Effects of heat on wheat germination (*Triticum aestivum* L.)

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ABSTRACT

Wheat is a self pollinated cereal crop, belongs to genus Triticum and species aestivum. It is one of the most important staple food crop which is cultivated as winter and spring crop in the world. High temperature affects the growth of plant and development during sensitive stages like flowering and grain filling stage which results in the reduction of economic yield of crop. During germination heat stress reduces the seedling growth, cell turgidity and plant water use efficiency. Therefore, heat stress adversely affects the crop yield.

Keywords: Heat, wheat germination, *Triticum aestivum.*

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Wheat (*Triticum aestivum* L., 2n = 6x = 42) is an annual self pollinated plant, belongs to family Poaceae. It is one of the most important staple food crop which is cultivated as winter and spring crop in the world. It is best adapted to cool growing conditions in different agro-ecological habitats. Wheat is mostly grown in temperate environment due to thermo sensitive nature. The ideal conditions for wheat cultivation are; soil (fertile, alluvial), rainfall (50-100cm) and temperature (12-25^{0}c). Under optimum temperature seeding emergence occurs within seven days. High temperature affects the growth of plant and development during sensitive stages like flowering and grain filling stage which results in the reduction of economic yield of crop. Seed germination is a factor which contributes to yield of crop. Temperature is considered as an important issue of wheat germination. During germination heat stress reduces the seedling growth, cell turgidity and plant water use efficiency. Many yield contributing traits like chlorophyll content, total biomass, starch and grain weight and yield is affected by heat stress. During early phases of the crop it affects number of tillers, number of spikelets and biomass production (Ruwali and Bhawasar 1998).

Around about 10 % decrease in yield of wheat results with every 1°C increase above a mean temperature of 23°C (Gibson and Paulsen, 1999). Howard (1924) reported first the significance of heat stress in reducing yield and stated that "wheat production is a gamble with temperature in India". Heat stress adversely affects the crop yield. When mean temperature goes above 31^{0}c during grain filling stage it results into terminal heat stress. To beat this problem in wheat-

- Sowing should be in the first week of November
- Application of additional dose of N (150 kg N/ha)
- Timely irrigation at flowering and grain filling stage
- Development of heat tolerant varieties

Reference

Gibson LR and Paulsen GM (1999). Yield components of wheat grown under high temperature stress during reproductive growth. Crop Science, 39(6): 1841-1846.

Ruwali KN and Bhawasar RC (1998). Effect of high temperature on grain development of wheat under late sown irrigated conditions. In: Wheat Research Needs Beyond 2000 AD. Proc Conf. Karnal, India, pp: 68-69.

Howard A (1924). Crop production in India: a critical survey of its problems. Oxford University Press, Oxford, U. K., pp: 156.

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