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Research Paper :

Effect of propagation methods and spacings on nutrient uptake and dry matter accumulation of banana cv. BASRAI

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ABSTRACT

Field experiment as conducted in 1999-2000 at CRS farm Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. The experiment was laid out in Factorial Randomized Block Design with four treatment replicated four times. The uptake of nutrient was higher for sucker grown plants compared with tissue culture plants due to greater accumulation of dry matter by the former. The spacing had no significant effect nutrient uptake by banana plants.

Key words : Tissue culture, Banana nutrient uptake

One of the common methods for propagation of banana is by the suckers. Diseases like bunchy top, sigatoka, which reduce yield of banana, commonly affect the crops grown through suckers. To overcome such problems and to evolve the improved quality plants the production of banana plantlets through micropropagation by using tissue culture technique will be useful. Mass propagation of elite material will lead to genetic upgradation and resulting in increased production.

Recently farmers have started use of tissue culture plantlets of banana. Raghupati *et al.* (1996) studied uptake of nutrient in tissue culture developed and normal plants of banana, but there is paucity of information regarding yield, nutrient uptake, sugar and vitamin content in normal and tissue culture plants of banana. With above relevant information the present investigation was undertaken.

MATERIALS AND METHODS

A field experiment was conducted at CRS farm Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during *Kharif* season 1999. The properties of soil of experimental plot was clayey soil with 7.95 pH and 0.231 EC, $CaCO_3$- 5.7%, available N- 258.24, P- 15.38 and K- 344.53 kg/ha. Size of experimental plot was 10 R with four treatments and four replications. Two propagation methods were used, one was sucker (P_1) and another was tissue culture (P_2) with two spacing 1.5 x1.5 m (S_1) and 1.5 x 0.9 x 2.1 m (S_2).The fertilizers were applied @ 100:40:100gm of NPK/plant. Entire dose of P and K was applied as basal dose while N were applied in three split doses. The plant samples were collected at time of harvesting and dried at 70^0C temperature for analysis. The plant nitrogen was determined by Kjeldahl's methods (Jackson, 1973), phosphorus and potassium was estimated from di-acid extract by calorimetric method and flame photometrically, respectively (Jackson, 1973).

RESULTS AND DISCUSSION

The nutrient content at harvest stage in banana plant from different plots was determined separately and the total uptake of nutrients by the banana crop per hectare was calculated and presented in Table 1 and 2.

Uptake of nitrogen:

Nitrogen being the basic nutrient element of plant, the content in dry matter can be taken as an indicative parameter for nutrient uptake by plant. From the Table 1 it was observed that method of propagation had significant effect on uptake of nitrogen by banana plant at harvest stage. It was noticed that plants propagated by suckers removed more nitrogen (605.61kg/ha) compared with tissue culture propagated plants (567.88kg/ha).

Raghupathi *et al.* (1996) reported that the uptake of nutrient was higher for sucker grown plant compared with tissue culture plants due to greater dry matter accumulation. Effect of spacing on uptake of nitrogen was not reached to the level of significance. Interaction effect between method of propagation and spacing was non significant.