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Effect of different sources and doses of sulphur on yield and juice quality of sugarcane under clay loam soil condition

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ABSTRACT

Field experiment was carried out at Research and Development Centre, E.I.D. Parry (India) Ltd., Pugalur during 2006-07 to study the different sources and levels of sulphur on growth and yield of sugarcane under clay loam soil condition. The treatment consisted of two sulphur source and four sulphur levels compared with current practice and absolute control. The results revealed that though the higher millable cane, single cane weight and cane yield was recorded with 200 kg S ha^{-1} (104 kg through N and P source and 96 kg through elemental sulphur), but it was at par with 200 and 175 kg S ha^{-1} (104 kg through N and P source and remaining through gypsum) and 175 and 150 kg S ha^{-1} (104 kg through N and P source and remaining through elemental sulphur). Application of sulphur increased the juice quality and sugar yield. However, it was at par among sulphur treatments and significantly higher over the absolute control.

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Key words : Sugarcane, Sulphur, Gypsum, Elemental sulphur, Clay loam soil

INTRODUCTION

Sulphur is an essential plant nutrient assuming large scale importance in crop production. Now it has been recognized as the fourth major nutrient besides NPK. Higher yields of sugarcane crop remove higher amounts of sulphur from the soil which necessitates replenishment. Due to intensive agriculture and use of high analysis sulphur free fertilizers, the sulphur level in the soil is in declining trend. The Pugalur Sugar Factory command area soil analytical results revealed that nearly 60 per cent of the soils are deficient in available sulphur. Rahman *et al.* (1992) observed that application of sulphur alone increased the cane yield by 16.20 per cent compared to control yield. Hence, it is necessary to evolve suitable source and optimize level of sulphur for sugarcane. Considering the above facts, the present study was carried out.

MATERIALS AND METHODS

The experiment was conducted at Research and Development Centre, E.I.D.- Parry (India) Ltd., Pugalur, Tamil Nadu during the main planting season of 2006-07. The soil was clay loam in texture, having the available N, P_2O_5 and K_2O of 267, 29 and 333 kg ha^{-1}, respectively. The sulphur level of the experimental site was 8.22 mg kg^{-1}, which was quite below the critical limit. The treatments include two sulphur sources *viz.*, gypsum and elemental sulphur and four sulphur levels *viz.*, 125, 150, 175 and 200 kg ha^{-1}. The recommended NPK schedule (275:150:150 kg N, P_2O_5 and K_2O ha^{-1}) was supplied through single super phosphate (SSP), ammonium phosphate sulphate (APS), urea and muriate of potash. The SSP and APS supplied 104 kg S ha^{-1} along with N and P nutrients to all the treatments except the absolute control. Hence, the remaining sulphur for each treatment (21, 46, 71 and 96 kg ha^{-1}) was applied through gypsum (T_1 to T_4) and elemental sulphur (T_5 to T_8), respectively at the time of planting. The current practice of sulphur application @ 104 kg ha^{-1} through normal N and P

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