

Impact of *in situ* soil and water conservation measures on water use and production efficiency for cotton

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■ **ABSTRACT** : A field experiment was conducted during the *Kharif* season 2011-12 at Model Watershed of Agro-Ecology and Environment Centre, College of Agricultural Engineering and Technology, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola to study evaluation of *in situ* soil and water conservation measures in terms of improvement in crop growth, production and water use efficiency. There were total six treatments *viz.*, cultivation along the slopes (T_1), cultivation along the slope with opening of tide furrow (30 DAS) (T_2), cultivation across the slope with opening of alternate furrow (30 DAS) (T_3), cultivation across the slope with ridges and furrows (30 DAS) (T_4), contour cultivation with opening of alternate furrow (30DAS) (T_5), contour cultivation with opening of ridges and furrows (30 DAS) (T_6). Biometric observations such as plant height (cm), number of branches were favorably influenced in treatment T_6 followed by treatment T_5 , T_4 , T_3 , T_2 and treatment T_1 . Treatment (T_6) of *in-situ* soil and water conservation measure had maximum B: C ratio of 2.17 followed by 2.10(T_5), 1.99(T_4), 1.86(T_3), 1.74(T_2) and 1.70 for treatment T_1 . Water use efficiency was more dominant in treatment T_6 *i.e.* ($2.63 \text{ kg ha}^{-1} \text{ mm}^{-1}$) followed by 2.57(T_5), 2.34(T_4), 2.18(T_3), 2.01(T_2) and 1.89 in treatment T_1 . Productivity of cotton was favorably influenced by treatment T_6 . The increase in productivity was 38.26 per cent over along the slope cultivation followed by rest of the treatments. The maximum production efficiency for treatment T_6 was maximum $8.10 \text{ kg ha}^{-1} \text{ day}^{-1}$ and Rs. $192.6 \text{ ha}^{-1} \text{ day}^{-1}$, respectively, followed by treatment T_5 , T_4 , T_3 , T_2 and treatment T_1 .

■ **KEY WORDS** : Cotton crop, Cultivation, *In situ*, Rainfed, Water use efficiency

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