

The potential of the Nguni as a Dam Line in terminal crossbreeding

Michiel M Scholtz

Programme Leader: Beef, Dairy and Biotechnology
ARC-Irene

Under commercial farming practices with good managerial skills, but where conditions are still harsh with relatively low levels of nutrition, terminal crossbreeding with small cows may succeed in improving the output of beef cattle farming. This can be attributed to the increase in efficiency of production arising from the lower intake and maintenance requirements of the smaller cow⁽¹⁾.

Terminal crossbreeding, in contrast to rotational systems of crossbreeding does not put any additional burden on managerial skills. All it implies is that bulls from the sire and dam lines are mated in the desired ratio to the cows. They may even be reared together during the breeding season. All crossbred progenies as well as the straight bred males should be marketed⁽¹⁾.

The only prerequisite is that the fertility of the dam line should be high enough to allow for the production of enough straight bred heifers to maintain the system. The fertility of the Nguni is indeed high enough to maintain the system.

Traits desired for dam lines are primarily those related to reproduction and cow maintenance⁽²⁾. The females should be adapted and hardy, have low maintenance (small size), early puberty, high fertility, easy calving, moderate milk production and possess productive longevity.

No calving difficulties or perinatal deaths occurred in 29 Charolais x Nguni, 17 Simmentaler x Nguni and 17 Chianina x Nguni crossbred calves. If a 10% chance of dystocia or death exists, the probability of observing one or

more cases from a sample of 63 would be $100(1 - 0.9^{63}) = 99.9\%$. If a 5% chance exists the probability would be 96.1%. Therefore, it seems that dystocia will be negligible if the Nguni is used as a dam line. There was no difference in the percentage of calves surviving from birth to weaning between the Nguni and its crosses, or in the reconception rates between Nguni cows that suckled pure Nguni or crossbred calves. Thus, there appears to be no additional drain on cows when producing crossbred offspring.

In the case of Belgium Blue x Nguni, 10 calves were born of which two had to be pulled and two died during the birth process. Thus, in contrast to the aforementioned crosses there were only 60% normal births with this cross. In the case of the six normal births the average calf birth weight was 31 kg. The average calf birth weight for the abnormal births was 35 kg. A birth weight of 35 kg should still be acceptable in the case of the Nguni. The observation that was made, however, suggests that the calves were not too big, but that the cows did not go into labour properly.

The signal to initiate the birth process comes from both the cow (the calf is now getting too big for the uterus) and the pituitary gland of the calf (which indicates that it is ready to be born). It is postulated that one of these signals (probably the latter one) was absent or not strong enough, which resulted in the cows not going into labour properly.

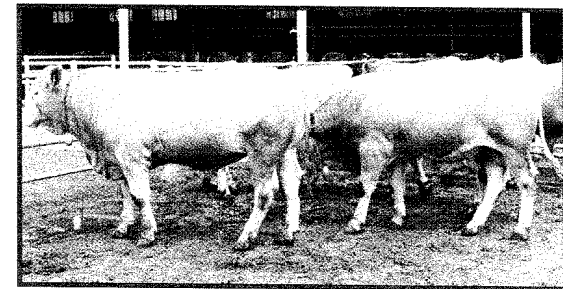
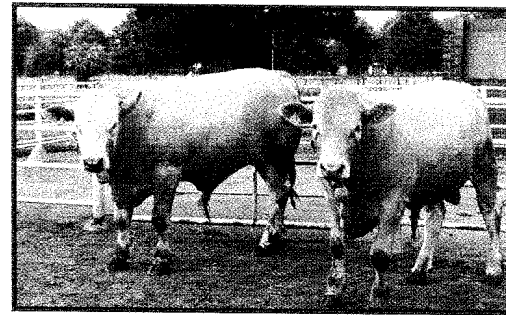
The performance of the different breeds and crosses is given in the Table^(3,5). While the average birth weight was 10% below the mid-parent value, the average weaning weight was 6% above the mid-parent value. The post-weaning growth rate of the crosses was 43% higher than that of Nguni, while the feed conversion ratio (FCR) was 10% better than that of the best purebred. Despite the suppression on birth weight below that of the mid-parent value, the weaning weight and growth rate of the different crosses are close to that of the larger parent. The negative maternal effect on calf birth weight due to the smaller cow, therefore, does not seem to persist up to adult life as in the horse⁽⁴⁾. This makes the Nguni one of the ideal dam lines in terminal crossbreeding.

TABLE: The performance of the different breeds and crosses

Trait	Breed Type			% Deviation from midparent
	Nguni	Charolais	Cross	
Birth weight	27	47	32	-14%
Weaning weight	183	222	215	+6%
ADG	1.12	1.77	1.65	+12%
FCR	7.5	6.6	6.4	-9%
	Simmentaler	Cross		
Birth weight	46	31		-15%
Weaning weight	227	215		+5%
ADG	1.71	1.55		+10%
FCR	7.8	6.6		-14%
	Chianina	Cross		
Birth weight	34	30		-2%
Weaning weight	199	214		+12%

TABLE: Continues

Overall mean	Breed Type			% Deviation from midparent
	Nguni	Large European	Cross	
Birth weight	27	42	31	-10%
Weaning weight	183	216	215	+13%
ADG	1.12	1.74	1.60	+12%
FCR	7.5	7.2	6.5	-12%



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* This article is available in Xhosa and Tswana from the society.