

RESPONSE OF PRECISION APPLICATION OF WATER AND FERTILIZER ON PRODUCTIVITY AND ECONOMICS OF BT COTTON

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Abstract: A field experiment was conducted during the *kharif* season of 2013-14 and 2014-15 at Agricultural Research Station (MPUAT), Banswara, Rajasthan to find out the response of precision application water and nutrient through drip with fertigation on productivity and economics of Bt cotton hybrid (*Gossypium hirsutum* L.). The treatments comprised of three irrigation regimes viz. 0.6 Etc (I_1), 0.8ET_C (I_2) and 1.0 Etc in main plot and three nutrient management practices viz. 100% RDF (120:60:40kg NPK/ha) (N_1), 75 % RDF (N_2) and 50 % RDF (N_3) in sub plot of split plot design with three replications. Results indicated that scheduling irrigation at 1.0 Etc was produced significantly higher seed cotton yield (3443kg/ha) over rest irrigation scheduling. Application of 100% RDF gave significantly higher seed cotton yield (3556kg/ha) compared to lower doses of nutrients. The maximum seed cotton yield (3851kg/ha) recorded at the interaction of 1.0 Etc with 100% RDF which was at par with 0.8 Etc with 100% RDF and found significantly superior over rest interactions. Contribution of yield attributes was significantly reflected on economical yield. The water requirement at 0.6, 0.8 and 1.0 was 75.79, 96.45 and 177.77 mm/ha respectively, compared to 183.6 mm/ha under 0.6 IW/CPE ratios. Maximum water use efficiency (6.11kg/ha-mm) recorded at the interaction of 1.0 Etc with 100RDF which was at par with 0.8Etc at 100% RDF and 75% RDF and significantly superior over rest interactions. Highest nitrogen use efficiency (47.62kg/kgN/ha) was recorded at the interaction of 1.0 ETc with 50% RDF which was at par with 0.8Etc at 75% RDF and significantly superior over rest interactions. Maximum B:C ratio (3.40) recorded with interaction of 1.0Etc at 100RDF which was at par with 0.8 Etc at 100RDF and 1.0Etc at 75% RDF and found significantly higher than other interactions. Overall, it is concluded that drip fertigation at 0.8 Etc with 75% RDF found more precision technique for Bt cotton hybrid under humid condition of Rajasthan.

Keywords: Seed cotton yield, Bt cotton, Fertigation, Water use efficiency, B:C ratio

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