

Research Paper :

Yield attributes and yield of mustard (*Brassica juncea* L. Czern and Coss) as affected by sulphur levels

L.T. KAPUR, A.R. PATEL AND R.F. THAKOR

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ABSTRACT

A field experiment was conducted during *Rabi* season in year 2007-2008 on light textured soils of Regional Research Station, Sardarkrushinagar Dantiwada Agricultural University. Results of the experiment revealed that yield attributes like plant height, no. of primary and secondary branches plant⁻¹, no. of siliqua plant⁻¹, no. of seeds siliqua⁻¹ and test weight were recorded significantly higher with application of 60 kg S ha⁻¹ (S₄) but it was at par with the 45 kg S ha⁻¹ (S₃) and 30 kg S ha⁻¹ (S₂) levels in case of no. of primary and secondary branches plant⁻¹ as well as found at par with 45 kg S ha⁻¹ (S₃) for no. of siliqua plant⁻¹, no. of seeds siliqua⁻¹ and test weight. The significantly higher seed yield was recorded with the application of sulphur @ 60 kg ha⁻¹ (S₄) and higher straw yield was recorded with S fertilization @ 45 kg ha⁻¹ (S₃) which was at par with 60 kg S ha⁻¹ (S₄) and 30 kg S ha⁻¹ (S₂) levels. The per cent increase in seed yield under S₄, S₃, S₂ and S₁ was 45.03, 44.92, 41.10 and 23.08 over control.

See end of the article for authors' affiliations

Correspondence to :

L.T. KAPUR

Krishi Vigyan Kendra,
Ambheti, VALSAD
(GUJARAT) INDIA

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Mustard (*Brassica juncea* L. Czern and Coss) is the second most important edible oil seed crop. Mustard oil is used as cooking oil and also condiments, medicine and industrial purposes. In Gujarat mustard is mostly cultivated under irrigated condition on sandy loam to sandy soils in Northern to Central parts of the state as well as on medium black soils of Saurashtra. However, in Banaskantha district, mustard is grown in an estimated area of 1.594 lakh ha. with the total production of 1.933 lakh tone and 1213 kg ha⁻¹ of productivity. (Margadarshika, 2002).

The main causes for low production are large acreage under marginal land, which is deficient in major nutrients and imbalanced nutrient management. It has been establishing that there is a positive correlation between fertilizer use and crop production. On an average, crop absorbs as much sulphur as phosphorus. Sulphur can be rightly called as the 'fourth major elements' in plant nutrition after nitrogen, phosphorous and potash (Goswami, 1986). Tandon (1991) reported that in India sulphur deficiencies occur in scattered manner in about 180 districts and yield response of oil seed crop to sulphur application under field condition. Widespread S deficiency is prevailing ranging from 15 to 56 per cent (Average 37 per cent) in different types of soils of Gujarat (Meisheri and Patel, 1996). When a soil is deficient in sulphur and this deficiency is not rectified, then the full yield potential of a crop cannot be realized regardless of other nutrients applied, adoption of improved crop varieties or top class

crop husbandry practices.

Therefore, present investigation was planned to study the effect of different levels of sulphur on yield attributes and yield of mustard.

MATERIALS AND METHODS

The field experiment was conducted at the Regional Research Station, Sardarkrushinagar Dantiwada Agricultural University (formerly Gujarat Agricultural University), Sardarkrushinagar in *Rabi* season during 2007-2008. Mustard variety "Gujarat Mustard-1 (GM-1)" was grown in Loamy sand soil with pH 7.8. The experiment was conducted with randomized block design with four replications. Treatments included five levels of sulphur *i.e.* 0 kg S ha⁻¹ (S₀)-Control, 15 kg S ha⁻¹ (S₁), 30 kg S ha⁻¹ (S₂), 45 kg S ha⁻¹ (S₃) and 60 kg S ha⁻¹ (S₄). The gross plot size was 4.5 x 5.1 m. The values of available nitrogen, phosphorus, potash and sulphur were 202, 25.34, 268 kg ha⁻¹ and 9.70 ppm, respectively. The crop was fertilized with recommended dose of 50 kg N and 50 kg P₂O₅ ha⁻¹. Half dose of N and full dose of P₂O₅ were applied as basal application through urea and DAP and remaining 25 kg N ha⁻¹ was applied as top dressing at 25-30 days after sowing. Sulphur was applied in soil through gypsum as per treatment. The crop was sown at a row to row distance of 45 cm using a seed rate 3.0 kg ha⁻¹. Interculturing, thinning and weeding were carried out as and when required. Observations on yield attributes and yield of mustard were recorded.