

be based primarily on fertility.

- (b) A program for identification of all male calves within one month or so of birth, and of weighing these at intervals after weaning in order to select sires on growth rate, will also be undertaken.

This summary indicates how identification of cows, pregnancy examination, and other observations have led to a step-by-step change in management and to a new and confident outlook toward solving the problems of cattle management in a semi-arid environment. The manager can also foresee a change in his labour force. He believes that he will be able to employ extra men for certain periods and reduce his labour force at others. This could lead to contracting of certain animal husbandry practices.

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PERFORMANCE OF HEREFORD AND SANTA GERTRUDIS CATTLE ON AN ARID RANGE IN SOUTH-WESTERN UNITED STATES

The performance of Hereford and Santa Gertrudis cattle on the Jornada Experimental Range was studied for 3 years. The test herd consisted of 15 cows of each breed stocked separately on two pastures of about the same shape. They were rotated between these two pastures annually.

The activities of one Hereford cow and one Santa Gertrudis cow were noted for a 24-hr period every 4 weeks during the 3-yr period. A cow from each breed was observed during the daylight hours each 28-day period for the first 17 months. Generally, Herefords spent more time grazing (42.9% v. 37.2%), standing-ruminating (8.6% v. 6.8%), and rubbing (1.1 times per day v. 0.1 times), while the Santa Gertrudis spent more time walking (12.1% v. 6.6%). They spent about the same time ruminating-lying (23.0%), standing-idle (7.5%), lying-idle (10.1%), nursing (1.6%), watering (1.2 times), salting (0.3 times), defecating (6.5 times), and urinating (6.2 times).

At the same time as the activities were being observed, the location within a pasture of the cow while grazing was noted. Utilization checks of perennial grasses in various zones (half-mile intervals from water) within a pasture were taken at periodic intervals. These data indicate that there was essentially no difference in the grazing distribution patterns in these pastures in each of which it was $3\frac{1}{2}$ miles from water to

the opposite side of the pasture.

Species preference data were obtained from the actual observation of the cattle and the utilization checks. The following are the major species grazed and their major period of use:

1. Aristida longiseta - when green, during the spring, summer, and fall.
2. Bouteloua eriopoda - winter.
3. Hilaria mutica - summer.
4. Scleropogon brevifolius - year-long.
5. Sporobolus airoides - when green, during the spring and summer.
6. Sporobolus flexuosus - year-long, but predominantly summer.
7. Total perennial grasses - higher use in summer.
8. Croton corymbulosus - spring, summer, and fall.
9. Psilostrophe tagetinae - spring.
10. Total perennial forbs - primarily fall and spring.
11. Total annual forbs - primarily fall, winter, and spring.
12. Ephedra trifurca - fall.
13. Yucca elata - winter and spring.
14. Total shrubs - spring.

Generally, the diet of Santa Gertrudis cows was higher in the perennial grasses while the diet of Hereford cows was higher in annual forbs and shrub-like plants; 40-50% of the diet of both breeds was composed of forbs and shrub-like plants. This is a contributing factor to the lack of a vitamin-A and protein-deficiency in the dry winter-spring period.

Blood samples were obtained by venous puncture from each of the cows every 56 days during the 3-yr period. Of 13 blood constituents studied, there were consistent breed differences only for haemoglobin content and haematocrit value, with higher values for the Santa Gertrudis cows. The plasma cholesterol level was considerably higher for the Hereford cows in April and May, with only small differences in the other months.

Weaning weights of calves were heavier for the Santa Gertrudis; however, the percentage calf crop weaned was higher for the Herefords. Milk production, as estimated by weighing calves before and after nursing, was higher for the Santa Gertrudis and was probably a major factor responsible for the heavier weaning weight in calves.
