



Research Article

Soil test based fertilizer recommendation and verification for maize grown in mid hills of Meghalaya

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Summary

A maize experiment on soil test crop response (STCR) correlation studies was conducted in mid hills of Meghalaya during *Kharif* season of 2005. Multiple regressions equations have been calibrated for predicting maize yield through soil and fertilizer nutrients. Using the basic fertilizer response data, crop nutrient requirement per quintal of grain production, efficiency of soil available nutrients and efficiency of fertilizer nutrients were worked out. The nutrient requirement (kg q⁻¹) of N, P₂O₅ and K₂O were found to be 6.97, 1.42 and 1.04, respectively for producing one quintal of maize yield in Meghalaya. The nutrient requirement (kg q⁻¹) of N, P₂O₅ and K₂O were found to be 4.06, 1.60 and 2.15, respectively for producing one quintal of rice yield in Meghalaya. The fertilizer adjustment equations and a ready reckoner of optimum fertilizer doses at varying soil test values for attaining yield target of 40 and 50 qha⁻¹ of maize yield have been calibrated based on the targeted yield concept. Using these fertilizer equations, four field experiments with maize were conducted during *Kharif* 2006 at different locations in farmers' fields. The experiments indicated that it is possible to target the maize yield up to 45 q ha⁻¹. The targeted yield equations and the fertilizer ready reckoner developed for maize grown in Meghalaya are useful for large scale recommendation by the soil testing laboratories of Meghalaya. along with fertilizer adjustment equations.

Key words : Maize, Fertilizer equation, Fertilizer recommendations, Targeted yield

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Introduction

Maize is the second major cereal crop grown in the NEH Region. Maize plant thrives well in a soil having neutral soil reaction and sandy to silty clay loam in texture. Most of the soils of NEH Region are acidic and light in texture. The productivity of maize crop and per capita availability of maize in North Eastern Region of India is quite low. Average yield of maize in Meghalaya is around 1 t ha⁻¹. The production potential of the crop in Meghalaya is much higher than the average production of the crop. Out of several reasons cited for its low productivity, the imbalanced nutrition of N, P and K is the most limiting one. Generally farmers of Meghalaya avoid applying fertilizers and this is the reason very low fertilizer use efficiency has been accounted. Maize is a heavy feeder of nutrients and response of added fertilizer is very common.

The balanced nutrition of NPK assumes greater significance in maize crop to increase use efficiency of NPK and to enhance productivity. Fertilizer recommendations, at present, are usually given for different crops by taking consideration only the available nutrient status of the soil prior to raising a crop, the soil being categorized as low, medium and high fertility classes. These are generalized recommendations and do not take into account the large-scale variations from field to field. An attempt has been made in this paper to summarize the basic information obtained from prescription-based fertilizer recommendation for maize crop.

Resources and Research Methods

A field experiment based on STCR methodology on maize with the variety 'RCM 1-1' was conducted at ICAR Research