

Dryland region in Punjab, Pakistan constitutes 25% of the arable land mass and is spread over 3.1 million hectares. These areas are most vulnerable to climate change on account of greater climatic variability, increasing temperatures, erratic precipitation, lack of water resources, land degradation. Wheat is the major stable food grown on 0.72 million hectares under rainfed conditions with yields lower than optimal. The increasing climatic variability demanded comprehensive analysis of the situation to recommend alternate strategies for the rural poor to enable them to earn livelihood on sustainable basis.

Barani Agricultural Research Institute, Chakwal focused on developing alternate strategies under CRP Dryland System in the region. The Chakwal action site employed Decision Support System for Agro-Technology Transfer (DSSAT) for assessing and developing crop management options. The analysis of the effects of different planting dates on wheat and barley conducted based on 30 years of historical weather data recommended following alternative strategies to enable farming communities to harvest higher yields in the changing climate scenario:

1. Shifting of crop planting dates

- For dryland wheat, late planting should be adopted (last 10 days of November) against current practice of sowing in the 2nd fortnight of October.
- For dryland barley, planting should be done in first week of December against current practice of sowing in the 2nd fortnight of October.
- Wheat produced higher crop yields when sowing was done in the last week of November followed by supplemental irrigation of 30 mm when preceding summer season was drier.

2. Application of supplemental irrigation

- During dry years (rainfall <200 mm), application of 30 mm irrigation water should be applied either at the time of sowing (last week of November) or 30 days after sowing.
- During wet years (rainfall >1000 mm), no supplemental irrigation was required; just adjustment of planting dates (wheat-20 November; Barley 30 November 05 December) was optimal strategy to harvest higher crop yields.