(3) Crop weather interaction
a. Sorghum, groundnut, pigeon pea and weather

Dr. R. Nagarajan

Climatic requirement of crop is determined by
• Habitats where the crop species had originated
• Cardinal values of various ecological parameters for optimum growth of plant and completion of various development stages
Crop weather interactions

**Sorghum**

**Examples**

- Sorghum, being a C4 plant, which tolerate high temperature and water stress; However, no repose to elevated $\text{CO}_2$

- Minimum temperature should be 8 to 10 $^\circ\text{C}$ for seed germination, while the optimum is 18 to 21$^\circ\text{C}$

- Needs 27 to 30 $^\circ\text{C}$ mean temperature for its optimum growth; tolerates up to 35 to 40 $^\circ\text{C}$ temperature

- Being a short day plant, flowering is delayed in long day period

- Total water requirement is 350 mm
Groundnut

Examples
• Groundnut is cultivated mainly in two seasons in India viz., monsoon or rainy season (*Kharif*; June-October) as well as in post-rainy season (*Rabi*; November to February).
• The optimum temperature of 30°C is required for germination of seeds
• The mean daily temperature for optimum growth is 22 to 28°C
• Low temperature retards growth of plants and lengthens flowering
• Maximum pods can be harvested under soil temperature of 23°C
• Water requirements range from 500 to 700 mm for the total growing period
Crop weather interactions

**Pigeonpea**

**Examples**
- Pigeonpea is cultivated mainly in semi-arid climate and sub-humid climate.
- Optimum temperature required for seed germination is 29 - 36°C.
- It can be grown under temperature ranged from 26° to 30°C in rainy season (June to September) and 17° to 22°C in the post-rainy (November to February) season.
- Flowering gets affected during monsoon seasons.
- Cloudy weather reduces pod formation.
- Tolerate wide range of rainfall, but prefers > 625 mm in the plains and >2000 mm in elevated areas.