

Research Article

Soil test based fertilizer requirement for specific yield targets of summer pearl millet in *Vertic Ustocrepts*

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Received : 22.08.2012; Revised : 24.09.2012; Accepted : 29.10.2012

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Summary

A field experiment was conducted on pearl millet var. GHB-526 in medium black calcareous soils (*Vertic Ustocrepts*) using fertility gradient approach and fertilizer prescription equation were calculated. The results of follow up trials conducted at different location showed that the economics of fertilizer use based on soil test for achieving maximum yield indicated an additional benefit over general recommended dose at tested grain yield targets of 24, 30 and 36 q ha⁻¹. The income/cost ratios of the additional produce obtained over recommended dose were 16.79, 4.21 and 3.34 for pearl millet grain yield at targets of 24, 30 and 36 q ha⁻¹, respectively.

Key words : Nitrogen, Potassium, Pearl millet, Yield, Yield target

How to cite this article : Sakarvadia, H.L., Golakiya, B.A., Parmar, K.B., Polara, K.B. and Jetpara, P.I. (2012). Soil test based fertilizer requirement for specific yield targets of summer pearl millet in *Vertic Ustocrepts*. *Asian J. Soil Sci.*, 7(2): 285-287.

Introduction

With increase in the cost of fertilizer, it is imperative to reduce the quantity of fertilizer and increase their efficiency by way of getting higher yields per unit production. Yield potentiality of pearl millet vary with variety, soil type, nutrient status, seasons and agronomical properties. In this context, targeted yield approach (Ramamoorthy *et al.*, 1967) provided a basis for such approach which takes into account of available nutrient in the soils and crops needs. In the present philosophy of targeted yield approach, it is now possible to make fertilizer recommendation to the farmers considering their financial conditions and for the targeted yield of a crop. Pearl millet is the fourth most important food grain cereal crop in India. India is the largest producer of pearl millet in the world which occupies an area of 95.96 lakh ha and production of 77.02 lakh tones with productivity of 803 kg ha⁻¹ (Singhal, 2003). No information is available on soil test crop response on pearl millet particularly in medium black calcareous soils of Saurashtra region (Gujarat) and hence, the present investigation was conducted.

Resources and Research Methods

A field experiment was conducted on medium black calcareous soils, Instructional Farm, College of Agriculture, J.A.U., Junagadh during summer season using fertility gradient approach (Ramamoorthy *et al.*, 1967). A field was divided into three equal strips and three fertility gradients were prepared artificial by applying graded level of N and K. So as to get large variation in one and the same field to evaluate the real relationship between yields of a crop was grown to stabilize the nutrients levels. After harvest of exhaust crop, each strip with fertility gradient were divided into 20 equal plots and pearl millet as test crop was sown, with 20 treatment combinations of five levels each of N (0, 40, 80, 120 and 160 kg ha⁻¹), four levels each of K (0, 40, 80 and 120 kg ha⁻¹). Full dose of K and half dose of N were applied at the time of sowing while remaining dose of N was applied as per treatment at 30 days after sowing. The fertilizer materials used were urea and murate of potash. The initial soils samples were drawn from 0-20 cm depth from each plot before application of fertilizer and analyzed