Proc. Aust. Soc. Anim. Prod. (1978) 12: 188

REPRODUCTION LEVELS AND REPEATABILITY OF CALVING INTERVAL IN TROPICAL BEEF CATTLE

W.A. PATTIE* and H.G. OSBORNE*

Low reproduction and turn off rates are a major barrier to efficient beef production in Northern Australia. The development of breeds better adapted to the tick and heat problems of the area from crosses between ***Bos*** *indicus* breeds and local ***Bos taurus*** types can be expected to reduce management costs and improve growth. However information is required on the reproduction levels of the new types.

Calving data were collected, from 1961 to 1976, from a Droughtmaster (D.M.) herd at Brisbane and from a herd at Emerald, Q., that had been "graded up" from Shorthorn to Santa Gertrudis (S.G.) through four successive top crosses. In each herd, heifers were put into mating groups at 18, months of age and bulls were run continually with the females. Data from the two herds were analysed separately.

Age at first calving, length of calving intervals and number of calves per cow per life were analysed by least-squares methods. Number of calves per cow per life was calculated for cows born before 1967.

TABLE 1. Reproductive performance and repeatability of calving interval.

Breed	1st X	2nd X	3rd X	S.G.	All SG-X	D.M.
Age 1st calf (d)	1112	1066	1032	1055	1066	1101
(No. : SE)	(181:41)	(171:31)	(207:29)	(95:37)	(654:22)	(146:240)
All intervals (d)	435	399	423	404	415	428
(No. : SE)	(697:19)	(519:21)	(335:22)	(109:28)	(1642:19)	(331:11)
1st interval (d)	534	467	489	494	496	476
(No. : SE)	(203:17)	(157:17)	(129:19)	(48:29)	(537:11)	(109:10)
Calves/cow/life	4.3	4.1	4.5	4.6	4.3	4.1
(No. : SE)	(212:0.12)	(150:0.16)	(44:0.37)	(11:0.78)	(417:0.18)	(79:0.33)
Repeatability -	0.03	0.07	-0.03	0.18	0.03	0.02
calving interval	(180:0.04)	(131:0.12)	(79:0.05)	(23:0.12)	(413:0.002)	(70:0.05)

There were no consistant significant differences among the Santa Gertrudis crosses. The figures for Droughtmasters were similar although they were maintained at a different location. The length of the interval between first and second calf was significantly greater ($P < 0.05$) than the mean of all intervals. This was not an age effect as correlations between age at first calving and length of first interval were -0.04 and -0.09 for the Droughtmaster herd and the Santa Gertrudis cross herd. None of the estimates of repeatability were significantly different from Zero. Recalculation of repeatabilities with the first interval omitted did not increase the estimates.

In general the results show relatively low reproductive performance for animals that should be reasonably well adapted to a sub-tropical environment. The importance of environmental effects cannot be estimated here. However nutritional and seasonal conditions varied considerably over the period and vibriosis was diagnosed in several years in each herd.

The repeatability estimates indicate that indiscrimminate culling of lactating cows on their post-calving mating performance, in the absence of a diagnosis of the possible reasons for mating failure would not lead to a significant improvement in reproductive performance in future years.

*Department of Animal Production, University of Queensland, St. Lucia, Queensland, 4067.