



EVALUATION OF BIOFERTILIZERS ON THE GROWTH OF CHILLY PLANT

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ABSTRACT

Capsicum frutescens are members of the Solanaceae family, which are bushy, about 60-80 cm high and are semi-perennials. They supply good levels of carbohydrates, vitamin A and vitamin C and E. The biofertilizers used for the growth of chilly plants are organic fertilizers, BIOVITA, and Neem cake. Organic fertilizers are made from natural rather than artificial material, either from animals or plants. The present study was undertaken to assess the effect of biofertilizer on chilly plants by different biometric parameters.

KEYWORDS: Biofertilizers, chilly plant, Neem cake, *Capsicum frutescens*.

INTRODUCTION

Capsicum frutescens are members of the Solanaceae family, which are bushy, about 60-80 cm high and are semi-perennials. They supply good levels of carbohydrates, vitamin A and vitamin C and E (Anonet *et al.*, 2007). Chilli is used as an essential condiment in foods for its pungency and red colour. The pungency of chillies is due to the presence of carotenoid and the red colour is due to carotenoid pigments such as capsaanthin and capsorubin (Glisukon *et al.*, 1980).

The biofertilizers used for the growth of chilly plants are organic fertilizers, BIOVITA, and Neem cake. Organic fertilizers are made from natural rather than artificial material,

either from animals or plants. Manure, slurry, worm castings, peat moss, bone meal, seaweed, sewage and guano are all examples of organic fertilizer, as are plants off cuts such as mulch, hay, leaves, peat moss, bark, glass, wood chips and corn husks. Organic fertilizers may be more readily available to growers as by-products of other cultivation and therefore also cheaper. However, the nutrient content in organic fertilizers is variable, so they cannot always be relied upon to provide the same amounts of nutrients. BIOVITA is based on seaweed *Ascophyllum nodosum*, the finest marine plant available for agricultural use and is recognized world over as an excellent natural fertilizer and source of organic matter. BIOVITA application enables plants to receive direct benefits from

the naturally balanced nutrients and plant growth substances available in the seaweed extract (Dhaliwal *et al.*, 2007). Neem cake, organic manure is the by-product obtained in the process of cold pressing of neem tree kernels, and the solvent extraction process for neem oil cake. Neem cake has an adequate quantity of NPK in organic form for plant growth (Mottaghian *et al.*, 2008). The present study was undertaken to assess the effect of biofertilizer on chilly plants by different biometric parameters.

METHODOLOGY

The hybrid chilly seeds (Sieara) were purchased from K.P. Fertilizer Agency, Tuticorin and the ordinary variety from the vegetable vendor. Biometric observation of chilly plant and biochemical analysis of seed samples were performed. Germination percentage was observed on the 7th day after sowing. The percentage of germination was also calculated. The plant height, root length and shoot length of the chilly plants were measured in centimeter (cm) using a tape. The yield characteristics were studied by the number of chillies per plant. Vigor index was calculated. Dry weights as well as fresh weight were recorded. Chlorophyll, carotene, phenol, carbohydrates, protein and ascorbic acid were estimated.

RESULTS AND DISCUSSION

Germination percentage was more in biofertilizer treated normal chilly plant (94.5%) than the control (68.60%). The use of

biofertilizers has been reported to be beneficial for the cultivation of vegetables and cereals by many workers (Venkateswarlu and Rao, 1983; Hadas and Okon, 1987). Shoot length was more in biofertilizer treated normal chilly plants (10.33 cm) than the control (7.87 cm). Root length was more in biofertilizer treated normal chilly plants (5.82 cm) than the control (4.77 cm). In general, biofertilizer considerably increased the seedling root length, shoot length, highest root length, shoot length, germination rate were recorded in the plants inoculated with biofertilizer (Asghar *et al.*, 2002). Vigor index was more in biofertilizer treated normal chilly plants (1399.95) than control (655.38). Fresh and Dry weight was more in biofertilizer treated normal chilly plants (8.508 gm, 1.765 gm) than control (2.880 gm, 0.662 gm).

Elloumi *et al.*, 2005 found that the dry weight of the leaves and roots of the almond decreased with increasing fluoride concentration. Our result also correlated with the studies of Guo *et al.*, 2005 and Gupta *et al.*, 2009. Chlorophyll content is more in biofertilizer treated normal chilly plants (6.5 mg) than control (1.23 mg). The carotene content in the leaf is more in biofertilizer treated plants (1.34 gm/l) than control (0.45 gm/l). The seaweed liquid fertilizer treatment also increased total chlorophyll and carotenoids content of both the test plants at lower concentration (20%) SLF with or without chemical fertilizer (Whampam *et al.*, 1993). The phenol content is more in biofertilizer treated plants (10.5mg/dl) than control

(8.8mg/dl). The carbohydrate content is more in the leaf of biofertilizer treated normal chilly plant (33.7mg/dl) than control (27mg/dl). The protein content is more in the leaf of biofertilizer treated plant (31mg/dl) than control (22mg/ml). Ascorbic content is more in biofertilizer treated plant(25.2mg/dl) than control(11.7mg/ml).Ascorbic acid acted as an antioxidant and played an important role in

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protecting against physiological stress(Guo *et al.*,2005).

From the present study it was observed that, biofertilizer was found to be beneficial for the growth of chilly plants. Hence, it will be advantageous to use this type of biofertilizers for large scale production of chillies from chilly plants.

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