

EFFECT OF DIFFERENT LEVELS OF POTASSIUM AND ITS APPLICATION ON GROWTH AND YIELD OF TISSUE CULTURED BANANA cv. GRAND NAINA

C. R. PALWE, T. D. PATIL, B. B. DHAKARE

ABSTRACT

Banana is an important irrigated fruit crop grown in India contributing nearly 38 per cent of the total fruit production. An experiment was conducted during three consecutive years from 1997-98, 1998-99 and 1999-00 at Banana Research Station, MPKV, Jalgaon on medium black soil to standardize the optimum dose and time of application of potassium during vegetative and reproductive phase for in-vitro propagated Grand Naine banana (AAA). The experiment was laid out in Randomized Block Design in four replication with six different treatments viz. 200 g K₂O p⁻¹ (2+0 splits), 100+100 g K₂O p⁻¹ (2+2 splits), 200 g K₂O p⁻¹ (0+2 splits), 200+100 g K₂O p⁻¹ (2+2 splits), 100+200 g K₂O p⁻¹ (2+2 splits) and 200+200 g K₂O p⁻¹ (2+2 splits). The different levels of potassium were applied in two splits at planting and 165 days after planting in vegetative phase and two splits at 255 and 300 days after planting in reproductive phase. Considering three years pooled data, due to split application of potassium in both vegetative and reproductive phases, the growth and yield parameters of tissue cultured Grand Naine banana were significantly influenced. The treatment of 200+100 g K₂O p⁻¹ i.e. 200 g K₂O in two equal splits at planting and 165 days after transplanting during vegetative phase and 100 g K₂O p⁻¹ in two splits at 255 and 300 days after transplanting during reproductive phase was found superior for growth, crop duration, yield and yield contributing traits with highest B. C. ratio over other treatments. The treatment 200+100 g K₂O p⁻¹ recorded maximum plant height (213.94 cm), girth of pseudostem (68.72 cm), days to flowering (238.16), early maturity (338.02), bunch weight (19.77 kg) and yield (87.83 t/ha). Application of higher doses of potassium beyond 300 g K₂O p⁻¹ had no beneficial effects on growth and yield. The application of optimum dose of potassium in split doses during vegetative and reproductive phases results in beneficial effects on growth and yield of tissue-cultured banana. Banana requires high levels of nutrients for proper growth and production. It is estimated that a crop of fifty two tones in one hectare removes 320 kg of N, 32 kg of P₂O₅ and 925 kg K₂O every years (Lahav and Turner, 1983).

See end of article for authors' affiliations

Correspondence to :
T.D. PATIL
Department of Soil Science
and Agricultural Chemistry,
College of Agriculture,
DHULE (M.S.) INDIA

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India is the largest producer of banana contributing 33 per cent of the total production with 16.16 millions tones from an area of 4.82 lakh hectares with an average productivity of 33.50 tones per hectare (Singh and Chundawat, 2002).

Balanced nutrient management is the key to increased plant use efficiency and to achieve the required crop yield in an efficient, economical and sustainable manner. This may indicate that the need for the application of different nutrient at specific times, in a particular order to derive the maximum benefit from the application of a given quantity of nutrients. Banana being a gross feeder requires high amount of nutrients for proper growth

development and optimum production. Though there is a extensive information on banana nutrition for the crop raised from suckers, very little work has been done on nutrition of tissue cultured banana. Considering the importance of this crop, the experiment was conducted to find out the dose of optimum potassium and its time of application for tissue cultured banana cv. Grand Naine.

MATERIALS AND METHODS

The experiments were conducted at Banana Research Station, Mahatma Phule Krishi Vidyapeeth, Jalgaon during three consecutive years 1997-2000. The main objectives of this experiment were to find out the need of potassium during vegetative and reproductive phase and to standardize the optimum dose and time of potassium application. The experiment was laid out in