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Studies on physio-chemical properties of soil under nutritional requirement studies in soybean

D.K. PALVE, S.R. OZA, J.D. JADHAV AND P.L. GHULE

SUMMARY

A field investigation entitled studies on physio-chemical properties of soil under nutritional requirement studies in soybean was conducted during *Kharif* season 2009-10 at AICRP for Dryland Agriculture, M.A.U., Parbhnai. The experiment was laid out in Randomized Block Design (RBD) with three replications. There were eight treatments *viz.*, T_1 -75 per cent RDF without FYM, T_2 -75 per cent RDF with FYM @ 5 t/ha, T_3 -100 per cent RDF without FYM, T_4 -100 per cent RDF with FYM @ 5 t/ha, T_5 -125 per cent RDF without FYM, T_6 -125 per cent RDF with FYM @ 5 t/ha, T_7 -FYM @ 10 t/ha and T_8 - Absolute control. The grain yield and straw yield were significantly more in treatments T_4 (100% RDF + 5 t FYM/ha). Based on the results it can be concluded the treatment T_4 (100% RDF + 5 t FYM/ha) was found beneficial in improving growth, yield attributes, yield of soybean as compared to other treatments, Treatment T_4 (100 % RDF + 5 t FYM/ha) also recorded double yield than absolute control and the physio- chemcial properties were improved with FYM application.

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The soybean oil is recommended in stomach disease and diabetes. It is also used as raw material in production of drying oil and soups. Soybean is a legume crop, it fixes atmospheric nitrogen. It sheds about 32 to 35 per cent of crop residue at the time of harvest, which helps in increasing the soil fertility and soil physical condition. Hence, soybean crop also called as miracle crop.

Fertilizer play an important role in crop production. A substantial increase in production can be obtained by use of fertilizers. However, due to high cost of fertilizers only a few farmers can afford to apply chemical fertilizers as per recommended doses. It was earlier stated that application of 50 kg N and 75 kg P_2O_5 along with 10 tonnes FYM gave significantly more yield of soybean (Khelekar *et al.*, 1991).

At present FYM which is organic source helps in increasing the yield of crop. So the different nutrient combination helps in increasing yield as well as soil physical condition. Nutrient are second most important limiting factor of crop production after water. Most of the soil in the rainfed regions are not only thirsty but also hungry. The nutrient demand of crop should be met from application of recommended dose of fertilizer as well as FYM application. They helps in increasing yield as well as increasing physico-chemical properties of soil, with this view in mind the present investigation was studied.

EXPERIMENTAL METHODS

A field experiment was conducted during *Kharif* season 2009-10 at AICRP for Dryland Agriculture, Marathwada Agriculture University, Parbhani. Before sowing of experiment three soil samples in each replication were drawn from 0-30 cm soil depth from experimental area and finally one representative sample was prepared for finding out physico-chemical properties of soil. The data obtained from soil analysis are presented in Table A.

In mechanical analysis of soil, solids, (sands, silt, clay) were estimated by international pipette method (Piper, 1966). In chemical analysis total nitrogen was estimated by kjeldhals method. Soil was also analyzed for available

Address of the corresponding author :

J.D. JAGHAV, Zonal Agricultural Research Station, Krishi Bhawan, SOLAPUR (M.S.) INDIA Email : slp.aircrpam@gmail.com, agmetsolapur@rediffmail.com

Address of the co-authors : D.K. PALVE, S.R. OZA AND P.L. GHULE, Marathwada Agricultural University, PARBHANI (M.S.) INDIA