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Response of black gram genotypes to different fertilizer levels during summer season

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ABSTRACT : A field experiment was conducted during summer 2010 at PG research farm of Agronomy Department, MKV, Parbhani (M.S.) to study the response of black gram genotypes to different fertilizer levels during summer season. The experiment was conducted in split plot design with two genotypes *viz*., BDU-1 and TAU-1 in main plot and four levels of fertilizer *viz*., F_1 – 100 per cent RDF – (25 kg N, 50 kg P_2O_5 ha^{-1}), F_2 –75 per cent RDF – (18.75 kg N, 37.50 kg, P_2O_5 ha^{-1}) + 2 per cent DAP foliar spray at flowering stage, F_3 – 100 per cent RDF – (25 kg N, 50 kg P_2O_5 ha^{-1}) + 2 per cent DAP foliar spray at flowering stage and F_4 – 125 per cent RDF – (31.25 kg N, 62.50 kg P_2O_5 ha^{-1}) + 2 per cent DAP foliar spray at flowering stage in sub plot with eight treatment combinations and three replications. Based on present investigation it can be concluded that application of 25 kg N, 50 kg P_2O_5 and 2 per cent DAP foliar spray at flowering stage (F_3) was found optimum for achieving higher yield in respect of summer black gram. Performance of black gram genotype BDU-1 during summer season was found highly productive as compared to TAU-1.

Key Words : Black gram, Genotypes, Fertilizer levels, Summer

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Black gram (*Vigna mungo* L.) being legume crop responds well to phosphorus application. Phosphorus is the major essential nutrient required by the crop. In legumes, nitrogen requirement is less as compared to phosphorus because major protein is supplied through nitrogen fixation. Therefore, phosphorus is a key nutrient for increasing productivity of pulses in general and black gram in particular. Legumes as such have a relatively high phosphorus requirement being utilized by plant and bacteria. The crop also responds to foliar application of DAP.

The productivity of black gram in Maharashtra is very low (299 kg ha^{-1}). The probable reason for this may be the negligence in adopting the recommended package of practices by the farmers coupled with its low yielding ability. Secondly, the harvesting of black gram during *Kharif* mostly coincides with September rainfall, which ultimately results into low yield and poor quality of seed. Thus, supply of quality seed to the farmer is arising as a big constrained in low productivity of black gram.

Therefore, to overcome such problem, cultivation of black gram during summer season can be one of the best alternatives for enhancing the productivity and improving the seed quality. Taking into consideration the above fact, the present investigation was undertaken to identify the suitable genotypes of black gram for cultivation during summer season and their response to different fertilizer levels.

RESEARCH PROCEDURE

The experiment was conducted during summer 2010 at PG research farm of Agronomy Department, Marathwada Krishi Vidyapeeth, Parbhani (MS) on clay loam soil. The soil had pH 7.7, organic carbon 0.26 per cent and available phosphorus 15.6 kg ha^{-1}. The available N and K contents were 212 kg ha^{-1} and 578 kg ha^{-1}, respectively. On the basis of N, P and K status, the soil could be classified low in N, medium in P and high in K. The experiment was laid out in Split Plot Design wherein the main plots were assigned to two genotypes *viz*. BDU-1 and TAU-1 whereas sub plots were allotted to four levels of fertilizer *viz*., F_1 – 100 per cent RDF – (25 kg N, 50 kg P_2O_5 ha^{-1}), F_2 –75 % RDF – (18.75 kg N, 37.50 kg, P_2O_5 ha^{-1}) + 2 per cent DAP foliar spray at flowering stage, F_3 – 100 per cent RDF – (25 kg N, 50 kg P_2O_5 ha^{-1}) + 2 per cent DAP foliar spray at flowering stage and F_4 – 125 per cent RDF – (31.25 kg N,