International Conference "Water, Environment, Energy and Society" (WEES–2009)
New Delhi, 12–16 January 2009

Conserving Soil and In-Situ Water through Improved Agricultural Practices for Productivity in Rainfed Foothill Region of North-West India

Sanjay Arora
Division of Soil Science and Agricultural Chemistry
SKUAST-J , Chatha -180 009, Jammu, INDIA
E-mail: aroraspau@yahoo.co.in

Rajan Bhatt
Department of Soils, Punjab Agricultural University
Ludhiana -141 004, INDIA

ABSTRACT

The lower foot-hill tract of Shivaliks extends from Uttaranchal to Jammu and Kashmir in North-West India and the area is mainly rainfed in nature and cry for the considerable attention. The crops experiences moisture stress of varying degrees as a result of erratic distribution of rainfall, this affects crop productivity adversely. It therefore, requires the development and adoption of need based location specific technologies by the use of which the area could be ecologically rehabilitated and production potential could be realized on a sustained basis. Among the various mechanical and agronomic measures, tillage and mulching are the two most important practices that have been reported to reduce the soil erosion and increase the soil moisture storage in-situ and improve the productivity of crops.

On farm studies showed that soil moisture storage increased to the tune of 2.25, 4.01 and 10.77% at 60 Days After Sowing (DAS) with shallow tillage, deep tillage and ridge and furrow sowing treatment over the farmers' practice. The application of mulch on the whole covered plot resulted in 48.4, 61 and 138% higher soil moisture content at 40, 60 and 80 DAS respectively. It was also observed that fully covered plots had 156% higher dry matter yield of maize compared to unmulched plots. There was 10.6% increase in maize grain yield in ridge and furrow sowing of maize over farmers' practice. Mulch spread on the whole plot increased the grain and straw yield of maize by 58.6 and 35.0% as compared to unmulched control.