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Eucalyptus and digitaria grass Intercropping in the Chapada do Araripe, Pernambuco, Brazil.

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Introduction

The region of Chapada do Araripe, in Brazil, is an important producer of gypsum, having high energy demand for the industrial process. Currently, the main source of energy is the wood from Caatinga vegetation. In order to reduce deforestation and promote the regional gypsum industry, eucalyptus has been indicated as an alternative to generate energy. Eucalyptus integrated systems with adapted forage plant is a strategy to ensure stability and diversify the production systems, increasing the supply of wood for energy and fodder for animal feeding.

Material and Methods

The experimental area was established in 2008 in the Experimental Station of the Instituto Agronômico de Pernambuco-IPA IPA, Araripina-PE. Treatments were three planting spacing of eucalyptus hybrid (*Eucalyptus camaldulensis* x *Eucalyptus grandis*), 6 x 6m; 6 x 12m and 12 x 12m, intercropped with digitaria grass (*Digitaria decumbens* Stent) and two control treatments, sole eucalyptus (3 x 3m) and sole digitaria grass. The evaluation was performed for six years after establishment, measuring plant height (m), diameter breast height (DBH) (cm), survival rate (SR) (%) and wood volume (m^3 ha^{-1}) for eucalyptus and forage mass (kg DM ha^{-1}) for digitaria grass.

Results and Conclusions

Figure 1 presents the overview of eucalyptus x digitaria grass integrated system and Table 1 shows the productive characteristics of eucalyptus and digitaria grass.

Figure 1. Eucalyptus x digitaria grass integrated system in Chapada do Araripe, Pernambuco, six years after establishment.

Table 1. Productive characteristics of eucalyptus cultivated in different spacing and digitaria grass in integrated and isolated systems, six years after establishment in the Chapada do Araripe, Pernambuco.

Treatment	Height (m)	DBH (cm)	Survival (%)	Wood volume (m^3 ha^{-1})	Forage mass (Kg DM ha^{-1})
Sole Eucalyptus (3 x 3m)	12.6	11.3	100	98.1	-
Eucalyptus + Digitaria (6 x 6m)	12.7	17.9	100	62.2	4,241
Eucalyptus + Digitaria (6 x 12m)	13.4	17.8	100	32.5	3,677
Eucalyptus + Digitaria (12 x 12m)	12.9	18.1	100	16.0	3,621
Sole Digitaria	-	-	-	-	3,273

The eucalyptus survival rate was 100% for all studied spacing. Among the integrated systems, 6 x 6 m plant spacing promoted better performance for eucalyptus and digitaria (62.2 m^3 ha^{-1} of wood and 4,241 kg DM ha^{-1} of forage mass). Sole Eucalyptus (isolated) presented more wood volume (98.1 m^3 ha^{-1}) than intercropping systems, while forage mass (of isolated) for sole digitaria was 3,273 kg DM ha^{-1}.

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