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Nutrient uptake and physico-chemical properties of soil as influenced by Bt cotton (*Gossypium hirsutum* L.) based cropping systems under different spacings

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ABSTRACT : A field experiment was conducted on loamy sand soils of Agronomy Instructional Farm, C.P. College of Agriculture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar during the years 2012-13 and 2013-14 to study the cropping systems and spacing on performance of Bt cotton. The soil of the experimental plot was low in organic carbon and available nitrogen, medium in available phosphorus and potash. The experiment was laid out in Split Plot Design with four replications. Twelve treatment combinations comprised of three spacing treatments viz., 120 x 45 cm, 150 x 45 cm, 180 x 45 cm were taken in the main plots and four cropping system treatments viz., sole Bt cotton, Bt cotton + greengram -*Rabi* castor, Bt cotton + cowpea -*Rabi* castor and Bt cotton + sesamum -*Rabi* castor in the sub-plots. Spacing of 120 x 45 cm found significantly superior by recording higher seed cotton yield. Seed cotton yield was also higher under sole Bt cotton as compared to other cropping systems. Closer spacing of 120 x 45 cm proved its superiority by recording higher total nitrogen, phosphorus and potash uptake. Bt cotton + cowpea-*Rabi* castor cropping system was found significantly superior and recorded higher available nitrogen and available potassium, organic carbon and bulk density at end of cropping system. The cropping system Bt cotton + sesamum – *Rabi* castor proved its superiority by recording significantly higher available phosphorus at the end of the cropping system. Cropping system Bt cotton + cowpea – *Rabi* castor was found significantly superior by recording higher total nitrogen, phosphorus and potash uptake. Treatment combination S₁C₂ (120 x 45 cm spacing + Bt cotton + greengram-*Rabi* castor) obtained significantly higher P uptake.

KEY WORDS : Nutrient uptake, Cropping systems, Spacing physico-chemical properties, Yield

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