



DEGRADED SOIL RECOVERED BY BIOSOLID APPLICATION



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INTRODUCTION

The application of organic materials, as biosolid, improve the soil physical, chemical and biological characteristics in the long term, and it's fundamental for fertility recovery of degraded soils, once is rich in organic matter and nutrients.

The objective of this work was to evaluate the effect of the application of increasing doses of biosolid on soil fertility of a degraded area used as wood patio.

MATERIAL AND METHODS

The experiment was conducted at Entre Rios Farm from Suzano Bahia Sul Company, in Itatinga, São Paulo State, Brazil. The treatments were: doses of biosolid on a dry basis (2.5, 5, 10, 15 and 20 Mg ha⁻¹ + K supplementation), conventional fertilization (NPK) and control. Nine species of the Atlantic Forest were tested: *Croton floribundus*, *Schinus terebinthifolius*, *Peltophorum dubium*, *Cedrella fissilis*, *Guazuma ulmifolia*, *Anadenanthera macrocarpa*, *Copaifera langsdorffii*, *Hymenaea courbaril* and *Cariniana estrellensis*. Soil chemical analysis were made before planting, and at 6, 12 and 18 months after biosolid application. Results before planting and at 18 months-old are presented on Tables 1 and 2, respectively.

RESULTS

Table 1. Soil chemical analysis before planting.

Chemical Analysis									
pH	O.M.	Al ³⁺	K	Ca	Mg	SB	H+Al	CEC	BS%
CaCl ₂	g dm ⁻³			mmol _c dm ⁻³					
4,4	9	4	0,43	4,3	1,0	5,3	23,3	28,3	18,5

Table 2. Soil chemical analysis at 18 months-old.

Treatments	pH	P _{res}	OM	Ca	Mg	K	SB	H+AL	CEC	BS
	CaCl ₂	mg dm ⁻³	g dm ⁻³	mmol _c dm ⁻³						%
Control	4,4 ab	6,8 b	8,4 ab	2,6 ab	1,0 bc	0,3	4,0 b	28,1 abc	32,1 ab	12,5 abc
Chemical Fertilizer	4,6 a	6,9 b	8,9 ab	3,7 ab	2,5 a	0,5	6,6 ab	24,9 c	31,5 b	20,7 ab
Supplementation with K	4,6 a	6,1 a	8,3 b	5,2 a	2,1 ab	0,4	7,7 a	25,5 bc	33,1 ab	23,2 a
2,5 t ha ⁻¹ Biosolid + K	4,3 ab	6,1 b	9,5 ab	3,1 ab	0,9 bc	0,4	4,4 ab	29,8 abc	34,2 ab	13,4 abc
5,0 t ha ⁻¹ Biosolid + K	4,2 b	6,6 b	9,1 ab	2,1 b	0,9 bc	0,4	3,4 b	31,8 ab	35,2 ab	9,7 c
10,0 t ha ⁻¹ Biosolid + K	4,2 b	6,5 b	8,7 ab	2,4 b	0,6 c	0,3	3,3 b	32,8 a	36,0 ab	9,1 c
15,0 t ha ⁻¹ Biosolid + K	4,2 b	7,5 b	10,9 a	2,4 b	0,8 c	0,2	3,4 b	33,5 a	36,9 a	9,3 c
20,0 t ha ⁻¹ Biosolid + K	4,2 b	7,5 b	9,1 ab	2,9 ab	0,7 c	0,4	4,0 b	32,2 a	36,2 ab	11,1 bc
C.V. (%)	3,1	31,6	11,8	37,8	43,6	42,6	34,0	9,2	6,2	33,1
F	**	**	ns	*	**	ns	**	**	*	**



Figure 1. Soil preparation, biosolid application and trees growth at 6 and 18 months-old

CONCLUSIONS

Biosolid application increased soil fertility after 6 and 12 months-old, especially for pH, organic matter, P and Ca levels. However, the differences between the treatments reduced at 18 months-old, indicating that soil fertility is returning to the initial form and the necessity of make a new biosolid application. Tree growth were much better for higher doses of biosolid in relation to chemical fertilizer at this age.

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