STRATEGIC USE OF *BRACHIARIA DECUMBENS* PASTURE TO BEEF HEIFERS DURING DRY SEASON

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ABSTRACT
The main objective of this study was to evaluate a *Brachiaria decumbens* pasture, instead of a common rangeland, for zebu beef heifers during the dry season of the year as a means of anticipating the first calving age from four to three years of age, and so improve the production rate of the herd. Daily liveweight gains (DLWG) were analyzed for the effects of year and three stocking rates during the dry season (SR1=1.5; SR2=2.0 and SR3=2.5 head/ha). The main effect on heifers DLWG was the year (P<0.01), but SR was also important (P<0.05), mainly during the last half of the dry season when pastures are under severe constraints such as soil moisture deficit and low temperatures. The lowest SR presented the highest DLWG (0.204a, 0.174ab and 0.145b kg/head, respectively for SR1, SR2 and SR3), during the dry season. If climatic conditions are not exceptionally bad, heifer first calving occurs at 37 months of age when reared on *B. decumbens*.

KEYWORDS
Zebu, first calving, tropical grassland, stocking-rates, liveweight gain

INTRODUCTION
The replacement of native by sown pastures of improved plant species is a recognized option for providing better forage resources for feeding cattle. Tropical sown pastures can produce at least 3 times more weight per area than do rangelands, but in many such cases, it is not desirable to destroy all the existing ecosystem and put in exotic species. A previous simulation study determined that at least 5% of the rangeland of central Brazil should be replaced by a exotic sown pasture and used strategically for some herd categories, to ensure better productivity levels, with lower cost.

On rangeland, heifers first calve at the age of 4-years. However, if feed were not so restricted, calving could occur one year earlier and, in consequence, the beef herd production rate could be increased by about 20%. The objective of this study was to evaluate the strategic use of *Brachiaria decumbens* as a pasture for yearling heifers during the dry season of the year, to avoid delayed first calving.

METHODS
The experiment was conducted at the Brazilian Agricultural Research Corporation (EMBRAPA-CNPGC), Campo Grande - MS, located at 20°27'S and 54°37'W. Normal annual precipitation is 1571 mm, 29% occurring during May to October (dry season). From June to October there is not an excess of water in the soil. The mean maximum and mean minimum temperatures are 28.8 and 18.3°C respectively, the lowest values occurring at June and July.

A two-year-old unfertilized *Brachiaria decumbens* cv. Basilisk pasture was divided into 12 paddocks, each 4 of the following sizes: 4.0; 3.0 and 2.4 ha. During the rainy season (November through March) the pasture was grazed by Nellore (zebu) steers 3 to 4 years-old and with an initial liveweight (ILW) of 340 kg, at a true stocking rate that ranged from 2 to 2.5 head/ha according to the year and month, in consequence of the availability of dry matter or suitable animals, but always uniform for all paddocks. In April the pasture remained without animals. Mid may, at the beginning of the dry season, 72 Nellore heifers from 18 to 20 months of age and 220 kg of ILW were randomly assigned, 6 to each paddock, making up 1.5; 2.0 and 2.5 head/ha experimental dry season stocking rates (SR). The heifers, as well as the steers, were weighed monthly after 17h fasting. At the end of the dry season (30 October) heifers went back to a native pasture and were subjected to a December to March breeding season. All animals had water and a complete mineral mixture ad libitum.

The experimental design was of randomized blocks (two) with two replicates in each block. The year was considered to begin in November (start of rainy season) and to finish in October (end of dry season). Data were analyzed by a least squares analyses of variance, utilizing the General Linear Model (GLM) procedure available in the Statistical Analyses System (SAS, 1985).

The data include seven years of dry season daily liveweight gain (DLWG) and four years of rainy season DLWG analyses. Data for reproductive parameters was individually recorded for four years and the means registered, but was not statistically analyzed because the original individual records were lost. Even so, the means are presented, because they are valuable information.

RESULTS AND DISCUSSION
Liveweight gain on *B. decumbens* pasture showed a marked year effect (Table 1). The fifth year had the highest value (P<0.01) because it was warmer, and had the most favourable rainfall distribution thoughout both, the whole year and the dry season. The worst year was the fourth, as a result of very low rainfall and two months with exceptionally low temperatures. The climate condition for the 4th year were, however, not sufficient to explain such a low value for DLWG during the rainy period. The superior DLWG observed in the 5th year could be explained both, by climate and by a compensatory growth, after severe dry season conditions.

The stocking rate effect was significant (P<0.05) for rainy and dry season but in different ways (Table 2). For the dry season DLWG on lower SR was superior than higher. This difference resulted from the DLWG over the last half of dry season period. A separate analysis of the first period of the dry season showed no SR effect (P>0.99). For the rainy season, following the previous dry season with the lowest SR, had the lower (P<0.01) value for this parameter, probably reflecting the poorer nutritive value of that pasture which had more and older dry matter with a lower protein content (7.4%).

The first calving rate of the heifers (Table 1) reflected basically two factors: the pasture condition according to year, and their dry season ILW. The second year calving rates were low because heifers were initially so light (198 kg) and could not achieve a minimum weight for cycling (about 280 kg) during the breeding season. But in the 4th year, when ILW was not a problem (214 kg), the figures were similar to that achieved on rangelands as a result of the year effect on pasture production. In the first and third year, ILW were 260 and 230 kg, respectively. It is possible to see from the means that SR probably was not the main effect in terms of the desired anticipation of first calving, and that a *B. decumbens* pasture, instead of a native pasture, can improve the reproduction and production rates of the herd.

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Table 1
Steers daily liveweight gain (DLWG) during the rainy season; heifers DLWG during dry season and calving rate at 37-months-old, and precipitation according to year.

	DLWG (kg/head)[1]		**Calving rate (%)**			**Rainfall (mm)**	
Year	Rainy season	Dry season	SR1	SR2	SR3	Total year	Dry season
1		0.166c	95	96	83	1600	416
2		0.289b	75	63	74	1634	591
3		0.251b	92	82	71	2053	616
4	0.373c	0.043d	50	39	37	1444	342
5	0.914a	0.341a				1605	544
6	0.616b	0.126c				1980	641[2]
7	0.629b	0.012d				1285	226

[1]Means followed by different letters on the same column, are statistically different (P<0.01)
[2]Almost 30% of this rainfall occurred on the 15 latest days of the season.

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