

Capacities for Sustainable Production of Beef in Eastern Cuba

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ABSTRACT

Alternatives for calf and cattle fattening were validated, and capacities for beef production in grazing conditions were improved in the eastern part of Cuba. The reproductive behaviors of female Charolais, Creole and Zebu were evaluated for artificial insemination, along with the population data from the cattle fattening units. The herds from those breeds showed higher productivity, especially Charolais, which was higher than the other two. Only thirty-six percent of overall beef production is generated during the fattening stage; 43 % of weight achieved during fattening is produced in the calves, during reproduction. When fattening was started in the late rainy season, or early dry season, the final weights were significantly higher than the starting weights of animals that initiated fattening sometime else in the year. This can be linked to the relative contribution made by the concentrate supplement administered in the first months of fattening, around 30 % of the animal ingestion capacity, with effects on food conversion, and mitigating declines in availability and the quality of pasture in that period. If efficient exploitation capacities are created for these breeds, greater beef yields may be achieved, which will have a positive effect on cattle recovery in Cuba.

Key words: *beef breeds, fattening, efficiency, productivity*

INTRODUCTION

Breeding cattle is comprised of bovine herds used to breed calves, especially reserved for beef production. The main breeds used are Zebu, Charolais, their crossbreeding with other breeds, like Santa Gertrudis, Creole, Crimousin, and others, whose number is insignificant. The potentiality of breeding herds to produce beef is determined by the amount of annually weaned calves, herd survival, rate of replacement, calf growing speed, and breed productivity.

Critical factors to determine the productive efficiency of breeding herds are associated to the production alternatives implemented, productivity, and the capacity to feed herds (Benítez et al., 2009b). The eastern part of Cuba has the largest genetic stock of beef producing breeds, with more than 1 667 Charolais, 934 Creole, 2 286 Zebu, and 1 024 Santa Gertrudis heads. Conveniently used in the breeding and fattening systems, they may provide invaluable capacities to rescue the beef production efficiency in Cuba, and achieve quality indicators that meet the international standards (Benítez, 2009a).

The aim of this paper was to validate calf production and cattle fattening alternatives, and to strengthen the capacities for beef production from grazing animals, in the eastern region of Cuba.

MATERIALS AND METHODS

The productive breeding behavior of female Charolais, Creole, and Zebu was evaluated, at the Manuel Fajardo cattle raising company, in the province of Granma, Cuba. The breeders were placed in farms of 120, arranged in three groups, with rotational grazing, supplemented with forage in the dry season, following respective monthly nutritional balances. Artificial insemination was used for gestation of herds, and each breeder's reproductive behavior was monitored; the reproductive periods were registered in each cow's individual charts, along with their birth weight, and weaning of calves, as well as their identification. Likewise, the records of stud production behavior were evaluated, as they were stationed in 93.94 ha farms, on rational grazing, supplemented with forage in the dry season, according to the nutritional balance for the Creole and Zebu breeds in the dry season; and for Charolais, over the year. A completely random design, or with factor arrangement, was used for statistical analysis of data, including the effects of breed, year and month, in order to determine the productive behavior of reproductive females. The measures controlled were reproductive periods, weight of calves at birth and weaning. The Neuman Keuls test was applied to compare means (Statsoft, 1999).

RESULTS AND DISCUSSION

Table 1 shows the productive behavior of the three breeds in the study. The differences observed in this paper are related to differences in the supplementation given to herds; the Zebu and Creole breeds were not supplemented with concentrates in the rainy season. It had an effect on weight gains, the heavier the calf is at birth, the greater the weights are, both at weaning and at the end of fattening, regardless of the breed and the use of supplements, but relying on high quality and quantity pastures and forages to meet the animal requirements for proper growth (Benítez *et al.*, 2009a). Beef production capacity of special breeds, depends, first, on their capacity to breed, maternal ability and genetic progress, which depends on the interval of successive offspring, and on edafoclimatic factors (Pedroso and Soller, 1997; Benítez *et al.*, 2004).

Figure 1 shows the birth effect on beef production in three different breeds, in the Cauto Valley area.

When productivity of cattle systems is evaluated as a whole, beef production increases as long as herd quality increases. These factors are directly proportional to gains in production systems, favoring the use of technologies to improve production. Whole evaluation resulted in that only 36% of total live beef production is generated over fattening. Forty-three per cent of the weight gain from fattening is produced in calves during breeding; therefore, the key to success is in good handling (including nutrition) of breeders in the herds (Alfonso *et al.*, 1990).

Fig 2 shows the effect of the month in which fattening starts, on the final weight achieved. In the traditional fattening on grazing systems, the animals from breeding herds have shown a capacity for growing, and the possibility to achieve animals qualified for any quality control system,

provided suitable capacities are created. The season when the breeding herds are gestated is associated with birth behavior, calf quality, and weight loss decline (Santiago, 1989; Pedroso and Roller, 1998), which is related to yields and quality of the pastures used for nutrition (Ray, 2000). When fattening began at the end, or in the first months of the rainy season, the final weights were significantly higher than animals that began fattening at other times of the year. It is associated to the relative contribution of the concentrated supplement in the diet, in the first fattening months, around 30% of the animals' ingestion capacity, thus effecting on feed conversion, and decrease in pasture availability in the season. At the beginning of the rainy season, the animals had adequate live weight, and sufficient ingestion capacity to make good use of pasture. The relative nutrient needs were reduced per unit of metabolic weight, which favored the productive response in comparison to animals that initiated fattening at the beginning of the rainy and end in the dry season; pasture availability is suppressed, and the relative contribution of the concentrated supplement in the diet diminishes (Valdés and Senra, 1999; Ray, 2000).

If all the cattle raising production processes that determine herd productivity are duly attended, and if capacities are created for efficient cattle fattening, the beef producing breeds in the eastern part of Cuba may become invaluable tools and opportunities to achieve cattle recovery in Cuba.

CONCLUSIONS

If capacities for efficient exploitation of beef producing breeds are created in the eastern part of the country, and the proper technologies are introduced to meet the production goals for cattle, greater volumes of beef may be produced, that will lead to cattle raisin recovery in Cuba.

REFERENCES

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Table 1. Population behavior of Charolais, Creole, and Zebu breeds, at fattening on grazing, Cauto Valley

Indicators	Breeds		
	Charolais	Zebu	Creole
Intercalving interval, days	422 ^a ± 3.89	426 ^a ± 3.98	429 ^a ± 3.65
Calf weight at birth, kg	36.12 ^a ± 0.13	67.8±b	3.98±c
Age at fattening start, days	218 ± 0.4	186 ± 0.6	184 ± 0.4
Weight at fattening start, kg	195 ± 1.27	171 ± 1.42	179 ± 0.8
Final weight, kg	368.7 ± 2.7	356.6 ± 2.96	351.7 ± 1.8
Daily gain, kg	0.71 ± 0.01	0.67 ± 0.01	0.62 ± 0.01
Fattening time, days	243	276	279
Final age, days	461 ± 0.4	462 ± 1.0	463 ± 1.0

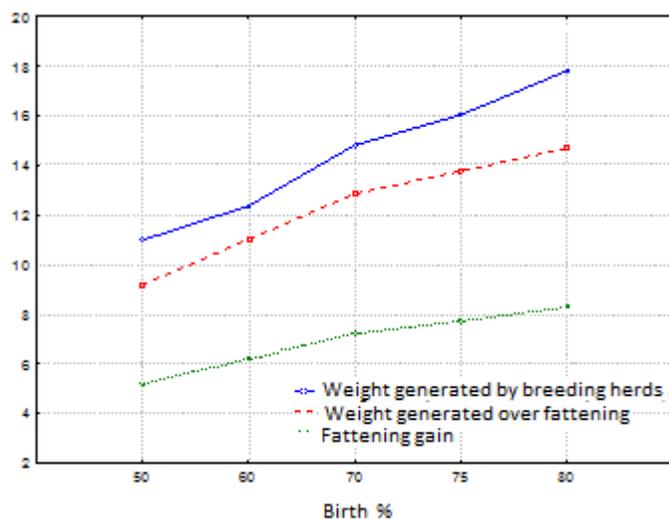


Fig. 1 Birth effect on beef production in three different breeds, in the Cauto Valley area.

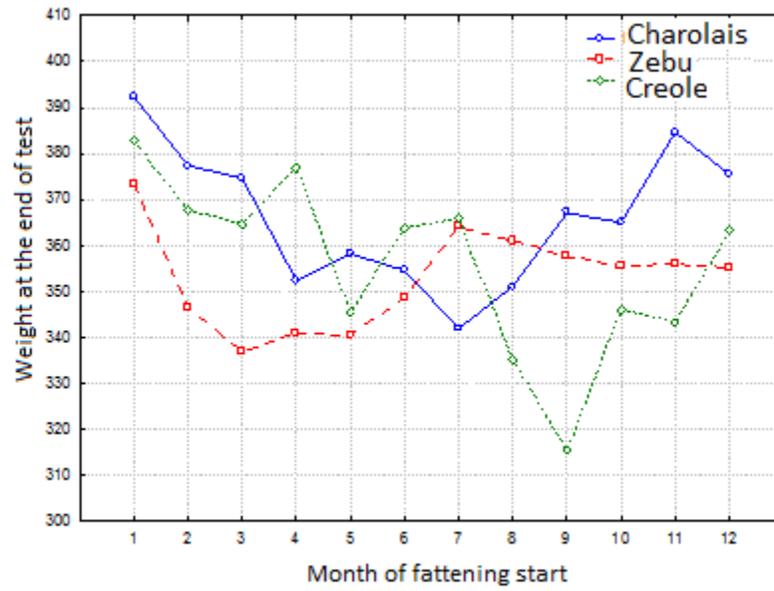


Fig. 2 Effect of the month in which fattening starts, on the final weight achieved. (co variables initial weight and final age of bulls).