

Crioulo Lageano Cattle, its value as beef producer under range conditions of southern Brazilian high plains as compared to Charolais and Nelore breeds and their crosses.

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#### SUMMARY

Crioulo Lageano (CL), Nelore (Ne) and Charolais (Ch) cows and their progeny resulting from several combinations of these breeds were evaluated during at least three years in a high plain region of the State of Santa Catarina. Size of CL cows was similar to that of Ch cows but larger than Ne cows. CL cows performed similarly to Ch cows with respect to fertility and calf mortality and were superior to either breed in milk production and superior also Ne cows, in these traits. Calves from CL cows were lighter at birth but heavier at weaning than the ones from Ch. Ne cows produced calves as light as CL cows at birth but lighter at weaning than either CL or Ch cows. Calves sired by CL bulls were lighter at birth than the ones sired by bulls of the other breeds. CL Cows produced significantly more kg of calf per 100 kg of cow weight than any other breed because of the combination of small superiority in calf survival and large advantage in weaning weight over the other breeds.

#### INTRODUCTION

The Southern Brazilian High Plain region is characterized by acid, shallow and rocky soils, by unpredictable frosts, which occur even during summer months. High quality native pastures growing during spring and summer months guarantees high daily gains at low costs and makes beef industry to be one of the few profitable enterprises dealing with natural resources in the region. Crioulo Lageano Cattle (CL) evolved mainly from a natural selection of a mixture of Spanish and at a lesser extend of Portuguese cattle brought into South America by the missionaries and the Iberian colonisers. Numbers of this cattle are declining since the beginning of century because of very effective marketing promoted by some other breed associations. The first attempt to save this breed from extinction was made by jointly by Brazilian government in 1985 in a cooperative project involving The University of Santa Catarina and EMBRAPA. At this time, Antonio Camargo, was the last farmer to maintain records of this cattle. In order to know the beef potential of this breed before it was too late and perhaps to find a place for it in the beef industry of this problematic region, a research work was planned and executed and some results will be shown in this paper.

#### MATERIAL AND METHODS

Three hundred CL, Ne and Ch cows and three hundred and fifty steers and heifers from various crosses among these genetic groups generated during three breeding seasons, were evaluated under native pasture conditions, with no supplemental feeding, of four private farms in a high plain region of the State of Santa Catarina, Brazil. Experimental design was planned in such a way that at least one mating group was located in every farm. Fall and winter weights, fertility, calf survival until weaning and milk production measured by the difference in calf weight before and after nursing her dam subsequent a 12 hour period of calf fasting were the maternal traits studied. Progenie traits were: weights taken at birth and at weaning. Calf weight (kg) per 100 kg of dam weight was a composite trait analysed.

Data were analysed through least squares procedures using a mathematical model containing breed of sire, breed of dam, year-season and month of birth and age as independent variables. Duncan Multiple Range Test ( $P < 0.05$ ) was applied in some unadjusted means.

## RESULTS AND DISCUSSION

Table 1 shows that CL and Ch cows are similar in weight and infertility while the performance of Nelore cows was significantly poorer. Low fertility in Ne herd could be due to low adaptation to a colder environment of the southern high plain region than the one of Central Brazil where Ne is the most popular beef breed. Winter weight loss was only significant for the first calf heifers of Ne breed. Nevertheless, when dry and lactating cows nursing purebred calves were sorted it was found that the weight lost by lactating CL cows in comparison to the same breed dry cows was much larger (371 vs 342 kg) than in Ne (325 vs 334 kg) or Ch (353 vs 353 kg), probably due greater milk potential of CL cows. The large loss in weight of lactating CL cows reflected in its fertility. The majority of lactating CL cows were not pregnant at the end of breeding season (November-February), while most of the pregnant Ch cows came from the lactating group. Nelore cows were intermediate.

Table 1. Fall and winter weights, and fertility (number of cows mated and number of calves born in three breeding seasons) of CL, Ne and Ch cows and survival rate (birth-weaning) of their calves.

Breed	% of of cow	% of cows	% of calves	% calf survival	Weight (kg)					
					1987		1988		1989	
					fall	winter	fall	winter	fall	winter
CL	116	70	94	312b	356a	318b	332a	413a	365a	
Ne	361	157	78	315b	292c	332b	293b	354b	329b	
Ch	330	172	93	337a	333b	386a	345a	421a	369a	

numbers followed by same letters indicate that they do not differ (Duncan multiple range test) at 5% probability of type I error.

Calf mortality was lower in CL breed although not significantly different from Ch breed. Very low birth weights of Ne calves could have caused their weaknesses and death, indicating once more lack of adaptation. In addition, it was observed that first calf heifers of Ne breed did not protect their calves against predators as well as their counterparts of CL breed.

Table 2 demonstrates that Ch cows gave birth to heavier and that Ne cows to a lighter calves than the CL cows. Ne cows maintained calf birth weight no matter the breed of their calf sire. Ch cows produced heavier calves when mated to Ne and Ch bulls than when mated to CL bulls (32kg vs 29kg vs 26kg). This is an indication that CL bulls are appropriate mates to heifers. Weaning weight of CL calves were larger than Ch calves and than Ne calves. This is very strongly related to cows milk production. CL cows produced more milk in every measurement than the other breeds. Ne cows were poorest milkers in part probably due to their genetic make up, however due to their nervousness probably less milk was extracted by their calves during measurement. Crossbred calves were in general heavier at weaning than their parents' means CL x Ne = 126kg, CL x Ch = 146kg, Ne x Ch = 145kg, Ch x Ne = 137kg. Lack of information on performance of crossbred calves from CL dams can in part be overcome if it is added to the purebred CL calves the advantage crossbred calves out of the other breed dams had to their purebred contemporaries. If so, crossbreeding using CL cows would be a good alternative for the Southern Brazilian High Plain region.

table 2. Least squared means and standard errors of milk production of CL, Ne and Ch cows and unadjusted means for birth and weaning weight of their calves.

Breed of cow	calf weight (kg)		milk production		
	birth	weaning	beginning	middle	end (lactation)
CL	26.1b	152a	5.6+0.5	4.7+0.6	4.2+0.5
Ne	24.1c	118c	2.9+0.5	2.2+0.5	2.1+0.5
Ch	28.5a	140b	3.6+0.5	2.9+0.5	3.1+0.5

Numbers followed by same letters do not differ at 5% level of type I error.

Table 3. brings a summary of traits which combined give an idea about efficiency of a cow-calf operation involving these breeds. CL cows showed to be much more efficient than their counterparts of either breed this advantage would have increase had crossbred calves out of CL dams been included.

Table 3. Efficiency of production of CL, Ne and Ch cows raising purebred calves

Breed of bull cow		# of calves	weaning weight	weaning percent	kg of calf/ 100 kg of cow
CL	CL	65	152	56	86
Ne	Ne	36	118	34	40
Ch	Ch	54	140	48	68

#### CONCLUSION

Small birth weighs with little impact on weaning weight, high survival ability good milk production are traits that CL cattle that could be contribute in crossbreeding plans to increase beef production in a sustainable way in regions similar to Southern Brazilian High Plains.