in the lot. When the heifers were driven to the scales each 28 days to be weighed, two in Lot 22 that were placed directly on the sorghum grain ration seemed to be slightly more content during the latter part of the test. They may have experienced slight founder.

The cornstayed bull lots were changed from their first bull ration (Table 25) to the rolled sorghum grain ration (Table 28) after about 28 days on test, and at about 28 days the wheat bran lots were changed to ration R1.

From this test it seems that when grain is compared favorably with cornstayed bullock feed, cornstayed filling catch.

Starting cattle on a high grain ration (92% sorghum grain) remains yet to be completely tested. Ten heifers brought in from pasture in the fall of 1963 were started on such a ration. Two of the ten experienced severe digestive upsets and one nearly died. The ration was somewhat different from the one outlined here but contained about the same percentage of grain.

During the first 19 days on test (Table 29) the heifers on the high grain ration (R1), Lots 21 and 22, had a much lower concentrate intake than the other heifers, about 3 pounds per head daily, compared with 16-17 pounds for the wheat bran lots. Cornstayed bullock rations seemed to be more palatable of all at around 20 pounds of intake daily. Low intake of Lots 21 and 22 is unexplained. Their ration was available at all times in a salt-feeder. Performance over a short period (12 days) is difficult to evaluate due to variation in cattle weights from day to day. All lots seemed to be gaining satisfactorily, however.

For the entire 128-day trial, lots where hay was omitted gained more than lots where hay was fed. Heifers in Lots 13 and 25, wheat bran lots, gained about a third of a pound lower than those on other treatments.

Level of Protein for Heifer Cows Wintered on Rhusus Pasture

C. N. DeLacer, K. R. Smith, D. Richardson, and D. L. Good

The 66 heifers used were grade-to-choke Herefords purchased near Fort Davis, Texas, and assigned to treatments on the basis weight basis. The heifers were rotated between pastures to minimize any differences due to pastures during the first winter grazing period and the summer grazing period. Pelleted grain ration was fed to standardize phosphorus intake between groups during the first winter grazing period.

Heifers were fed the experimental rations shown in Table 27, three times weekly. During summer grazing only salt was fed.

Heifers were bred from July 1 to October 1, 1964, from July 1 to August 15, the heifers were paired each week and those in heat artificially bred, using semen from a Hereford bull. From August 15 to October 1, a Hereford bull was with the heifers.

The results are reported in Table 27.

The heifers receiving only sorghum grain gained less than either of the other treatments during the first winter grazing period. The results indicate there was no advantage to feeding 2 pounds of soybean oil meal compared to feeding 1 pound of sorghum grain and 1 pound of soybean oil meal.

Heifers receiving only sorghum oil meal slightly outgained heifers on the other treatments during the summer grazing period.

During the second winter grazing period, heifers receiving only sorghum grain gained weight, an average of 0.44 pound per head daily. As the amount of soybean oil meal increased, performance improved. Heifers receiving 1 pound of soybean oil meal and 1 pound of sorghum grain per head gained an average of 0.48 pound per head daily, while those receiving 2 pounds of soybean oil meal gained an average of 0.68 pound per head daily.

(33)
Over the entire period, heifers receiving only sorghum grain gained less fat average daily gain of 0.47 pound per head than either those receiving 1 pound of sorghum grain and 1 pound of soybean meal per head daily (an average daily gain of 0.67 pound per head) or those receiving 2 pounds of soybean meal per head daily (an average daily gain of 0.71 pound per head). The results indicate the protein in the winter ration had no effect on conception rate.

Improvement of Beef Cattle Through Breeding (Project 286).

W. H. Smith, J. D. Wheat, and H. G. Spies

The nucleus Shorthorn cattle breeding program was continued during 1964 according to the plan initiated in 1949. Breeding of the two lines has been continued. The Wercemore Premier line is in its fifth generation and the Wercemore line is in its fourth generation of inbreeding. The inbreeding program for both lines has been essentially to continue successive generations of half-siblings.

The study was intended to study the inheritance of production traits in beef cattle, to evaluate the effects of inbreeding in cattle and to explore the feasibility of using inbred lines of beef cattle for the breeding improvement of their production traits. No extensive line crossing has been attempted because of the relatively low levels of inbreeding represented in both lines to date, and the limited number of animals in the project during its progress. Inbreeding levels will continue to be increased as a major objective.

Numerous production data have been collected on both lines. Some data have been subjected to preliminary statistical analyses.

Management of the experimental cattle includes watering each cow and calf immediately following parturition. Summer pasture breeding is practiced and the calves are born during the spring and early summer each year. Crop feeding during the weaning period is not practiced. Calves are weaned, weighed, and scored for type at approximately 5 months and the standardized weaning age for weanling weight adjustment is 180 days. All calves are placed on individual feeding trials for 120 days from the time they are weaned. The final age of the termination of the feeding trials is approximately 180 days. Feed consumption and live weight gains are maintained during the feeding period. The calves are weighed and scored for type at the termination of the feeding trials. Individuals possessing higher gains or weight per day of age and type scores have been retained for breeding replacements.

The full feed ration for the bulls consists of 75% cracked corn and 25% chopped alfalfa hay, for the heifers, 55% cracked corn and 45% chopped alfalfa hay. No calves have been castrated and fed as steers since 1957.

Production data for the 1963 calves are summarized in Table 28. The 1964 calves could not complete their feeding trials when this was written. Thirty seven calves of the 1964 calf crop are being fed individually.

To date, no abnormalities attributable to inbreeding have occurred in either inbred line. More calves have been still-born in the Wercemore line than the Wercemore Premier.