

Yield and quality of cotton (*Gossypium hirsutum* L.) as influenced by sulphur and micronutrients

N. MAMATHA, B.I. BIDARI, G.B. SHASHIDHARA AND H.T. CHANNAL

Accepted : April, 2009

See end of the article for authors' affiliations

Correspondence to :

B.I. BIDARI

Department of Soil
Science and Agricultural
Chemistry, University of
Agricultural Sciences,
DHARWAD
(KARNATAKA) INDIA

ABSTRACT

In a field experiment conducted on a Typic Chromustert at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad, the yield of cotton was significantly influenced by the different levels and combined application of sulphur, iron and zinc. The treatment that received combined application of sulphur, iron and zinc each at 50 kg per ha recorded the highest seed cotton yield (25.12 q/ha), higher ginning percentage (43.00%) and seed index (9.81 g).

Key words : Seed index, Ginning percentage, Micronutrients, Seed cotton yield

Cotton (*Gossypium hirsutum* L.) the queen of fibre is the leading fibre crop. The productivity of crop greatly depends on its genetic potential and on certain external factors which include weather condition and nutrient management practices. Among the nutrients, sulphur, iron and zinc play a key role in plant metabolism such as photosynthates, translocation of photosynthates, enzyme activation as well as water relations. Intensive cropping with high yielding varieties of cotton may result in the deficiency of secondary and micronutrients in the deep and medium black soils. Maintaining high yields through the use of high grade NPK fertilizers necessitates the use of secondary and micronutrients. The present investigation was, therefore, undertaken to find out the effect of sulphur, iron and zinc on yield and quality of cotton.

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 sulphur and micronutrients (zinc and iron) on yield and quality of hybrid cotton. Initial soil properties of experimental site are furnished in Table 1. The experiment was laid out in randomized block design with three replications and 9 treatment combinations. Treatments include 2 levels of sulphur, iron and zinc each at 25 and 50 kg/ha in the form of factomphos, FeSO_4 and ZnSO_4 and their combinations. FYM (10 tonnes/ha) and RDF were common for all the treatments. All the nutrients were applied as basal, except nitrogen which was applied in three equal splits one at

sowing and the remaining two doses at 60 and 120 DAS. Seeds of cotton (cv. RAHB-87) were dibbled in the field at 120 x 60 cm spacing with 2-3 seeds per spot. Only one plant per spot was retained after uprooting remaining

Table 1 : Physical and chemical properties of the soil of experimental area

Sr. No.	Properties	Value obtained
I. Physical property		
1.	Particle size analysis (Oven dry basis)	
	Coarse sand (%)	7.10
	Fine sand (%)	12.30
	Silt (%)	28.60
	Clay (%)	51.95
	Texture	Clay
2.	Bulk density (Mg. m^{-3})	1.21
II. Chemical properties		
1.	pH (1 : 2 soil water suspension)	7.80
2.	EC (dS/m) (1:2 soil water extract)	0.31
3.	Organic carbon (g/kg)	5.80
4.	CEC (cmol (p+)/kg)	49.80
5.	Available N (kg/ha)	315.00
6.	Available P (kg/ha)	22.00
7.	Available K (kg/ha)	390.00
8.	Available S (kg/ha)	22.50
DTPA extractable micronutrients (mg/kg)		
9.	Iron	3.10
10.	Zinc	0.55
11.	Manganese	2.40
12.	Copper	0.64