



São Mateus System - soybean and beef production in sandy soil of the Brazilian Cerrado

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Introduction

In part of the Brazilian savanna, as in eastern Mato Grosso do Sul state, there is an unfavorable condition for cultivation of crops, in conventional production system due to the occurrence of sandy, acid and low fertility soils (Quartzpsaments), associated to the occurrence of drought periods with variable duration. In this region, large areas are occupied by pastures whose significant portion presents degradation, with low zootechnical indexes and economic outcomes.

Material and Methods

On São Mateus farm (9% clay) was implemented in 2008 an technological reference unit (URT) containing distinct management systems: a- soybean monoculture under conventional soil tillage (CS), b- soybean monoculture under no-till (NTS) over sorghum or maize straw, c- integrated crop-livestock system (SSM) in NTS where soybean is rotated with *Brachiaria brizantha* cv. Marandu in cycles of one/two years, and d) pasture *B. brizantha* cv. Marandu in degradation reference system.

Results and Conclusions

For such environmental conditions was proposed procedure for chemical and physical adequacy of the soil enabling the production of soybeans and high productivity of beef. At ICLS, the best soil physical conditions, with higher water storage capacity, coupled with deep root growth of soybeans, allowed good grain and beef yields even with occurrence of dry periods (Table 1). Besides the higher water storage capacity, lower losses by evaporation were also observed compared to other systems. At ICLS, grazing showed higher cattle support capacity, whit more than double live weight gains, and greater forage production than the reference system.

Table 1 - Soybean yield in 6 seasons and beef in two years in the São Mateus system (SSM), no-till system (NTS), conventional system (CS) and permanent pasture (PP).

year	soybean yield			daily weight gain and beef yield [‡]			
	SSM	NTS	CS	SSM	PP	SSM	PP
	(kg ha ⁻¹)			g animal ⁻¹ day ⁻¹		kg ha ⁻¹	
2008/09	1080 ^{ns}	900	900				
2009/10	3060	nd	nd				
2010/11	3973a	3027b	3286b	460.0	553.0	262.5	75.0
2011/12	2075	nd	nd	735.5	642.0	287.2	118.5
2012/13	3960	2650	nd				
2013/14	1902	1352	nd				
2014/15	1744a	1643a	1279b				

ns: not significant

nd: not determined. harvesting was not conducted due to low productivity

[‡]for the periods nov/10 - may/11 and nov/11 - jun/12 *same letters indicate similarity between the means by Tukey 5%

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