

Productivity, profitability and sustainability of wheat as influenced by water management practices in chambal command of Rajasthan

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SUMMARY

On farm experiment was conducted at farmer's field of Kota and Bundi districts under operational research programme (ORP), Agricultural Research Station, Kota (Rajasthan) during five consecutive years (2005-06 to 2009-10) to assess the impact of improved water management practices for enhancing crop and water productivity of wheat crop in Chambal Command Area. Treatments comprised of irrigations scheduling at crown root initiation (CRI), late tillering, flowering and milk stages by border strip (6 m x 50 m) method using 80 per cent cut off ratio (improved water management technology) which was compared with farmer's practice *i.e.* wild flooding. Results revealed that improved water management technology gave higher and sustainable yield of wheat over the years. The mean grain yield recorded (47.3 q/ha) being 7.0 per cent higher as compared to the grain yield (44.25 q/ha) observed in farmers practice. Sustainability of wheat yield reflected by the higher pooled sustainability yield index and value index *i.e.* 0.803 and 0.675, respectively. Improved water management technology possess higher mean water expanse efficiency (139.0 kg/ha/cm) and incremental benefit cost ratio (5.0).

Key Words : Wheat, Sustainability yield index, Value index, Water management technology

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Wheat [*Triticum aestivum* (L.) Emend.Fiori and Paol.] occupies a predominant place as an important crop contributing 40 per cent in the total food grain production and grown on 21.24 lac ha area with an average productivity of 27.62 q/ha in Rajasthan. Yield of wheat crop is influenced by improved production technology and water management practices (Sharma *et al.*, 2007). Irrigation scheduling, method and time of water application play an important role in enhancing the water productivity of wheat

(Nadeem *et al.*, 2007). Declining availability of irrigation water, needs sustainability in crop production and increasing demand of food can be achieved through adoption of improved water management and crop production technologies. Keeping this in view, field trials were conducted at farmer's field under operational research programme with the objective to enhance crop and water productivity at field level and to show the benefits of water management technology to them in real farm situations.

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MATERIALS AND METHODS

The study area comes under agro climatic zone V (Humid south eastern plain) of Rajasthan represents chambal command lies between 25° and 26° North latitude and 75°-30' and 76°-6' East longitude comprising part of Kota, Bundi and Baran districts. The soils of the chambal command are vertisols and inceptisols comprised mainly chambal series (62%) and Kota variant (23%). The bulk density, pH and cation exchange capacity of soils varies between 1.30-1.60 Mg/m³,