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Residual effect of vermicompost and inorganic fertilizers of sprouting broccoli on succeeding cowpea growth, yield and soil fertility for eastern Himalayan region

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Abstract

Cultivation of vegetable cowpea after winter season vegetables is emerging as a popular cropping system for the region as legume crops can fix atmospheric nitrogen, incorporate organic matter, harbours beneficial microorganisms in the soil, improves the fertility status of soil and bring sustainability in the production system. The present investigation was aimed to evaluate the effect of vermicompost and inorganic fertilizers of broccoli on the succeeding cowpea growth, yield and soil fertility and to identify the most suitable nutrient combination for the rotation. Broccoli crop was grown in factorial RBD with 3 replications by combining four different doses of recommended inorganic fertilizers (120:60:60 kg N, P and K per hectare) and five different levels of vermicompost. Vegetable cow pea cv.Laffa Barbati was raised on the same plots of broccoli field during February to April of 2010 and 2011. The results revealed that integrated use of inorganic fertilizers and vermicompost of broccoli crop significantly influence the succeeding cowpea growth, yield and soil fertility. The nutrient combination composed of vermicompost (10 t/ha) along with 100% recommended dose of fertilizer recorded the maximum number of green pod per plant (19.16), pod weight (15.18 g) and pod yield per plant (290.77 g) and per hectare (7.70 ton).The same combination also recorded the highest residual N, P and K nutrient status of soil (183.19 kg per hectare, 17.44 kg per hectare and 122.94 kg per hectare NPK respectively). The nutrient schedule can be practiced for wider broccoli-cowpea cropping sequence to achieve the much desired increased yield with sustainable soil health for eastern Himalayan region.

Keywords: Broccoli-cowpea rotation, Vermicompost, Inorganic fertilizers and Soil fertility

Biography

Ranjit Chatterjee is an Assistant Professor in the Department of Vegetable and Spice Crops and involved in teaching (UG, M.Sc and PhD students) research and extension activities in the field of vegetable and spice crops for last 11 years. He obtained his Master's degree in Vegetable Crops from Dr. Y.S, Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh, India in 1998 and PhD in Vegetable and Spice Crops from UBKV,West Bengal. He is conducting research works since last 10 years on organic vegetable production with special emphasis on vermicompost production from vegetable crop residues and its application on commercial vegetable crops. He has participated in international training on Basic Organic Crop Inspection from MingDao University, Taiwan and has developed expertise on organic farm certification of USDA and NOP standard as per IFOAM guidelines. He has published more than 27 research papers in reputed journals, technical bulletins, popular articles on vegetable crops.