



Extreme crossbreeding

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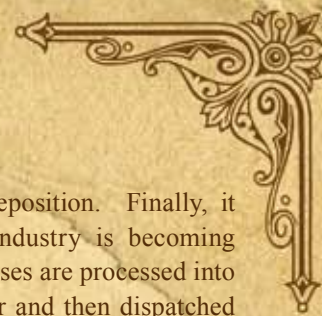
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The challenge to the beef industry today is to produce meat on a sustainable basis that complies with consumer needs with regard to safety, wholesomeness, eating quality and visual appeal and affordability. The slaughter house and carcass processing plant is the point where many of these qualities are determined and depend heavily on the type of product, the live animal and its characteristics supplied. To this end the Charolais breeder, like other breeders, is challenged to produce an animal that performs well in the feedlot or on pasture, that produces a carcass that can be economically processed into portions that is affordable, that has the visual appeal to attract consumers (size, colour, fat content) and that is palatable. While there are niche markets in the local and limited export markets for large beef carcasses (>260 kg), the South African beef industry still seems to prefer medium size carcasses for various reasons. The Charolais breed is generally regarded as a late maturing beef breed and is often used as sire in terminal commercial crosses together with earlier maturing dam breeds to obtain carcasses most preferred by the industry. The cow weight at calving and weaning is on average 90 kg higher and the Phase C final weight (112 days) for bulls 70 kg higher than the national average for all breeds.

In a recent trial conducted by the Agricultural Research Council on behalf of the Charolais and Nguni Beef Cattle Breed Societies, the option of crossbreeding extreme maturity types was investigated, since it is often believed that the carcass weight of the pure Charolais is too large (>300 kg) for the domestic market. The Nguni dam has proved in past to be a good option for this type of diversification, due to the hardiness of the breed, its good mothering ability, ease of calving (no calving problems were experienced in this trial) and low maintenance cost.

Data recorded on growth performance and carcass yield confirmed common knowledge that the Charolais is a later maturing and the Charolais x Nguni a medium maturing beef breed. Over the same duration and conditions of feeding (grain feeding for 120 to 140 days), the Charolais had a better feed conversion and growth rate and produced larger carcasses than Charolais x Nguni. The Charolais x Nguni performed better than pure Ngunis evaluated in previous trials and was similar to Bonsmara types. Due to the large difference in carcass size, the Charolais dressed out higher at slaughter. The type of carcass that was produced, favours (220 kg) a large sector of the market. In this trial the animals were slaughtered towards the leaner side of the fatness scale and the carcass weight could have been increased with another 10 – 20kg without over feeding the animals (becoming over fat). The Charolais had a higher meat to bone ratio than the Charolais x Nguni, which corresponds with the previous work that late maturing animals generally produce higher proportions saleable meat than smaller early maturing carcasses. However the Charolais x Nguni was also slightly fatter and should the groups were slaughtered at exactly the same fat level, the difference would have been less. In an industry where centralised processing and packing becomes popular (meat plants at abattoirs instead of sending carcasses to butcheries), the yield of high priced hind quarter cuts is important. The two breeds were very similar with regard to the distribution of meat in the high priced cuts (loin, fillet, topside, silverside, thick flank) relative to the rest of the carcass, although the Charolais x Nguni had a slight advantage over the Charolais. The proportional differences should not be confused with physical weight (kg) where the Charolais will yield more meat from these cuts, since its carcass weight at optimum fat is higher.

Both breeds produced meat of good eating quality (tenderness, colour) and considering the fact that much attention was given to slaughter procedures, it is evident that breed plays a minor role in meat quality, although



previous trials proved that both the Nguni and Charolais have the genetic capability to produce high quality meat.

Considering the unique intrinsic qualities of the Nguni, the option to diversification for both breed societies seems to be very attractive. The larger part of the industry seems to be fixed in their views regarding carcass size; both the lower and upper limits of carcass weight. Through this cross, the Nguni can benefit with regard to intensive production suitability, final carcass weight and yield. The pure Charolais can benefit from the reduced

carcass weight and earlier fat deposition. Finally, it has to be considered that the industry is becoming increasingly integrated and carcasses are processed into portions at the meat plant/abattoir and then dispatched to retail outlets. As a result, larger carcasses are more easily processed due to better skills and more flexibility in terms of by-products from off-cuts. In addition, certain export markets prefer larger carcasses (personal communications). It is therefore important to realise the niche markets and accept that the purebred Charolais is a breed to consider for specific purposes.

Table 1: Means (\pm s.e.) for growth performance and carcass characteristics of the Charolais and Charolais x Nguni

Characteristics	Charolais	Charolais x Nguni
Starting weight (kg)	234	171
Final weight (kg)	515	379
ADG (kg/day)	2.30	1.49
FCR (kg/kg -Dry matter basis)	4.7	5.2
Final carcass weight (kg)	312	224
Dressing%	60.5	59.0
Fat code	2	2
Carcass composition:		
SCF %	4.12	4.90
Meat %	80.6	78.3
Bone %	15.3	16.8
Composition of high priced cuts¹		
SCF %	48.6	46.2
Meat %	42.9	43.5
Bone %	24.1	23.7
Warner Bratzler shear force (kg)¹		
2 days post mortem	5.14	5.30
14 days post mortem	3.00	2.92
Amount of ageing	2.14	2.38
Meat colour		
Reflectance (0-100)	41.2	39.9
Chroma (redness)	17.1	17.2

SCF – subcutaneous fat or visible fat on the surface of the carcass