The Asian Journal of Horticulture, 3 (1) : 87-89 (June-2008)

Effect of different levels of nutrition and spacing on post harvest qualities of banana cv. ROBUSTA (AAA) under high density planting systmes

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Accepted : April, 2008

ABSTRACT

The investigations on the effect of different levels of nutrition and spacing on post harvest qualities such as number of days taken for ripening of fruit, weight of pulp and peel, pulp to peel ratio, total soluble solids (TSS), acidity, reducing sugars, non reducing sugars, total sugars and sugar- acid ratio under high density planting systems of banana cv. ROBUSTA was studied during 2003-04, with 19 treatments replicated thrice with a Randomized Block Design. The treatments includes, 3 levels of NPK 180:125:250g/hill; 270:185:375 g/hill and 360:250:500 g/hill with planting 2 and 3 suckers/hill at a spacing of 2.0 m x 2.0 m, 2.5 m x 2.5 m, 3.0 m x 2.0 m and were compared with conventional planting system (single sucker/hill) with recommended practices. The results revealed that, increased level of nutrients (360:250:500 g/hill) with planting two and three suckers per hill resulted in the increased shelf life, pulp to peel ratio, TSS, acidity, reducing sugars, non reducing sugars and total sugars of fruits, whereas, sugar to acid ratio was reduced with increasing nutrition levels. There was an extension of storage life of fruits, under higher level of nutrients, compared to lower levels.

Key words : Banana, Robusta, Nutrition, High density planting systems, Post harvest qualities.

Banana crop gives good response to judicious fertilizer programmes. Any excess or insufficient application of fertilizers will not exploit the full potential of its yield. Excess fertilizers will increase the cost of production and sometimes cause toxicity and insufficient application will result in poor yields caused by nutrient deficiencies. Many workers confirmed that banana requires large quantities of potassium, moderate quantities of nitrogen and relatively lower doses of phosphorus, which determine growth and productivity. Nitrogen supply largely affects growth and fruiting by way of exercising control over the use of carbohydrates. The requirement of phosphorus for banana is relatively lower and varies with the variety. Potassium is considered as a major nutrient in banana cultivation and many researchers have enlightened that adequate supply of potash fertilizer not only increases the yield of banana but also improves the quality and shelf life of fruits and helps the plants to withstand adverse effects of drought, frost, salinity, pests and diseases. It also plays a vital role in the physiological and biochemical functions of the plant (Raju, 1996).

Although adequate information on banana nutrition is found in the literature, most of it is for low-density situation. The information available on proper system and density of planting, spacing and nutritional requirement for banana cv. ROBUSTA under different agro-climatic situations is meager. This clearly emphasizes the need for research on these aspects, which is expected to provide vital information on practical benefits to the growers. With this background, studies were undertaken to standardize the nutrition, system of planting and spacing for Banana cv. ROBUSTA under field conditions for maximizing the post harvest qualities of the fruits.

MATERIALS AND METHODS

The present investigations were carried out in the farmer's field at Tarikere taluk of Chikmagalur district, Karnataka state. The soil was sandy clay loam having pH: 6.6, electric conductivity: 0.16m mhos/cm: organic carbon: 0.90% available nitrogen: 87.0 kg/ha, available phosphorus: 80.0 kg/ha and available potash: 425.0 kg/ha. The experiment was laid out with banana cv. ROBUSTA in a randomized block design with 19 treatments and 3 replications. Each treatment was surrounded by 2 guard rows on all sides of the treatment, occupying a net area of 12m x 12m; the treatment details are as follows

The quantity of nutrients (NPK) applied to each treatment *i.e.*, T_1, T_4, T_7, T_{10}, T_{13} and T_{16} at 180:125:250 g/hill, T_2, T_5, T_8, T_{11}, T_{14} and T_{17} at 270:185:375 g/hill, T_3, T_6, T_9, T_{12}, T_{15} and T_{18} at 360:250:500 g/hill and control (T_{19} recommended practices) with 180:108:225 g/hill, in the form of urea, single super phosphate and muriate of potash. The fertilizers were applied in 3 splits, at 2nd 4th and 6th month after planting, while potash was applied in