

## Effect of sources and levels of sulphur fertilizers on bulb yield of onion (*Allium cepa* L.)

M.S. DUDHAT, P.K. CHOVIATIA, B.T. SHETA AND N.M. THESIYA

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### SUMMARY

An experiment was conducted to study the effect of sources and levels of sulphur fertilizers on bulb yield of onion during the *Rabi* season of the years 2003-04 to 2005-06. There were significant effects of sulphur sources on bulb yield. Significantly the highest bulb yield of 320.98, 415.63 and 383.21 q ha<sup>-1</sup> were recorded with the use of element sulphur during 2004-05, 2005-06 and in pooled result, respectively. Whereas, various levels of sulphur could not exert any significant effect on the bulb yield during individual years as well as in pooled results. Among various sources, the maximum net returns of 35676 Rs.ha<sup>-1</sup> and benefit cost ratio of 0.87 were recorded by elemental sulphur and among various levels, the maximum net returns of 31107 Rs.ha<sup>-1</sup> was secured by the application of sulphur @ 60 kg ha<sup>-1</sup>. Whereas, net BCR for all the levels of sulphur was equal.

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Onion is an allogamous vegetable crop of global importance. It is popularly used both in immature and mature bulb stage as a vegetable and spices. It is grown mainly as a *Rabi* season crop. In recent times, the deficiency of sulphur is increasing in Indian soils as a result of indiscriminate use of phosphorus and potassium fertilizers (Tandon, 1995). Sulphur is an essential nutrient for growth and development of onion plant and bulb. Sulphur being a secondary nutrient is essential for the formation of protein and other biologically important compounds (Lakkineni and Abrol, 1994). Apart from this, it is a component of several enzymes such as nitrogenase and nitrate reductase. Several reports are also available on the increased yield of crop plants by the application of sulphur containing fertilizers but there is hardly any literature on sulphur nutrition of onion particularly for Saurashtra region of Gujarat state. Hence, present

experiment was under taken to study the effects of sources and levels of sulphur fertilizers on onion bulb yield in *Rabi* season.

### MATERIALS AND METHODS

A field experiment was conducted during the *Rabi* season of the years 2003-04, 2004-05 and 2005-06 at Vegetable Research Station, Junagadh Agricultural University, Junagadh. Soil of the experimental area was medium black in texture, low in available nitrogen, high in available phosphorus, medium in available potash and low in available sulphur with the pH of 8.20. The treatments comprised of twelve treatment combinations of four different sources (mineral gypsum, elemental sulphur, ammonium sulphate and phospho gypsum) and three levels of sulphur (20, 40 and 60 kg S ha<sup>-1</sup>) were tested in factorial Randomized Block Design with three replications. The common full dose of phosphorus, potash and half dose of nitrogen was applied as basal dose, while remain half dose of nitrogen was applied as top dose at 30 days after transplanting in each experimental year. The sources of nitrogen, phosphorus and potash were urea, diammonium phosphate and murate of potash, respectively. The different sources of sulphur as per treatments were applied at the time of transplanting in each experimental year. The elemental sulphur was applied before 20-25 days of transplanting in each experimental year. The seedlings were transplanted at 15 cm x 10 cm spacing on December 5, 2003, December 5, 2004 and December 7, 2005 during

#### Correspondence to:

M.S. DUDHAT, Department of Soil and Water Engineering, College of Agricultural Engineering and Technology, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA  
Email : musdudhat@jau.in

#### Authors' affiliations:

P.K. CHOVIATIA, B.T. SHETA AND THESIYA, Department of Agronomy, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA

B.T. SHETA, D.W.R.S., ANAND (GUJARAT) INDIA

THESIYA, W.T.O. Cell, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA