

Zinc Fertilization Needs of Intensively Cultivated Regions of Andhra Pradesh, South India

T. Nagendra Rao, M.N.VA. Uma Mahesh, S. Kumar Yadav, H. Rahman, B. Singh Sekhawat

Nagarjuna Fertilisers and Chemicals Ltd., Nagarjuna Hills, Punjagutta, HYDERABAD – 500082, A.P., India (TNagendraRao@nagarjunagroup.com)

INTRODUCTION

Zinc has been identified as the most critical micronutrient in the soils of agriculturally important regions of India. The situation has been alarming particularly in the southern state of Andhra Pradesh as soil tests are indicating that Zn levels are below critical limits in many districts of the state. Multi-location field studies were conducted in three regions of Andhra Pradesh for rice, maize, cotton *etc.*, during 2008-09 to establish Zn requirements and the impact of added Zn on yield and nutrient uptake. In those studies, Zn additions along with NPK fertilization treatments according to crop and site specifications were compared with no Zn added treatments.

METHODS

Nutrient-omission plot trials were organized in selective farmer's fields of selected districts of the southern state of Andhra Pradesh where rice, maize and cotton are grown extensively. In one set of plots N, P, K and Zn were applied based on local nutrient recommendations as per standard methods of application and in another set of plots, Zn was excluded. Yields (grain) were recorded towards the end of crop growth stages for rice and maize whereas the kapas (seed and lint) was recorded for cotton, at designated intervals after boll opening. Soil samples were collected at the beginning and plant samples were collected and analyzed for documenting uptake of NPK and Zn.

RESULTS AND DISCUSSION

Results indicated improved crop yields across all locations with inclusion of Zn. Increased uptake of major nutrients particularly N and K was observed. The need for regular Zn fertilization in intensive agricultural production systems of Andhra Pradesh has been established through these studies. In view of fertilizer best management practices, various issues related to current Zn fertilization practices have been highlighted in this paper.

CONCLUSIONS

As soil Zn concentrations were below the critical limit in most parts of the region, Zn application becomes essential to improve crop productivity and uptake of major nutrients. Application of Zn up to 10 kg ha⁻¹ was found beneficial for rice, maize and cotton across regions.