To Evaluate the Potential of Native Beef Cattle Breeds in a System of Rotational Crossbreeding with or without the Inclusion of Exotics for the Production of Beef

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[Abstract]

The relative desirability of a given genotype is based on the animal's pre- and post-weaning performance. Feedlot performance and carcass characteristics of the animal must be evaluated so as to determine the range of genotype for economic beef production. It is therefore necessary to develop breeding systems which optimize the values of these productive traits.

Researchers have demonstrated the phenomenon of heterosis in beef cattle production. Commercial farmers use crossbreeding as a toll for increasing the profitability of beef production. The necessary guidance for the Jamaican farmer must be given by the Research and Development Division. This can only be done if controlled breeding programmes and trials are conducted and evaluated so as to provide information on this system of beef production.

Crossbreeding beef studies began at Grove Place in 1971. Initial crosses were between the Jamaica Red Poll and Jamaica Brahman. Triple crosses with the Jamaica Black were also produced and later the Hereford, Limousin and Charolais breeds were introduced. Initial crosses were between Jamaica Red Poll females and Jamaica Brahman males.

The selection of the Jamaica Red Poll as the maternal parent is based on the breed's demonstrated good milking and mothering ability. F_1 females were then bred to Jamaica Black bulls.

The Jamaica Brahman contributed to hardiness of the F_1 which becomes important when the exotics are introduced and the Jamaica Black imparting its early maturing and good carcass qualities.

By 1977, some data were available on the performance of the three native breeds and their crosses. Reciprocal crossings were not made and only a few black crosses were done for observation.

Preliminary work using the polled Hereford, Charolais and Limousin as the terminal parent in the cross was started. Observations were made on fertility, growth and carcass traits. Unadjusted mean 210-day weight of the Jamaica Red Poll and Jamaica Brahman crossbred calves, and data relating to the purebred Jamaica Red Poll for the period 1972-1977 were compared. The data showed that initial 210-day weights were higher for F_1 calves this trend reversed in later years. This was related to the higher average age of the dams in the programme. Values ranged from 194.6 kg (1972) to 177.4 kg (1977) for purebred males and 196.9 kg (1972) to 161.0 kg (1977) for the crossbred. Values for females ranged from 172.8 kg

(1972) to 129.3 kg (1977) for the purebreds and 186.4 kg (1972) to 133.4 kg (1977) for the crossbred. Mean 400-day weights for the same period was also evaluated. At this stage, the selection pressure applied to the crossbreds was zero while selection of purebred was for the Jamaica Red Polls. The trend was as before that the unselected Cross-bred did far better than the selected group of purebreds in year one, but showed a reversal in performance in the latter years.

Slaughter weights, age and dressing percentage were recorded and compared with data for contemporary Jamaica Red Polls. The data showed that dressing percentage for both purebreds and crossbreds was consistently above 52% with the F_1 dressing above 55% while the purebreds ranged from 52-55%. In addition, amount of fat deposits on purebred carcasses were greater than that of crossbreds.

In crossbreeding studies reported by Southgate et al. (1982) they indicated that progeny of heavier sire breeds grew faster ane were slaughtered at heavier weights. Sire breeds used were Aberdeen Angus, Charolaais, Hereford, Limousin, Murray Grey, South Devon, Simmental, Lincoln Red, Devon and Sussex sire.

Reynolds et al. (1982) in their study Louisianna Agricultural Experimental Station of Angus, A; Brahman, B; Brangus, Br; and Agricander- Angus, AF; and their crosses indicated that breed groups differed in average daily gains (AD) to weaning and 205-day weight. WW crossbred calves (AxB,BxA) exceeded straight bred (A and B)

Gregory et al. (1978) reported that breed effects for traits associated with growth rate in four breed crosses rank in order (high to low) of Brown Swiss, Red Poll, Angus and Hereford while as straight breeds, ranking (high to lower) was, Brown Swiss, Angus, Hereford and Red Poll. Calves with Red Poll and Brown Swiss dams averaged 2.4 kg heavier at birth and 350 kg heavier at 200 days than their reciprocal crosses with Hereford and Angus dams. Breed maternal effects favoured the Brown Swiss and Red Poll breeds over Hereford and Angus breeds for traits associated with growth rate.