RESEARCH PAPER

Effect of spacing and bio fertilizers on yield and quality parameters of stevia (Stevia rebaudiana Bertoni)

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ABSTRACT

A field experiment on efect of spacing and bio fertilizers on growth and yield of stevia (*Stevia rebuadiana* Bertoni) was conducted at Department of Horticulture, Ch. Chhotu Ram P.G College, Muzaffaranagar (Uttar Pradesh) during *Kharif* seasons of 2006-07 and 2007-08. The experiment was laid out in split plot design with main plot having four spacing levels (30 cm x 20 cm, 30 cm x 30 cm, 45 cm x 20 cm and 45 cm x 30 cm) and sub-plot treatments included six biofertlizer based nutritional treatments [100% NPK (Recommended dose: 60:30:45 kg/ha), 75% N + 100% PK + *Azotobactor*, 100% N + 100% PK + *Azotobactor*, 75% N + 100% PK + *Azospirillum*, 100% N + 100% PK + *Azospirillum* and Control (no fertilizer)] with three replications and 24 treatment combinations. The spacing of S₁ 30 x 20 cm and S₂ 30 x 30 cm recorded significantly higher herb yields and were at par with fresh (36.53 and 33.68 t/ha) and dry (8.02 and 8.32 t/ha) herb yield, respectively. The fresh (20.10 t/ha) (S₁) and dry (4.58 t/ha) (S₂) stem yield and fresh (16.43 t/ha) (S₁) and dry (3.73 t/ha) (S₂) leaf yield where higher as compared to 45 x 20 cm and 45 x 30 cm spackings. Significantly higher stevioside content (8.06%) was recorded in the spacing of 30 cm x 30 cm than other spacing levels. Significantly lower stevioside content (4.13%) was recorded in the spacing of 45 cm x 30 cm. Among biofertilizer treatments, significantly higher fresh and dry herb yield per hectare was recorded in the treatment that received 100% N + 100% PK+*Azotobactor* (35.72 and 8.30 t/ha, respectively), fresh and dry stem yield per hectare (19.63 and 4.56 t/ha, respectively) and significantly higher fresh and dry leaf yield (16.09 and 3.73t/ha , respectively) as compared to other treatment combinations.

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Key words : Stevia rebaudiana, Spacing, Stevioside, Bio-fertilizers

INTRODUCTION

Stevia rebaudiana (Bertoni) was officially discovered by Dr. M. S. Bertoni in 1905, belongs to the family Compositae, is a recent high demand medicinal crop in herbal world. Foods that may cause diseases by the use of natural caloric sweetener as well as by chemical sweeteners (like saccharin and aspartame) make the life risky especially for the middle aged, diabetic and other susceptible groups. So the focus came on stevia which is completely natural and zero-calorie plant. The plant is native to South America (Paraguay and Brazil) but recently domesticated in India for its large scale cultivation. Above all, recently Stevia rebaudiana is gaining momentum due to its novel natural sweetener properties and as an alternative sweetener source for the diabetic people. Looking to its present and prospective domestic and global demand for a variety of alleged medicinal effects, the availability of quality raw materials of this wonder plant is very meagre. Since, it is newly adopted crop; there is almost no information available on its proper production techniques which may be one of the causes for the non-availability of its quality raw materials. The modern and intensive agricultural methods are not only costly, but also cause soil and water pollution along with diminishing the quality of the raw materials. Thus, in this situation, the recent concept of ecofriendly technology, application of bio-fertilizers in combination with inorganic fertilizers substitutes may prove to be necessary for this potential crop. In stevia, leaves are the economic part of the plant. The agronomic manipulations and practices aimed at improving the yield of leaves through optimizing source-sink ratio are of more practical significance. Optimum spacing provided to each plant helps to utilize growth resources optimally resulting in better yields. Hence, keeping in view the above facts the present investigation entitled Effect of spacing and bio -fertilizers on growth and yield of stevia (Stevia rebaudiana Bertoni)

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