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Evaluation of Kützing ex Gomont as a Biofertilizer on the Gemination and Seedlings of Selected Vegetable Seeds

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Abstract—Food requirements of growing populations around the globe are rising continuously and require proper management. A major factor affecting the production of vegetables, seafood, and fruits and ultimately causing food insecurity is climate change. Vegetables typically have a high sensitivity to environmental extremes and have a significant impact on several physiological and biochemical processes. In the current research, we evaluated the role of biofertilizer (control and phormidium. sp) on the growth of selected vegetables namely; Daucus carota, Allium cepa, and Pisum sativum under laboratory conditions. Two fractional complete randomizing designs with three applications were used for the said experiment. In a temperature-controlled laboratory (25 °C ±2)., seedlings treated with biofertilizer displayed improved growth characteristics, such as shoot length, root length, height, number of leaves, and leaf area. The physic-chemical nutrients of soil were investigated and the result showed that treated soil with bio-fertilizer *Phormidium* sp. increased its organic matter (0.19), phosphorus, potassium, and nitrate (0.012) levels. Soil sodium level decreased from 0.6 mmol to 0.3 mmol, which showed a decrease in salinity from 1.0 ppm to 4.0 ppm and increased fertility of the soil. Hence, biofertilizers are the most effective for enlarging the production capacity and managing growing systems during the winter season and sensible light intensity promotes photosynthesis in plants. Biofertilizer increases soil fertility and is a good tool to increase vegetable production as it is eco-friendly and reduces soil pollution as compared to chemical fertilizers.

Keywords—Vegetable Seeds, Biofertilizer (Phormidiyum sp), Growth Parameters, Kützing ex Gomont