The Asian Journal of Horticulture, December 2007, Vol. 2 (2) : 126-130

RESPONSE OF BITTER GOURD (*Momordica charantia* L.) ON FRUIT YIELD AND QUALITY TRAITS AS INFLUENCED BY FERTIGATION LEVELS

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Accepted : November, 2007

ABSTRACT

The field experiment was conducted on physico-chemical parameters of hybrid bitter gourd (*Momordica charantia* L.) CoBgoH-1 under different macro and micronutrient fertigation levels. The results revealed that the time taken for first harvesting of fruits was decreased to 54.28 and 54.10 days in T_4 (100 per cent macro and micronutrients applied together), respectively and the average single fruit weight (260.03 and 277.30 g in Kharif and Rabi season, respectively) coupled with highest yield per hectare of 37.50 and 49.77 t was registered maximum in the same treatment in Kharif and Rabi season. The length, flesh thickness and girth of the fruit increased from fruit set to maturity in all the treatments, with maximum increase was observed in 100 per cent macro and micronutrients applied through fertigation unlike the diameter of the fruit recorded higher value in 100 per cent macronutrient alone. The application of 100 per cent macronutrient in combination with micronutrient recorded highest values for TSS, iron, momordicine and Vitamin C while acidity content was maximum in the control.

Key words: Fertigation, Macro and micronutrient, TSS, Iron, Momordicine, Acidity.

The bitter gourd (*Momordica charantia* L.) is one of the most nutritive and commercially important vegetables in India as well as in countries of South East Asia. Among all cucurbitaceous vegetables, fruit of bitter gourd records the highest calorific value. Besides, the fruits are rich in Vitamin C, iron and phosphorus (Wills *et al*., 1984). Bitter gourd is also known for its various medicinal properties (Morton, 1967) with a more recent attention focused on its use as a hypoglycemic agent (Perl, 1988). Maintaining optimum soil moisture and nutrient status throughout the plant growth for higher yields with good quality produce. The fertilizer applied through fertigation reaches the active root zone thus helping easy absorption and efficient utilization. Fertigation, which combines fertilizers with irrigation is one of the most effective and convenient method of supplying nutrient and water according to the specific requirements of the crop to maintain optimum soil fertility and better quality produce (Shirgure *et al*., 2000). Similarly, the influence of macro and micronutrients on the growth, yield and quality of bitter gourd are of immense magnitude. Adoption of advanced and efficient methods of application of water and fertilizers through drip irrigation system would go a long way in economizing the scarce inputs and help to increase the area and productivity besides maintaining high quality produce in the State and elsewhere. For ensuring good quality produce it is, therefore essential to study the effect of fertigation on biochemical parameters of the hybrid bitter gourd.

MATERIALS AND METHODS

The experiments were conducted during the year 2001-2002 on hybrid bitter gourd at the University Orchard, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore in Kharif and Rabi season. The soil of the experimental field was alkaline (pH 8.1) in reaction and sandy loam in texture with EC 0.22 dSm^{-1}, available N (175.00 kg ha^{-1}), available P (17.20 kg ha^{-1}) and available K (626.00 kg ha^{-1}). The planting was taken up for two seasons with a spacing of 1.5 x 2.0 m. The treatments include fertigation with macronutrients alone in water soluble form at three levels (100, 75 and 50%), fertigation with macro and micronutrients (water soluble from and micronutrients in polyfeed formulation) at three levels (100, 75 and 50%) with one control (soil application of 100% normal fertilizer). The experiment was laid out in randomized block design and the fertigation was given once a week.

The weight of ten fruits was taken on electronic balance individually and average single fruit weight was calculated and expressed in gram. The diameter and flesh thickness of the fruit was measured with the help of Vernier caliper individually and the average was calculated