GRI CONCEPTS

THE CUTTING EDGE OF NUTRITION

The Bulletin for Alumni of the Beef Cattle Nutrition School

December 1995

Fading Fast

1995 is almost behind us and I'm not ready. Its hurry up time if I'm to accomplish all that I set out to do in '95. Form a consistent habit of flossing my teeth every day. I will start that tonight. Write my two sons more frequently this year. Wonder if they will appreciate five letters in the last week of December? Be all set to run Turbo-Tax the first week of January. Oh sure! I can do three months worth of bookkeeping on New Years day. The situation is reminiscent of years past. Hurry! Hurry! Hurry!

It seems that I am not alone with this dilemma. Recent comments suggest that it would be desirable to speed up the production cycle. Or, at the very least, not let it fall farther behind.

Age at Puberty

The concern some of you have is breeding the replacement heifer. (All of us are concerned about breeding her for the second calf.)

In order for the heifer to enter the herd as a two year old, she must calve on her second birthday – 730 days of age. She must be bred by 15 months or 450 days of age.

In the School, data were presented that showed that conception rate was 21% higher when breeding the heifer during her third estrus as opposed to her pubertal estrus. If she is to conceive on her third estrus when 450 days of age, she must experience pubertal estrus 63 days earlier. Cycling must commence by the time she is 387 days of age. Hurry! Hurry!

Photoperiod was discussed as well. The heifer born during months of long photoperiods, experienced pubertal estrus at a younger age. This could result in an age difference of up to 60 days depending upon location. Most of this work was carried out in Wisconsin.. Madison is situated at about 43° N latitude.

BCS and the Calf

There is always a tendency to supplement forage with energy to achieve a desired gain and assure early cyclicity. Replacement heifers receive special treatment. Researchers at Oklahoma State recently reported the results of a two year study in which 265 day old heifers were grown on one of the following regimes:

1. Gain 3 lb/d. Actual gain was 2.31 & 3.89 lb/d for years 1 & 2 respectively.

2. Gain 1.5 lb/d. Actual = 1.15 &1.86.

3. Gain 0.5 lb/d for 16 wk the 3 lb/d thereafter. Actual was 2.08 & 1.47 lb/d.

The heifers followed the feeding regime until one estrus after pubertal estrus. The results are summarized in the following table.

Relationship of Growth Characteristics to the Age of Puberty

Treatment[a]	3		1.5		0.5 → 3	
Initial age	263		269		262	
Puberty age	389	351	431	398	371	434
Initial BW	481	430	485	432	456	430
Puberty BW	772		672		683	
Puberty BCS	6.7	6.1	5.7	5.6	5.5	5.6
Carcass fat lb	140	99.2	70.8	66.1	55.1	70.5
Lean, lb	224.9		220.5		212.7	
Bone, lb	72.8		72.8		67.2	

[a] Full fed to gain 3 lb/d, fed to gain 1.5 lb/d & fed to gain 0.5 lb/d for 16 wk then fed to gain 3 lb/d.

The authors stated that the study commenced in November of each year. Assuming late November , and the age of the calves, they were born in early March. Also Stillwater OK is situated at 36° N latitude.

Only two groups of heifers reached puberty by 387 days of age. Their body weights were 772 and 683 lb. and BCS was 6.1 and 5.5 at puberty. BCS 5.5 was the lowest of all six groups and one group had a BCS of 6.7. Body fat is not the answer The group that cycled by 371 days and had a BCS of 5.5 had the lowest quantity (55 lb) of body fat. Further evidence that body fat has little to do with age of puberty is indicated by the pounds of lean and bone tissue. (There were no year differences so the data were pooled.) All of the heifers had the same quantity of lean and bone mass at puberty.

If not BCS, Then What

For the most part the cattle that gained at the fastest rates reached puberty at the youngest age. They also weighed more. Faster gain and earlier age of puberty simply indicates that a certain lean body mass was achieved sooner. The suggestion is that a certain minimum lean mass must be reached in order for cycling to commence. Further, the lean mass that these heifer had developed by the time total body weight was 670 + lb was approaching maximum. The additional weight that the heavier heifers had was all fat. These cattle were Angus X Hereford.

What is not indicated here is that the cattle were weighed and scored frequently. The faster gaining heifers did not cycle when they weighed 670 lb. At this weight they probably had the necessary lean body mass. Puberty occurred later, suggesting that age is also a controlling factor. That is not surprising. Both the age factor and lean body mass will vary with potential adult frame size for different cattle.

Schools in '96

San Angelo, TX January 8 - 11

Albuquerque, NM February 13 - 16

Tucson, AZ March 19 - 22

North Platte, NE September 10 - 13

Additional Schools currently are being scheduled. Call for future dates if you would enjoy repeating the School.

Your questions and comments sincerely are appreciated. Please call or write:

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