

CYANOGENESIS IN COTTON PLANTS

John Radin

Cyanogenic compounds were found in virtually all tissues of the cotton plant (cv. Deltapine 16), but large amounts were present only in photosynthetic tissues. Amounts in leaves, measured as HCN, varied from 1 to 3.4 μ moles per g fresh wt, with a mean of 1.9, but no correlation was found with leaf age. Unlike other photosynthetic tissues, green carpel walls contained little cyanide. This may have resulted from high rates of destruction rather than low rates of synthesis, since carpel walls were more active hydrolytically than another low-cyanide tissue, etiolated cotyledons. Cyanogenic compound formation depended upon light. In addition, the rate of hydrolysis of cyanogenic compounds increased with increasing exposure to light. Cyanide turnover was substantial, accounting for more than 50% of the pool of cyanogenic compounds per day.

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LEAF WATER STATUS VS SOIL MOISTURE

Kenneth Fry

The pressure bomb furnished a fast and relatively simple method of determining the water stress (potential) in cotton leaves. Two persons were able to make 36 determinations in 1 hour, one collecting the leaves while the other uses the bomb. Tests showed that during the daylight hours the pressure bomb readings increased rapidly in the morning and reached a relatively constant level between 1:00 and 4:00 p.m. We also noticed that leaves perpendicular to the sun's rays and taken from the 7th node from the top of the plant gave the most uniform readings between the above mentioned hours.

In the field pressure readings of leaves from the 7th nodes were taken over several of the irrigation cycles as listed in Table 1. The irrigation timing was based on available-water-used (AWU) measurements.* Time graphs of % AWU and leaf pressure readings furnished the interpolated data shown in Table 1. The pressure reading differences between the selected % AWU were small but were found statistically significant at the 95% level. The original pressure readings graphed against time (not shown) increased more rapidly after reaching the 20 bar level indicating that a water stress was developing. In further experiments where irrigation timing is based on leaf water stress it appears that water should be applied between bomb pressures of 20 and 22 bars.