Beef cattle performance on *Panicum maximum* pastures under two levels of fertilization in Brazil

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Introduction The low soil fertility is the most important limiting factor hampering the intensification of beef production in Savannah areas . According to Macedo (1995) the low base saturation and low P soil content are the two factors directly related to pastures productivity and its sustainability . After having these two deficiencies corrected the productivity is dependent on nitrogen fertilization . Thus , the objective of this work was to evaluate levels of fertilization on *Panicum maximum* pastures .

Materials and methods The experiment was carried out on an Oxisol at the National Beef Cattle Research Center , Campo Grande , Brazil , from October 2004 to May 2006 . The experimental design was a randomized block design with subdivided plots with three replications . The main plots were formed by two levels of soil fertility : LFL to maintain fertility on 50% base saturation , 8 mg/L of phosphorus and 80 mg/L of potassium ; HLF-to maintain fertility on 70% base saturation , 12 mg/L of phosphorus and 100 mg/L of potassium . The subplots were formed by 150 (N150) and 300 (N300) kg/ha of nitrogen . Twelve modules , of *Panicum maximum* cv . Tanz nia , measuring 1 .125 ha each were utilized , and divided into six paddocks (0 .188 ha) . Each module was submitted to a rotational grazing characterized by pre-grazing condition of 70cm sward height and a post-grazing residue of 40 cm height , and was grazing by four yearling steers . Additional steers were allocated and removed from each paddock according to forage mass to assure the planned residues . Forage samples , before and after grazing , were taken . The animals were weighted at 28-day intervals . Data was analyzed according to GLM-SAS and averages were compared by the Tukey test .

Results There was no interaction involving the main effects ($P>0.05$) for average daily gain (ADG) , stocking rate (SR) , liveweight gain (LWG) per area and all sward characteristics . The ADG and SR on LFL were similar to those observed on HLF pastures . However , the pastures that received N300 accumulated more forage with higher nutritive value than those which received N150 (Table 1) . Consequently , N300 pastures sustained higher SR and the steers performed better , which resulted in greater productivity than those pastures with N150 (Table 2) .

Table 1 *Means for forage dry matter (DM) , percentages of leaf blade (LB) , stem (S) , crude protein (CP) and in vitro organic matter digestibility (IVOMD) .*

Cultivars	N150	N300
DM (kg/ha)	4640[b]	5210[a]
LB(%)	69 .8[a]	70 .0[a]
S(%)	16 .5[a]	17 .8[a]
CP(%)	16 .0[b]	18 .2[a]
IVOMD(%)	68 .0[b]	70 .6[a]

Means followed by the same letter in the row are not different ($P<0.05$) , by the Tukey .

Table 2 *Means for average daily gain (ADG) , stocking rate (SR) , gain per area (GA) , rest period (RP) and grazing cycles (GC) .*

Cultivars	N150	N300
ADG(g/day)	685[b]	770[a]
SR(AU* /ha)	5 .03[b]	6 .59[a]
GA(kg/ha)	845[b]	1 .264[b]
RP(days)	30 .1[b]	24 .9[a]
GC(no .)	5 .8[b]	7 .4[a]

Means followed by the same letter in the row are not different ($P<0.05$) , by the Tukey .
* Animal unit

Conclusion After correcting soil fertility , assuring 50% of base saturation , 8 mg/L of P and 80 mg/l of K the guineagrass production is dependent on nitrogen fertilization .

Reference

MACEDO , M . C . M . (1995) . Pastagens no ecossistema cerrados . In : SIMPÓSIO SOBRE PASTAGENS NOS ECOSSISTEMAS BRASILEIROS :pesquisas para o desenvolvimento sustentável ,1995 ,Brasília . *Anais ... Brasília : SBZ* , p .28-62 .