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Studies on sources of potassium on yield and post harvest soil characters of banana

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ABSTRACT

The experiment on assessment of sources and levels of K to improve the yield of banana cv. ROBUSTA resulted in increased bunch weight and its attributes such as number of hands, total number of fingers per bunch, finger length, finger circumference, finger weight and pulp:peel ratio by application of 150 per cent potassium as Sulphate of Potash. The soil pH and EC were found to be lowered at harvest wherever SOP was used as K source. Thus, the results clearly indicated the benefit of SOP in sustaining the soil quality in long run. Hence, it is recommended to integrate SOP in banana nutrition, by supplying recommended dose of K through SOP at 2, 4, 6 and 8 months after planting.

Key words : Banana, Bunch weight, Potassium, Sources, Sulphate of Potash, Soil pH, Soil electrical conductivity, Balance sheet.

Banana is considered as a potassium loving crop, as it requires high amount of K followed by N and P for proper growth and fruit production (Walmsley and Twyford, 1968 and Twyford and Walmsley, 1974). Thus, large quantity of nutrients has to be replenished in order to maintain soil fertility and sustain continuous production of higher yields. Besides, with the introduction of hitech horticultural practices for banana such as use of vigorous tissue culture derived plants, high density planting coupled with fertigation etc. accentuated banana researchers to fine tune the fertilizer schedule of banana. In tissue culture Robusta banana application of 150 per cent of recommended dose of K_2O *i.e.* 495 g per plant helped to get higher yield potentials (Nalina, 2002). But application of this higher dose may result in chloride accumulation in soils especially in sodic soils, when MOP is used as K source. These results in impairment of soils in long run, thus hindering the uptake of other nutrients, which ultimately reflect on yield of banana. This prompted to try alternate source of, Sulphate of Potash (SOP) *vis a vis* MOP on improving the yield of banana as well as soil quality.

MATERIALS AND METHODS

Initial soil analysis :

Before initiating the experiment, soil samples were collected and subjected for available potassium, pH and electrical conductivity and the contents were given below:

Available Potassium	: 423.52 (kg / ha)
pH	: 7.36
Electrical conductivity	: 0.19 (dSm^{-1})

The present investigation was undertaken with Ten treatments, T_1 = No potassium (Control), T_2 = 100% of RDK through MOP (3rd, 5th, and 7th months after planting), T_3 = 100% of RDK through SOP (3rd, 5th, and 7th months after planting), T_4 = 100% of RDK through MOP (3rd and 5th months after planting) + SOP (7th month after planting), T_5 = 100 of RDK through MOP (3rd month) + SOP (5th and 7th months after planting), T_6 = 150% of RDK through MOP (2nd, 4th, 6th and 8th months after planting), T_7 = 150% of RDK through SOP (2nd, 4th, 6th and 8th months after planting), T_8 = 50% of RDK through MOP (2nd and 4th months) + 50% of RDK through SOP (6th and 8th months after planting), T_9 = 75 % of RDK through SOP alone (3rd, 5th, and 7th months after planting), T_{10} = 50 % of RDK through SOP alone (3rd, 5th, and 7th months after planting)

Note :

– RDK- Recommended Dose of K_2O and hereafter it will be referred as RDK.

– The recommended K_2O adopted was 330 g per plant per year.

– Wherever 3 and 4 splits involved, RDK was applied in three and four equal split doses, respectively.

The observations on yield characters *viz*., bunch weight, number of hands, total number of fingers, finger length, finger circumference, finger weight and pulp: peel ratio were recorded. Soil samples were collected at the time of harvest. The samples were air dried in shade, ground with wooden mallet, passed through two mm sieve and used for following analysis. The pH of 1:2 soil and water suspension was determined using a pH meter model