

## Investigating the Significance of Ground Covers and Partial Root Zone Drying Irrigation for Water Conservation Weed Suppression and Quality Traits of Wheat

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**Abstract :** One of the main negative effects of climate change is the increasing scarcity of water worldwide, especially for irrigation purpose. In order to ensure food security with less available water, there is a need to adopt easy and economic techniques. Two of the effective techniques are; use of ground covers and partial root zone drying (PRD). A field experiment was arranged to find out the most suitable mulch for PRD irrigation system in wheat. The experiment was comprised of two irrigation methods (I0 = irrigation on both sides of roots and I1= irrigation to only one side of the root as alternate irrigation) and four ground covers (M0= open ground without any cover, M1= black plastic cover, M2= wheat straw cover and M4= cotton sticks cover). More plant height, spike length, number of spikelets and number of grains were found in full irrigation treatment. While water use efficiency and grain nutrient (NPK) contents were more in PRD irrigation. All soil covers suppress the weeds and significantly influenced the yield attributes, final yield as well as the grain nutrient contents. However black plastic cover performed the best. It was concluded that joint use of both techniques was more effective for water conservation and increasing grain yield than their sole application and combination of PRD with black plastic mulch performed the best than other ground covers combination used in the experiment.

**Keywords :** ground covers, partial root zone drying, grain yield, quality traits, WUE, weed control efficiency

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