



Organic inputs and soil cover effects on seedlings establishment in the formation of an agroforestry system in degraded soil in the Caatinga biome

Roberto C.F.F. POMPEU^{1*}; Henrique A. de SOUZA¹; Luiz A.L. SERRANO²; Rafael G. TONUCCI¹; Juliana E.S. ROCHA²; Francisco E.P. FERNANDES¹

¹Embrapa Caprinos e Ovinos, CP 145, 62010-970, Sobral, CE, Brazil; ²Embrapa Agroindústria Tropical, CP 60511-110, Fortaleza, CE, Brazil; ³Embrapa Produtos e Mercados, CP 70770-917, Brasília, DF, Brazil

E-mail address of presenting author*: roberto.pompeu@embrapa.br

Introduction: The use of organic inputs and/or soil cover promotes beneficial effects, mainly for crops, and this is one way to alleviate the problem of environmental degradation in the Brazilian semiarid region. The objective of this study was to evaluate the use of organic fertilizers and soil cover, in degraded soil, on the surveillance and variables of development of cashew (*Anacardium occidentale*) and “Sabiá” (*Mimosa caesalpiniiifolia*) seedlings in the establishment of an agroforestry system in the Brazilian Semiarid.

Material and Methods: The experiment was conducted in a degraded area placed in an Haplic Planosol inside the Caatinga biome (24M 527153m E 9475928.18 m S, 105 m asl – UTM projection). The treatments consisted of application of three organic inputs (carnauba straw - 10 t ha⁻¹, goats and sheep manure - 10 t ha⁻¹ and cattle manure - 10 t ha⁻¹), and a control treatment (no application of organic input) in a randomized complete block design with four treatments and five replication. We evaluated the establishment of the plant Cashew and “Sabiá” through the percentage of survival of each species. The variables: height, stem diameter (10 cm from the ground level) and canopy spread were measured nine months after planting only in “Sabiá”, due to the high mortality of cashew plants in all treatments. Like all variables presented normal distribution and homocedasticity was applied to analysis of variance (ANOVA) F, followed by the Tukey test at 5% probability, using the statistical program SISVAR.

Table 1. Chemical analyze of the experimental area.

| Deph | pH | O.M. | P | K | Na | Ca | Mg | Al | H+Al | SB | CTC | V |
|---------|-----|--------------------|---------------------|--|------|-----|------|------|------|-----|-----|------|
| | | g kg ⁻¹ | mg dm ⁻³ | ----- cmol _c dm ⁻³ ----- | | | | | | | | % |
| 0-0.2 m | 5.0 | 4.7 | 1.83 | 0.09 | 0.05 | 0.7 | 0.16 | 0.25 | 1.6 | 1.0 | 2.6 | 37.5 |

Results and Conclusions: There was no effect between organic inputs on the percentage of survival of cashew seedlings, with an average of 23.32%. The low percentage of survival of cashew seedlings might be due to the low rain precipitation. In relation to the “Sabiá”, there was 100% survival of seedlings in all the treatments, showing that culture is quite tolerant to drought. Regarding to height and canopy spread crown diameter to the “Sabiá” plants, no differences were observed among goat and sheep manure, carnauba straw or cattle manure. However using goat and sheep manure increased both variables compared to control treatment, probably due to the greater amount of nutrients when compared to other soil covers (Kielh, 1985), supporting the development of the seedlings.

Figure 1. Cashew and “Sabiá” seedlings survival percentage under different organic farm inputs

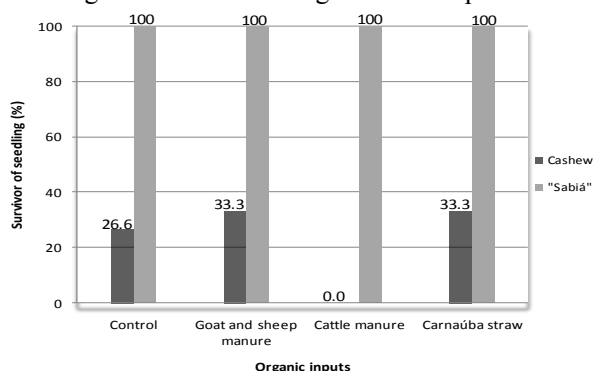


Table 2. Biometric variables in “Sabiá” seedlings under different organic farm inputs

| Treatment | Variable | | |
|------------------------------|--------------------|------------|--------------------|
| | Stem diameter (mm) | Height (m) | Canopy spread (cm) |
| Control | 8.92 | 0.96 b | 13.11 b |
| Carnauba straw | 11.47 | 1.31 ab | 18.67 ab |
| Goats and sheep manure | 11.69 | 1.40 a | 25.67 a |
| Cattle manure | 10.79 | 1.13 ab | 17.67 ab |
| Coefficient of variation (%) | 12.11 | 12.05 | 16.73 |

We concluded that Sabiá seedlings showed higher tolerance to drought compared to cashew ones. Furthermore, the farm inputs and soil cover increases the height and diameter of “Sabiá” seedlings.

References cited

KIELH, E.J. *Fertilizantes orgânicos*. São Paulo, Agronômica Ceres, 1985. 492p.

Acknowledgements

To the Embrapa and Confederation of Agriculture and Livestock of Brazil (CNA) by the financial support.