

# Simulating Climate Change Impact on Crop productivity - Wheat

**Environmental Policy Integrated Climate (EPIC) Model** : a process-based model simulate climate-soil-management interactions.

## Input data:

**Climate:** World Clime (1x1 km.)- Tmin & max., precipitation: A2 scenario (2020,2050 &2080)

**Soil:** Texture, OC, pH, BD : Soil samples at 0 -15, 15-30 & 30-50 cm depth

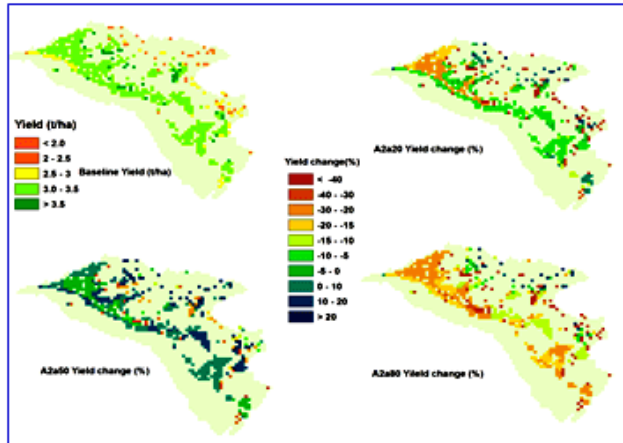
**Topography:** CartoDEM-slope &elevation

**Crop:** area & LAI

**Crop management:** Planting & harvesting date, fert. Use & tillage practices, irrigation

**Crop Cutting** (yield, biomass, plant density)

•Climate: Av. Annual Rainfall: 1750 mm. Mean temperature: 21.8°C



Wheat crop under A2a scenario without CO<sub>2</sub> fertilization results a large reduction in yield of about 24 % in 2080s.

## Sensitivity analysis

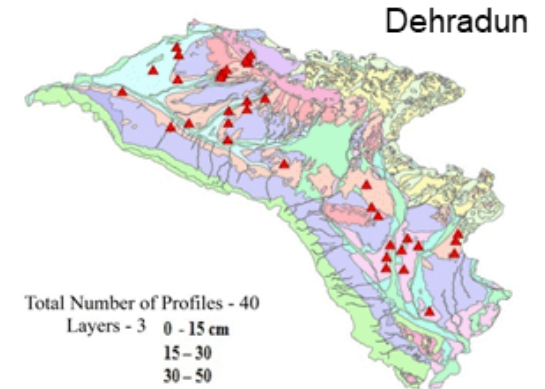
most sensitive parameter that affect crop yield :Biomass Energy Ratio, Potential Heat Units (°C), Maximum Potential LAI

## Calibration & Validation

Based on field observed yield and LAI data (Crop cutting experiment).

Scenario	Period	Mean
Baseline Productivity (t.ha <sup>-1</sup> )		3.17
A2a	2020	-13.93
	2050	4.13
	2080	-23.72

Hundal & Kaur (1996) : 18.7 to 25.7 % decline in wheat yield & reduction of 07 days in crop duration in Punjab.



## Climate change on crop duration

