

Cottonseed Planting and Chilling Injury

Spring is here and the end of the Pink Bollworm host free period. Cotton planting will soon begin. Germination of cottonseed requires a minimum soil temperature of 58°F at planting depth and favorable weather during the subsequent five-day period. While the temperature for optimum growth rate of the emerging radical and hypocotyl is between 91°F and 96°F, planting usually occurs when temperatures much cooler. Cottonseed requires 50 degree-days to emerge from optimum planting depth. An accumulation of 20 degree-days in the 5-day period following planting is ideal. To aid in the 5-day weather decision, a link has been made between the National Weather Service Forecast and growth models through the UC IPM web site. This information can be obtained at **cekern.ucanr.edu**.

Planting in less than optimal conditions has some long lasting impacts. Germinating seeds are most sensitive to chilling at two different stages, during imbibition and 1 to 3 days after germination. Temperatures below 53°F inhibit cottonseed germination and seedling growth. Chilling during imbibition results in radical tip abortion. Soil temperatures below 41°F cause seed death. Chilling 1 to 3 days after germination causes root cortex damage prompting lateral roots to prematurely initiate. In addition, germinating seeds once exposed to temperature less than 58°F do not immediately resume growth when temperatures increase. The length of chilling time has an accumulative effect on plant growth. Two day chilling (50°F) reduced plant height by 2 inches and delayed first flower by 3 days. Six day chilling reduced plant height by 14 inches and delayed first flower by 10 days. Crop productivity is thus negatively affected.

To get off to a good start plant when soil temperatures are above 58°F and the 5-day weather forecast calls for an accumulation of 20 degree-days. If not, park the planter. There are other things to do.

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