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Full Paper

Effectiveness of Multiple Inoculation of Biofertilizer with Biochar on Growth of Cacao (*Theobroma cacao* L.) Seedlings Planted under Agroforest Ecosystem

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The study aimed to determine the efficacy of bamboo biochar (BB)-biofertilizer-vermicompost mix in promoting plant growth and yield of cacao seedlings under field conditions. The treatments were: Control, BioN™, endoROOTS® (eR), MYKOVAM® (MV), MYKORICH® (MR), MV+eR, MR+eR, eR+BioN™, MV+BioN™, MR+BioN™, MV+eR+BioN™, and MR+eR+BioN™. The experiment was conducted at Barangay Mabacan, Calauan, Laguna in July 2016 following a two factor Randomized Complete Block Design (RCBD). The highest height and stem diameter increments were obtained from MR inoculated seedlings after one year with a high significant effect to the control. Cacao inoculated with MV+eR promoted the highest fresh pod (940 g and 1177 g) and bean (221 g and 249 g) inoculated both with 0% and 15% BB, respectively. On the other hand, seedlings applied with 15% BB promoted a higher population of NFB compared to seedlings without biochar. The results imply that the significant effects of these inoculants could have potential applications for improvement to other agricultural ecosystem with similar conditions.

Keywords: agricultural ecosystem, cacao, nitrogen-fixing bacteria, Philippines