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Residue and tillage management for soil moisture conservation in post maize harvesting period under rainfed conditions of north-west Himalayas

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ABSTRACT

Soil moisture conservation during maize post harvest period is critical for succeeding wheat crop productivity under rainfed condition of north-west Himalayas. An experiments was carried out in the Research Farm, Selakui of CSWCRTI during 1995-99 with seven different soil moisture conservation practices consisting of maize straw and tillage. The results reveal that immediate maize post harvest tillage with mulch application (maize straw @ 5 t ha⁻¹) reduced water losses from the soil profile (0-75 cm) during fallow period between maize harvest and wheat sowing and more moisture was available at the time of wheat sowing for the use of wheat crop as compared to other treatments. Tillage and mulching increased water use, water use efficiency (WUE) and grain yield of wheat. Under rainfed condition in maize-wheat sequence, maize field should be ploughed immediately after maize harvesting and covered with maize straw mulch @ 5 t ha⁻¹ up to wheat sowing to reduce the evaporation losses and soil water storage for the succeeding wheat crop. This treatment showed soil moisture conservation efficiency about 3 times higher than control treatments (maize harvesting at 30 cm height and tillage at the time of wheat showing). It has been estimated that an additional 23 kg ha⁻¹ wheat grain yield can be achieved per mm of conserved moisture.

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