

Effect of Biochar (oil palm chaff Charcoal) application on some agronomic characters of cocoyam (*Xanthosoma spp.*) - A pilot project to improve marginal soils through biochar application

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Introduction

Cocoyam (*Xanthosoma spp.*), commonly called 'makabo', is an important staple food stuff in Cameroon. It is a crop that grows on a wide variety of soil with high economic importance, as its leaves, combs and combs are converted to a variety of local dishes.^{1,2,3,5}

The crop strives well in the savanna and forest region of Cameroon. Its cultivation techniques and periods of planting vary among these areas.^{4,6}

The objective of this study was to investigate the potential of biochar (oil palm chaff charcoal) application on some agronomic characters of cocoyam (*Xanthosoma spp.*)

An on farm trial was made during the farming season of the South West Region of Cameroon to investigate the potential of biochar (oil palm charcoal) application on some agronomic characters of cocoyam (*Xanthosoma spp.*). The experiment use only one level of biochar 0.5 kg/mount/stand at planting. Character studied included number of functional leaves, comb size, plant vigor, and size of basal leaves.

Results

Functional leaves: From the physical counts of the leaves it shows that there were more 4-6 functional leaves on the experiment compare to 2-3 leaves on the control.

Comb size: Combs were larger 1-2 kgs compare to 0.5-1kg on the control plot.

Plant vigor: Plants on the experimental plot were growing very luxuriantly even in the dry season (more vegetative growth) compare to the control where only the innermost leaf was surviving.

Size of basal leaves: Leaves were very large in surface area compare to very small leaf size in the control plot.

Discussions

Application of biochar to cocoyam (*Xanthosoma spp.*) shows that cocoyam responds well to biochar application with the result of promoting more vegetative growth which is an indicator (more functional leaves, vigorous plant, larger basal leaves and larger combs) for higher crop yields.

Conclusions

The results of this study showed that biochar (oil palm chaff charcoal) had significant effects on some agronomic characters studied e.g. functional leaves, comb size, plant vigor and size of basal leaves.

From the foregoing it can be concluded that biochar (oil palm chaff charcoal) be applied to increase yield. However, more work need to be carried out on other crops, different time of planting and different levels of biochar.

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¹ Mbanaso et al. In: *Cocoyam Programme of the National Root Crop Research Institute*, Umudike, Nigeria

² Onwueme, I.C. (1978). *The tropical tuber crops*. John Wiley and Sons, New York, USA, p 234

³ Purseglove, J.W.(1972). *Tropical crops, Monocotyledons*. I. London, Longman, p 333

⁴ Raemaekers, R. (2001). *Crop production in tropical Africa*. Directorate General for International Co-operation, Belgium, p 1539.

⁵ Reyes,C,G. (2006). *Studies on cocoyam (Xanthosoma spp.) in Nicaragua, with emphasis on Dasheen mosaic virus*. Doctoral thesis, Swedish University of Agricultural Sciences, Uppsala.

⁶ www.cocoyam.org