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Effect of Biochar on the Biomass Production of *Zea mays*

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Corn is one of the most important commodities in animal production, as it is the main energy ingredient in the feed of various species and categories of animals. However, there is a low supply of this input, which compromises the progress of livestock activities. In the northeastern region, the low soil fertility and the low level of technology employed prevent the area from reaching its productive potential. As a result, most of the inputs used are imported from other regions, which reduces the profitability of livestock activities and decreases human settlement in rural areas. Therefore, greater use of technologies aimed at increasing productivity and reducing potential environmental impacts is necessary. In this sense, biochar, which is a product obtained through the slow pyrolysis of organic residues and used in various functions to improve soil quality, has shown positive effects on biomass productivity of various crops, depending on the type of material used in its manufacture, in addition to reusing residues that could be environmental liabilities. The present study aimed to evaluate the effect of biochar from grape residues on the green matter and dry matter productivity of forage corn. For this purpose, an experiment was carried out in a greenhouse with a completely randomized design with three treatments: control (without biochar), stem biochar (SB), and fermentation biochar (FB), and five replications, totaling 15 experimental plots. Each plot consisted of a 7 kg soil pot, in which a corn plant was grown. In each pot, 10g of biochar was applied, and four corn seeds were sown, with thinning done 10 days after sowing. Foundation fertilization was done with nitrogen, phosphorus, and potassium, according to the fertilization and liming manual of the state of Pernambuco for dryland corn cultivation. After 45 days of sowing, the plants were collected, weighed, and placed in a forced air circulation oven at 65°C for 72 hours. The different types of biochar applied to the soil allowed for better development of the corn plants. Plants subjected to SB and FB biochars showed increases in green biomass of 71.4% and 78.6% compared to the control treatment. The dry matter of corn plants subjected to SB and FB biochars showed increases of 45% and 49% in dry matter, probably due to soil structure improvement and nutrient availability promoted by the addition of biochar, which acts as a soil conditioner. Thus, biochar is a sustainable alternative to increase forage corn biomass production.

Keywords: Forage, Animal production, Grape residues.

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