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F. S. Bernardino

Federal University of Viçosa, Brazil

R. Garcia

Federal University of Viçosa, Brazil

J. C. L. Neves

Federal University of Viçosa, Brazil

R. G. Tonucci

Federal University of Viçosa, Brazil

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Beef cattle performance in a silvopastoral system fertilized with N and K , in Brazilian Cerrado

Bernardino , F .S . , Garcia , R . , Neves , J .C .L . , Tonucci , R .G .
Federal University of Viçosa , Minas Gerais , Brazil . E-mail : fsbernardino@gmail.com
Research supported by FAPEMIG , Minas Gerais State , Brazil .

Key words : Brachiaria brizantha , Eucalyptus , nitrogen fertilization , potassium fertilization

Introduction Silvopastoral system is an emergent technology that is in evidence in Brazil . Degraded soils caused by continuous agricultural crops , extensive degraded pasture areas caused by poor management , and massive cutting of forest has been the major factors to increase the interest for silvopastoral systems (Garcia & Couto , 1997) . There is in Brazil very few research concerning to the establishment and management of those systems .

Material and methods The experiment was conducted in a Cerrado area , in Brazil , during the 2006 summer . A factorial 3×2 , with three doses of nitrogen (0 , 75 and 150 kg ha⁻¹) , and two doses of potassium (0 and 100 kg ha⁻¹) was evaluated . It was utilized a completely random design with four replications and three periods of evaluation . Nelore beef steers , with initial weight of 185.5 kg , were utilized in a put and take system (Mott & Lucas , 1952) .

Results and discussion Individual animal live weight gain (LWG) per period and LWG per hectare are showed in Table 1 . It was verified linear increase ($P < 0.01$) on LWG per animal on the first period of grazing , quadratic ($P < 0.01$) on second period , and linear reduction on third period , with increase of nitrogen doses . Potassium fertilization , combined with lower doses of N increased LWG . Negative variations on individual LWG did not compromise LWG per hectare . Due to highest dry matter production with nitrogen and potassium fertilization , highest meat production per hectare was obtained .

Table 1 Animal gains per day and per hectare in a silvopastoral system fertilized with N and K .

Doses of N (kg ha ⁻¹)	Doses of K ₂ O (kg ha ⁻¹)	Individual LWG kg an ⁻¹			LWG per hectare (kg ha ⁻¹)
		Period 1	Period 2	Period 3	
0	0	0.40	0.52	0.55	57.83
	100	0.49	0.49	0.49	82.39
75	0	0.65	0.47	0.50	132.33
	100	0.71	0.44	0.45	166.78
150	0	0.90	0.58	0.45	197.72
	100	0.72	0.60	0.41	216.38

Conclusion Fertilization with nitrogen and potassium should be considered in order to improve LWG to establish and manage the silvopastoral system in Brazilian Cerrado .

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