

Effect of levels and sources of potassium on yield and nutrient uptake by Chilli (*Capsicum annuum* L.) in a vertisol

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ABSTRACT

In a field experiment conducted on Typic Chromustert at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad, the yield of chilli was significantly influenced by the levels and sources of potassium. The treatment that received 150 per cent RDK through SOP in 2 split doses recorded highest fruit yield (10.71 q ha⁻¹). The highest uptake of N (67.93 kg ha⁻¹), K (106.77 kg ha⁻¹) and S (15.30 kg ha⁻¹) were noticed with the application of potassium at the rate of 150 per cent RDK through sulphate of potash in 2 split doses.

Key words : Chilli, MOP, SOP, Photosynthates

Chilli (*Capsicum annuum* L.) is an important spice cum vegetable crop cultivated extensively in India. The productivity of crop greatly depends on its genetic potential and on certain external factors which include weather conditions and nutrient management practices. Among the nutrients, potassium plays a key role in plant metabolism such as photosynthesis, translocation of photosynthates, enzyme activation as well as water relations. The chief potassic fertilizers are muriate of potash (MOP) and sulphate of potash (SOP) of which MOP supplies 60 per cent K₂O and is extensively used K fertilizer in India, whereas SOP (50% K₂O and 18% sulphur) would meet sulphur requirement of the crop apart from supplying potassium. Hence, an investigation was undertaken to study the influence of different levels of potassium applied through MOP and SOP on yield and nutrient uptake by chilli.

MATERIALS AND METHODS

A field experiment was conducted on Typic Chromustert at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad during *kharif*, 2006-07 to study the effect of different levels and sources of potassium on yield and nutrient uptake in chilli. The soil of experimental field was clayey in texture with pH of 7.54 and EC of 0.39 dSm⁻¹. The organic carbon, available nitrogen, phosphorus, potassium and sulphur contents were 5.8 g kg⁻¹, 303.80, 22.00, 401.00 and 22.10 kg ha⁻¹, respectively.

The experiment was laid out in randomized block design in 3 replications with 10 treatments. Treatments include 3 levels of potassium (100%, 150% and 200%

RDK) applied through MOP and SOP and two additional treatments *viz.*, two per cent foliar spray of KCl and K₂SO₄. A uniform dose of N 100 kg ha⁻¹ and P₂O₅ 50 kg ha⁻¹ as well as 25 t ha⁻¹ of FYM were common to all the treatments. FYM and phosphatic fertilizers were applied as basal, while nitrogen was applied in two equal splits one as basal and the other at 45 DAT. Five week old chilli seedlings (cv. BYADGI DABBI) were transplanted in the field at 75 cm x 75 cm spacing with two seedlings per spot. Three plants were collected randomly from each treatment at final picking stage and analysed chemically for N, P, K and S contents and nutrient uptake was computed. N was estimated by Kjeldahl's digestion and distillation method, P by Vanadomolybdate method, K by Flame Photometer method and S by Turbidimetric method. The analysis of variance was worked out as per the procedure given by Gomez and Gomez (1984).

RESULTS AND DISCUSSION

The highest number of fruits per picking (36.74 plant⁻¹) was recorded in treatment (T₆) that received 150 per cent RDK through SOP in 2 split doses which was at par with potassium application at the rate of 100 per cent RDK and 200 per cent RDK through SOP in 2 split doses (T₄ and T₈), but it (T₆) was significantly superior over treatment (T₅) receiving 150 per cent RDK through MOP in 2 split doses (29.94 plant⁻¹). Application of potassium through SOP produced significantly higher number of fruits per plant per picking than MOP. The reason might be the hormonal balance brought about in plant system by sulphur available through SOP resulting in less flower drop and more fruit set (Ananthi *et al.*, 2004).