ABSTRACT

Soil Test Crop Response Studies On CowPea (Vigna Ungiculata (L). Walp) in Mollisol of Uttarakhand

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A field experiment was conducted during spring 2009-2010 in a Aquic Hapludoll at Norman E. Borlaugue Crop Research Centre of the G.B. Pant University of Agriculture and Technology, Pantnagar (29^0 N latitude and 79^0 29' E longitude), as per technical programme of All India Coordinated Research Project on Soil Test Crop Response Correlation. The experiment was conducted in two phases. In the first phase soil fertility gradient was created by dividing experiment field into three strips and applying graded doses of fertilizers in them (Strip I (no fertilizer), Strip II (100, 100 and 100 kg N, P_2O_5 and K_2O/ha) and strip III (200, 200 and 200 kg N, P_2O_5 and K_2O/ha) and growing of exhaust crop oat (*var* Kent). In the second phase *i.e.* next season test crop Cowpea (*var.* Pant Lobia-1) was grown by dividing each strip in twenty four plots having twenty three fertilizer treatments and one control plot. Response to selected combinations if three levels of FYM (0, 5 and 10 t/ha), four levels of nitrogen (0, 15, 30 and 45 kg N/ha), four levels of phosphorus (0, 30, 60 and 90 kg/ha) and four levels of potassium (0, 30, 60 and 90 kg/ha) at different fertility levels of Cowpea was studied. The values of the organic carbon, Alkaline $KMnO_4$ extractable N, Olsen's P and neutral Ammonium Acetate extractable potassium in the experimental field ranged between 0.72-1.16 per cent, 112.30-200.60 kg/ha, 13.00-24.24 kg/ha and 101.90-245.30 kg/ha, respectively. In the present investigation the total straw yield ranged from 13.07-24.94 q/ha and total grain yield ranged from 9.00-18.20 q/ha. The nutrient requirement for production of one quintal of cowpea grain was found to be 5.71 kg of nitrogen, 0.90 kg of phosphorus and 3.72 kg of potassium. Percent contribution of nitrogen, phosphorus and potassium was 62.00, 59.00 and 32.00, from soil, whereas from other sources as FYM was 7.00, 29.00, 10.00; chemical fertilizer 30.00, 14.00 and 30.00 and conjoint use of chemical fertilizer with FYM was 30.00, 17.00 and 27.00 in terms of NPK respectively. With the help of these data fertilizer recommendation at different yield targets and soil test value can be calculated. Coefficient of quadratic multiple regression (R^2) was found highly significant (0.898**) between grain yield, soil test values, added fertilizers and FYM. Organic carbon, alkaline $KMnO_4$-N, Olsen's P and AB-DTPA P and Ammonium acetate K and AB-DTPA K methods of available N, P and K, respectively were at par for the cowpea grown in Mollisol of Uttarakhand. Findings from present study can successfully be utilized for the larger parts of Tarai region of Uttarakhand as effective guide for efficient and balanced fertilizer recommendations.

Recent Publications:

Kumar, D.E. and Singh, N.B. 2001. Cowpea Agronomy In: Cowpea in India. Scientific Publishers (India): Published on behalf of Indian Arid legumes society. C.E.R.A pp. 136-167.

Taura, D.W. and Fatima, M.S. 2008. Effects of organic and inorganic fertilizers on the vegetative and reproductive parts of some selected varieties of cowpea (Vigna ungiculata (L). Walp. African Journal of General Agriculture 4(2) 79-86.

Reddy, K.C.; P. Visser. 2010. Pearl Millet and Cowpea yields in sole and intercrop system and their after-effects on soil and crop productivity. Field Crops Research 28: 315-326.

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Biography:

Varun Tripathi, the author of this abstract was born on 27 the june 1987. at Pithorgarh (Uttarakhand) India. He passed High School examination in 2003 and Intermediate examination in 2005 from Army public School Ranikhet (Uttarakhand) India. He completed his graduation from Government P.G. College Ranikhet, in 2009. He completed his post graduation from G.B.P.U.A&T Pantnagar in July 2009. Currently he is pursuing his Phd from G.B.P.U.A&T Pantnagar.

Notes/comments: