RELATIONSHIP BETWEEN THE QUALITY PARAMETERS OF BIOFILM BIOFERTILIZER AND VEGETABLE CROP RESPONSE

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Maintaining a proper quality of Biofilm biofertilizer (BFBFs) is one of the most important aspect which determines the success of the fertilizer with a particular crop. Quality of BFBFs can be monitored with certain parameters. This study was mainly focused to evaluate the relationship between the quality parameters of BFBF-Veg and early crop response of carrot. Experiments were conducted, in the laboratory and field, each with ten treatments developed from four Biofilm-Veg batches (15001, 15002, 15003 and 15004). Plant assay (using lettuce seeds), colony forming units (CFUs), exo-polysaccharides assay (EPS), biofilm pH, Fourier Transformed Infarred (FTIR) spectroscopy and soil microbial seed bank dormancy breaking test were conducted under laboratory condition to determine the quality parameters. Total dry weight of carrot plant at early vegetative phase was obtained. Data on dry weight of plants and quality parameters were subjected to factor analysis and multiple regression. Quality parameters such as concentrations of compounds in fingerprint region (FP) and mixed region (MX) of FTIR spectra showed a significant positive relationship with total dry weight of plant (R^2=0.58; $p<0.05$). The total dry weight of plant in early vegetative growth can be expressed as a function of FP and MX (*Total dry weight of plant = 13.25(FP) +1.5 (MX)-0.17*). The most significant quality parameter was concentrations of compounds in mixed region (MX). It is concleded that, FTIR spectroscopy can be used as quality controlling test for Biofilm-Veg. Since this study was limited to early vegetative growth of an upcountry root crop, further studies are needed to examine the relationships between the BFBF quality parameters and responses of other crop types.

Keywords: Biofilm biofertilizer, Crop production, Quality, Vegetative growth, Vegetables