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Evaluation of CropSyst model for yield and water productivity of *Bt* cotton

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ABSTRACT : India is the only country where all the four cultivated species of cotton are grown however, its water and fertilizer use efficiency and yield is below its potential. To introduce improved production methods, knowledge is required on how the agro-ecosystem would respond to these alternatives. For this assessment, dynamic simulation models such as the crop soil simulation model CropSyst are useful tools. Keeping this view, the study "Evaluation of CropSyst model for yield and water productivity of Bt cotton" was conducted on farmers field during *kharif* 2012 at village Menawali in Hanumangarh district of Rajasthan. The soils of the area are alluvial and calcareous in nature formed under arid and semi arid climate. The soils of site are brown to greyish brown and dark grey in colour, besides being calcareous and slightly alkaline in reaction having 71.04, 10.5 and 18.4 % of sand, clay and silt, respectively in 0-100 cm soil depth with pH 7.9 and low soil organic matter content. The simulate yield of cotton were closer to the observed seed cotton yield. Simulations of early cotton aboveground biomass development matched the field data reasonably well. Final aboveground biomass, however, was overestimated by the model. The total water applied in cotton was 727 mm out of this 559 mm consumed in ET. Thus, ET constituted 77% of total water applied and deep drainage constituted 20% and rest 3% stored as residual soil moisture.

Key Words : CropSyst Model, Bt cotton, yield, water productivity.