

Effect of planting systems, spacing and nutrition on dry matter production and distribution in banana cv. ROBUSTA

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ABSTRACT

An investigations on the Effect of planting systems, spacing and nutrition on dry matter production and distribution in different plant parts such as corms, pseudostem, leaves, stalk and fruits of banana cv. ROBUSTA was studied during 2003-04, with 19 treatments replicated thrice with a Randomized Block Design. The treatments includes, 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 with 3 levels of NPK *i.e.*, 180:125:250g/hill; 270:185:375 g/hill and 360:250:500 g/hill and were compared with conventional planting system (single sucker/hill) with recommended practices. The results reveal that, the total dry matter production and distribution in different plant parts was highest in T₃ (13.92 kg and 19.60 kg/plant), where, planting two suckers per hill at 2.0m x 2.0m apart, supplied with 360:250:500 g NPK indicated that there was better uptake and translocation of nutrients at shooting and harvesting stages, respectively.

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The system of High Density Planting (HDP) has been successfully implicated in banana, since HDP results in the optimum utilization of natural resources. In most of the regions, where banana is grown, solar radiation is abundant and thus productivity largely depends upon its efficient utilization. The system and density of planting need to be designed to intercept the solar radiation effectively. Banana plant, mostly feeds at the surface of the soil, subsequently, it is of paramount importance to maintain a high degree of soil fertility, if the production is to be maintained at an economical level over long periods. The crop gives good response to judicious fertilizer programmes. Any excess or deficit application of fertilizers will not exploit the full potential of its yield. Although adequate information on banana dry matter production and distribution 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 optimum production in banana cv. Robusta under different agro-climatic situations is meagre. This clearly emphasizes the need for research on these aspects, which is expected to provide vital information on practical benefits to the growers.

MATERIALS AND METHODS

The present investigations were carried out in the farmer's field at Tarikere taluk of Chikmagalur district, Karnataka state from 2001 to 2004. 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 presented in Table.

The planting systems followed in the trial were, planting 3 suckers / hill, 2 suckers/hill at a spacing of 2.0mx2.0m, 2.5mx2.5m, and 3.0mx2.0m and compared with the recommended practices. The quantity of nutrients (NPK) applied to each treatment *i.e.*, T₁, T₄, T₇, T₁₀, T₁₃ and T₁₆ at 180:125:250 g/hill, T₂, T₅, T₈, T₁₁, T₁₄ and T₁₇ at 270:185:375 g/hill, T₃, T₆, T₉, T₁₂, T₁₅ and T₁₈ at 360:250:500 g/hill and control (T₁₉, 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 4 splits; last split was applied at shooting stage. The detailed observations recorded from the bunches of 3 plants (3 suckers planted per hill), 2 plants (2 suckers planted per hill) and from one plant (single sucker planted per hill) as control from each replication, were used for recording observations

RESULTS AND DISCUSSION

The total dry matter production (DMP) and its distribution (Table 1) in different parts of plant *viz.*, corms, pseudostem, leaves, stalk and fruits differed significantly among the treatments at shooting. Among all the