

## Welfare and Sustainability in Beef Cattle Production on Tropical Pasture

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**Abstract :** The aim of this study was to improve the production of beef cattle on tropical pasture without harming this environment. On tropical pastures, cattle's live weight gain is lower than feedlot, and forage production is seasonable, changing from season to season. Thus, concerned with sustainable livestock production, the Premix Company has developed strategies to improve the production of beef cattle on tropical pasture to ensure sustainability of welfare and production. There are two important principles in this productivity system: 1) increase individual gains with use of better supplementation and 2) increase the productivity units with better forage quality like corn silage or other forms of forage conservations, actually used only in winter, and adding natural additives in the diet. This production system was applied from June 2017 to May 2018 in the Research Center of Premix Company, Patrocínio Paulista, São Paulo State, Brazil. The area used had 9 hectares of pasture of *Brachiaria brizantha*. 36 steers Nellore were evaluated for one year. The initial weight was 253 kg. The parameters used were daily average gain and gain per area. This indicated the corrections to be made and helped design future fertilization. In this case, we fertilized the pasture with 30 kg of nitrogen per animal divided into two parts. The diet was pasture and protein-energy supplements (0.4% of live weight). The supplement used was added with natural additive Fator P® - Premix Company). Fator P® is an additive composed by amino acids (lysine, methionine and tyrosine, 16400, 2980 and 3000 mg.kg-1 respectively), minerals, probiotics (*Saccharomyces cerevisiae*,  $7 \times 10^8$  CFU.kg-1) and essential fatty acids (linoleic and oleic acids, 108.9 and 99g.kg-1 respectively). Due to seasonal changes, in the winter we supplemented the diet by increasing the offer of forage, supplementing with maize silage. It was offered 1% of live weight in silage corn and 0.4% of the live weight in protein-energetic supplements with additive Fator P ®. At the end of the period, the productivity was calculated by summing the individual gains for the area used. The average daily gain of the animals were 693 grams per day and was produced 1.005 kg /hectare/year. This production is about 8 times higher than the average of Brazilian meat national production. To succeed in this project, it is necessary to increase the gains per area, so it is necessary to increase the capacity per area. Pasture management is very important to the project's success because the dietary decisions were taken from the quantity and quality of the forage. We, therefore, recommend the use of animals in the growth phase because the response to supplementation is greater in that phase and we can allocate more animals per area. This system's carbon footprint reduces emissions by 61.2 percent compared to the Brazilian average. This beef cattle production system can be efficient and environmentally friendly to the natural. Another point is that bovines will benefit from their natural environment without competing or having an impact on human food production.

**Keywords :** cattle production, environment, pasture, sustainability

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