"STUDIES ON PLANTING METHOD AND NUTRITIONAL MANAGEMENT IN KHARIF URDBEAN (Vigna mungo L. HEPPER) AND THEIR EFFECT ON PRODUCTIVITY POTENTIAL OF SUCCEEDING WHEAT (Triticum aestivum L.) IN VERTISOLS OF CHHATTISGARH PLAINS"

By

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ABSTRACT

The experiment on urdbean based wheat cropping systems were conducted during kharif and rabi seasons of 2002-03 and 2003-04 at Instructional Farm, IGAU, Raipur (C.G.). The basic objective was to find out suitable planting method and optimum nutritional requirement of kharif urdbean in Vertisols and simultaneously to study their residual effect on succeeding wheat crop.

In experiment on urdbean-wheat cropping system, the treatments in kharif urdbean consisted of three planting method i.e., ridge, paired and flat planting and four nutrient management viz., 100% RDF, 75% RDF, 50% RDF and Rhizobium inoculation, whereas, in wheat crop, the treatments consisted of residuals of kharif treatments and two doses of directly applied nutrients i.e. 100% RDF and 75% RDF. In both the crop, the design selected was randomized block design (factorial) with three replications. The soil of the experimental site was Vertisols.

The results of experiment on planting methods and nutrients levels in kharif urdbean revealed that the ridge planting method showed slightly higher plant height, number of branches, dry matter accumulation, root dry weight, number and dry weight of nodules, LAi, LAD, CGR and RGR and yield attributes like pods plant⁻¹, seeds pod⁻¹, length of
pods, seed and stover yield and HI of urdbean over paired and flat planting methods. But most of the parameters including seed yield were non significant due to planting methods. Application of 100% RDF recorded significantly higher growth parameters, yield attributes and yield of urdbean over other nutrient management treatments, though for most of the characters use of 75% RDF was also found comparable.

Similarly in wheat crop, the residual effect of 100% RDF with all the methods of planting proved best in terms of growth, yield attributes and yield of wheat crop. The next best performing treatment combination was 75% RDF with different methods of planting. Growth parameters like plant height, tillers plant\(^{-1}\), LAI, LAD, CGR, RGR, dry matter accumulation and yield attributes like, weight of ears, grains ear\(^{-1}\), number of ears, 1000-grain weight, HI and grain and straw yield was found higher under 100% RDF applied directly to wheat crop as compared to 75% RDF.

The results of urdbean-wheat cropping system revealed that the highest total productivity and net income was found under ridge method of planting + 100% RDF followed by flat + 100% RDF and paired + 100% RDF. As regards to directly applied nutrient, the highest total productivity and net income was found under 100% RDF applied to wheat. The depletion of N, P and K was minimum under higher level of fertilizer dose in \textit{kharif} as well as in \textit{rabi} too.

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