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## INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“INTEGRATING CLEANER PRODUCTION INTO SUSTAINABILITY STRATEGIES”

### **Productive Potential of Green Manures Aiming Rotation with Sugarcane, in the State of Alagoas**

OLIVEIRA, T. B. A. <sup>a,b\*</sup>, BORNIA, A. C. <sup>a</sup>, OLIVEIRA, M. W. <sup>b</sup>

*a. Universidade Federal de Santa Catarina, Florianópolis, SC*

*b. Universidade Federal de Alagoas, Maceió, AL*

*\*Corresponding author, tbalbino@ceca.ufal.br*

#### **Abstract**

In a neat agricultural production system, it is essential to minimize the disruption to environment as well as to optimize the production factors. In Brazil, the sugarcane is considered as clean energy source. However, one must be aware of the changes caused by sugarcane production system, which can cause physical and chemical deterioration to soil. To maintain the physical and chemical properties of the soil cropped with sugarcane, the rotation with leguminous plants is recommended because they are easy to grow, present high biomass production, vigorous root system, besides their high capacity to fix nitrogen from atmospheric air. In this study, the productive potential of seven leguminous plants grown in Rio Largo, State of Alagoas, on northeastern Brazil were evaluated during two years. Sowings took place on early April and the cutting of the plants for evaluation of the nitrogen and dry matter accumulation was performed at seed formation stage. The *Cajanus cajan*, the *Mucuna aterrima*, the *Canavalia ensiforme* and the *Mucuna nivea* were more effective in accumulating dry matter and nitrogen in aboveground biomass. However, because their very long cycles, they do not allow rotation with cane. On the other hand, the *crotalaris juncea*, *ocroleuca* and *spectabilis* showed lower productive potential, although showing good adaptation to rotation with the sugarcane of one year and half. The results showed the use of the *crotalaris* (*juncea*, *ocroleuca* or *spectabilis*) under rotation with cane rather results higher dry matter production and higher nitrogen supply to soil, in comparison to natural vegetation (spontaneous), when optimizing the production factors and mitigating the effects from the physical and chemical deterioration of the soil.

*Keywords: Sustainable development, cleaner production, energy, crop rotation, nutrient cycling.*

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