

**EFFECT OF FERLIZERS ON CARBON  
SEQUESTRATION POTENTIAL OF *Brachiaria*  
SPECIES CULTIVATED UNDER COCONUT**

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## ABSTRACT

Livestock plays an important role in coconut based farming systems providing efficient utilization of resources. Underutilized space and solar radiation in mature coconut lands can be used for forage cultivation. Sequestration of atmospheric carbon (C), which is one of the major roles of fodder and pasture is considered very useful in climate change mitigation. Therefore, there is a potential of using fodder species to increase the amount of C stocks accumulated in soils by enhancing the storage of soil organic carbon (SOC) and to reduce carbon dioxide (CO<sub>2</sub>) emission.

In the present study, three species of *Brachiaria*, *B. brizantha*, *B. milliformis* and *B. ruziziensis* were cultivated under coconut to identify the potential of C sequestration and the growth performance of forages under different nutrient sources. The three species were planted in two factor factorial RCBD and fertilizer treatments; organic and inorganic were applied for a one month period while maintaining one block of grasses without applying any fertilizer as the control. Destructive sampling was practiced in two weeks interval and laboratory analyses were carried out to determine the selected parameters of growth performance, total dry matter, and leaf dry matter and root dry matter and C Sequestration, total carbon content, leaf carbon content and root carbon content.

The results of the study showed that *B. milliformis* produced the highest dry matter and C content among the given three species. The interaction between species and fertilizer type did not significantly ( $p > 0.05$ ) affect the dry matter production. *B. ruziziensis* produced the highest amount of root dry matter and this indicated the highest response to fertilizer compared to the other species in this study. The highest C amount was found to be sequestered by *B. ruziziensis* with inorganic manure (4212.57 kg/ha) and the lowest value was recorded by *B. brizantha* with no fertilizer (2415.35 kg/ha). A conclusion can be made that the C content, which provided to the soil due to grasses was not changed within this 6 month of this presents study. The grass species under investigation can be used for further greenhouse and field studies to confirm the feasibility of using them for the management of soil C content of coconut cultivations.

**Key words:** Carbon sequestration, *B. brizantha*, *B. milliformis* and *B. ruziziensis*, fodder, pasture, organic and inorganic fertilizer, total dry matter