



## Research Article

# Sulphur and boron influences soil quality indicators in a typical entisol

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### Summary

Identifying constraints in terms of physical chemical and biological indicators of soil quality is a major challenge in sustainable management of problem soils. Onattukara sandy soil is delineated as a problem soil in the soil map of Kerala. Crop production in this type of soil is beset with constraints in terms of poor water and nutrient holding capacity, scarce supply of essential nutrients, low organic matter content and the poor biological activity. The present paper attempts to outline the impacts by the application of S and B as gypsum and borax in improving the quality indicators of this soil and also to improve the productivity of sesame, the choice crop in such a soil type. Two field experiments were carried out with four levels each of S and B having a total of sixteen treatment combinations. Application of these nutrients resulted in the general improvement of soil quality in terms of the enhanced organic matter status and dehydrogenase activity. It also resulted in improving the availability of P, K, Mg, S, B, Fe, Mn and Zn. The productivity of sesame was also found to be positively correlated with the different levels of S and B. Maximum economic benefit from this crop in this type of soil could be gained by the application of S@30 kg ha<sup>-1</sup> and B @ 2.5 kg ha<sup>-1</sup>.

**Key words :** Problem soil, Synergism, Sulphur, Boron

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## Introduction

Sulphur and boron are the two essential nutrients having well defined roles to play in the production phenology of oil seed crops. These nutrients often act synergistically in improving the soil characteristics as well as the yield and yield attributing characters of the crop. Synergistic interaction between these two nutrients in enhancing soil and plant health was reported by Das (2007). Sahrawat *et al.* (2008) reported widespread deficiency of S and B in the semi arid regions of India. The present paper focuses the impact of S and B on soil quality indicators in a typical entisol of Kerala with sesame as the test crop.

## Resources and Research Methods

### Experiment site :

Field investigations were carried out in a typical sandy

soil of Onattukara which is designated as a problem soil in the soil map of Kerala and hence, requires specific management practices for sustained crop production. The soil belongs to Oxyaquic Quartzi Psamment subgroup occupying a total area of 28 000 ha and are characterized by low nutrient status, acidic pH and low base saturation. Considering these constraints, the cropping sequence paddy – paddy – sesame is practiced in the area.

### Treatments :

Four levels of S and B were applied in different combinations with gypsum and borax as the respective sources. The levels of S tried were 0, 7.5, 15 and 30 kg B ha<sup>-1</sup> and that of B were 0, 2.5, 5.0 and 7.5 kg B ha<sup>-1</sup>. Other nutrients like N, P and K were supplied through urea, bone meal and muriate of potash, respectively. Organic matter was supplied in the form of farmyard manure @ 5 t ha<sup>-1</sup>. Fertilizers and organic