

# CONJOINT USE OF BIOCHAR WITH COMPOST AND INORGANIC FERTILIZERS ON SOIL QUALITY AND PLANT GROWTH OF TOMATO

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Biochar is a form of charcoal produced through the heating of natural organic materials under low oxygen conditions. Two pot experiments were separately conducted using Completely Randomized Design (CRD) in a planthouse with 8 treatments and 4 replicates to monitor the growth and yield of tomato (*Lycopersicon esculentum*) with two biochar types in Reddish Brown Latesolic soil (RBL). Biochar was applied with inorganic fertilizers under the experiment one and with both inorganic fertilizers and compost together in experiment two. As treatments no biochar (control) and two types of biochar namely rice husks and Gliricidia were separately applied at three rates; 75, 150 and 225 g per 5 kg of soil for both experiments representing 30, 60 and 90 tonnes/ha respectively. Compost was added at the rate of 10 tonnes/ha at experiment 2. Plant growth and soil parameters were investigated after nine weeks period. According to the results, biochar has increased plant fresh weight and dry weight, plant N, P, K uptake and N and K use efficiencies with the application rate than the check in experiment one although the values were not significant ( $p>0.05$ ). In experiment one, plant P uptake and P use efficiency was significantly higher in 225 g rice husks treatment and significantly lower in 225 g Gliricidia treatment compared to other treatments ( $p=0.05$ ). In experiment two, the highest P uptake was recorded at 150 g Gliricidia biochar treatment and control pots had the highest P use efficiency. Two hundred and twenty five grams gliricidia biochar treatment had given the lowest values for P use efficiency and P uptake. Therefore, 225 g rice husks biochar is most appropriate for apply with inorganic fertilizers because of it can significantly increase P use efficiency and P uptake while producing highest dry matter yield. However, application of biochar with compost was not given successful results of selected parameters. Biochar has improved soil exchangeable K, available P at both experiments. The long term field investigations should be carried out to confirm the results.

**Keywords:** Biochar, Compost, Gliricidia, Inorganic fertilizers, Rice husks