

Successful cultivation of wheat under rainfed conditions of Punjab

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In Punjab, along with Shivalik hills, the rainfed area is spread in the form of a 10-20 km wide strip, which includes some areas of Pathankot, Gurdaspur, Hoshiarpur, Shaheed Bhagat Singh Nagar, Ropar, Rupnagar and Sahebzada Ajit Singh Nagar districts. By conserving rainwater in this area and used in the form of irrigation, we can cultivate wheat as the main rabi crop as follows:

Soil and moisture conservation: To get a good yield from wheat from light soils (sandy to loamy sand) usually have low water holding capacity, green manure with cowpea (fodder) or sun hemp during *Kharif* and take a crop of wheat/wheat-gram mixture with *Raya* rows during *rabi*.

The fertilizers recommended for wheat also hold good for the above mixed cropping. The success of *rabi* crops in rainfed areas mainly depends on the conservation of moisture in soil profile. The practice is locally known as '*gil dabna*'. It consists of ploughing and planking the field immediately after the harvest of the *Kharif* crop. The field is generally ploughed in the evening and is planked early in the morning.

Improved varieties and seed rate: Under rainfed conditions, 40 kg of improved seeds per acre of wheat varieties PBW 660 and PBW 644 should be used.

Seed treatment: Termites cause heavy mortality of plants. Treat the seed by diluting 40 g Cruiser 70 WS (thiamethoxam) or 160 ml Dursban/Ruban/Durmet 20 EC (chlorpyrifos) or 80 ml of Neonix 20 FS (imidacloprid+hexaconazole) in one liter of water and spray the same on 40 kg seed spread as a thin layer on the pucca ground or tarpaulin or polythene.

Time and method of sowing: Sow wheat from the last week of October to the first week of November. Sow crop preferably with a seed-cum-fertilizer drill. In case the crop stand is poor, *i.e.* less than 50 percent of the optimum and the winter rains come before 15th December, re-sow the field with any of the recommended varieties. If the soil moisture is good so the crop is at a row-to-row spacing of 22-25 cm. If the seed zone moisture is inadequate, sow seed slightly deeper in moist soil layer (8-10 cm) and increase row spacing to 30 cm.

Fertilizer application: It pays to apply fertilizer to wheat in rainfed areas provided adequate moisture has been stored in the soil profile. To get a good yield from wheat, should apply 32 kg nitrogen (70 kg urea) and 16 kg phosphorus (100 kg single superphosphate) in sandy loam to clay loam soils (sufficient moisture retention capacity) and apply 16 kg nitrogen (35 kg urea) and 8 kg phosphorus (50 kg single superphosphate) per acre in loamy sand to sandy soils (low moisture retention capacity).

Weed control: Give two hoeings preferably with improved wheel hand hoe to check weed growth and create soil mulch for reducing evaporation from the soil.

With the above mentioned methods, farmers can cultivate wheat successfully by conserving soil moisture, timely sowing of recommended varieties of wheat for rainfed conditions (where crops are totally dependent on rainfall) by Punjab Agricultural University, applying fertilizers properly and retaining moisture in the soil.