395

Heifers born Jan 13 □ 2 d and Feb 24 □ 2 d in two consecutive years were used in the Florida study. *Not much emphasis on photoperiod in this study.* Breeds were Hereford, Senepol and reciprocal cross-breeds. In addition to breed differences, the researchers compared two winter feeding programs. All of the heifers were offered bahiagrass hay free-choice and had access to bahiagrass pastures. One half of the heifers were fed 5 lb of a mixture of 75% cracked corn and 25% soybean meal (CS) per head per day. The remaining heifers received 2 lb of soybean meal (SBM) daily. In the first year, the weaned heifers started on the winter feeding pro-

gram Nov 1 and continued for 157 d. Similarly, in the second year supplementation commenced Oct 22 and lasted for 196 d. When the forage greened on Apr 17 and May 6 of the respective years, the cattle were turned out to pasture. The heifers were exposed to Angus bulls for the entire study. The data from both years were pooled and are presented in the following table. Body weight at puberty was the

Effect of winter treatment on age and BW at puberty.		
Variable	CS	SBM
Initial wt	498	498
Final wt	688	699
Gain	190	201
Age d	500	563
Daily Gain	0.86	0.68

same for both nutritional programs. The big difference was the age of the heifers when they achieved puberty. Those supplemented with CS gained 0.86 lb daily and were 500 days of age when they started cycling. The SBM-fed heifers gained 0.68 lb per day and were 63 days older when cycling started. *Any way you want to cut it, there will be no birthing by the second birthday.*

Body Condition ?

The physiological characteristics of a subset of heifers at conception were examined in considerable detail. A combination of slaughter (with removal of the gut and bladder contents) and urea space measurements in live cattle were used. Results are given in the following table. The per-

Effect of year and winter treatment on percentage empty body components and fat thickness (FT) at first conception.				
Variable	Year 1		Year 2	
	CS	SBM	CS	SBM
EB Protein, %	17.8	18.3	18.3	18.2
EB Water, %	60.0	62.1	62.5	62.1
EB Fat, %	16.9	14.4	14.3	14.7
FT, mm	4.3	3.4	4.6	4.0

centages of empty body Protein and Water indicated very slight, but not significant, differences. In the first year, the percentages of protein and water were a tad higher for the SBM cattle. Percentage empty body fat was 2.5% higher for the CS cattle in the first year. Further, fat over the long-

issimus muscle was almost 1-mm thicker in the same cattle. *(Ultrasound was used to measure fat thickness. The authors used the relationship of a 1.3-mm increase in fat thickness as being equal to an increase in BCS of one).* In the heifers from the second year, there were no differences in percentages of empty body protein, water and fat. There was, however, a 0.6-mm increase in fat thickness for the CS-fed cattle. This approaches a higher BCS of almost ½.

Deducing

The authors concluded that the keys to early pubertal estrus and conception in heifers are body weight and BCS. We agree. We would agree wholeheartedly if photoperiod had been considered. If the heifers had been born a little closer to June 21, they may have cycled and been bred to calve by their second birthday.

Rumors

"100% conception in 60 days. The program works." Thank you, Susie Vaello, near San Antonio, TX.

Schools In 1998

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¹ Simpson, R.B., C.C. Chase, Jr., A.C. Hammond, M.J. Williams and T.A. Olson. 1998. Average daily gain, blood metabolites and body composition at first conception in Hereford, Senepol and reciprocal crossbred heifers on two levels of winter nutrition and two summer grazing treatments. *J. Anim. Sci.* 76:396.