



Texas Agricultural Extension Service
The Texas A&M University System

Frost-Damaged Corn Plants

Dr. Cloyce G. Coffman

Professor & Extension Agronomist

Texas Agricultural Extension Service, College Station, Texas

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Problem

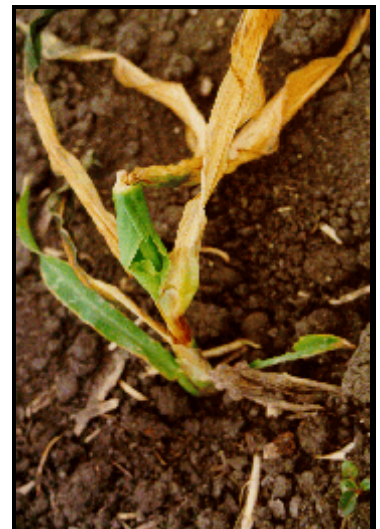
Corn plants in several areas of Central Texas and the Upper Gulf Coast counties suffered from low air temperatures and desiccating winds that occurred on Friday and/or Saturday mornings (April 16 and 17, 1999). The degree of damage varied extensively from field-to-field. Some fields suffered only leaf desiccation on the ends of upper leaf blades; while other fields suffered significant freeze and desiccation damages of all leaf and upper stalk tissue above ground. In a few isolated fields, the damage was so severe that even the growing-point was destroyed.

Where Damages Occurred

Most damage from the freeze and/or desiccation occurred in fields of older corn, that had been cultivated, and were in low topographical positions. There was also noticeably more damaged plants in areas of the field where there was limited wind breaks on the north and west side of the fields. There appeared to be some differences in the degree of damage suffered among different hybrids in the same field. Fields with lower plant density appeared to suffer more severe damage than where plant densities were greater.

Damage Observed

Most corn fields possess some corn plants with an occasional tan-colored leaf blade which had been desiccated by the low temperatures and/or high drying winds. In some fields, there was evidence of “freeze-damage” (dark-blue, water-soaked tissue) on the upper leaves of corn plants. In the worst cases, the whole top of the plants were damaged so severely that the damaged tissue was drooped over, with some degree of rotting tissue occurring above the growing point. In some of these severe cases, the growing point was still “sound” (light-cream colored and firm tissue). However, in a few cases, the growing point was already destroyed by the freeze.



Probable Impacts of Weather Conditions following Events

Sunny, low-humidity, and windy days following the freeze events will encourage the quick dry-down of the drooping portions of the damaged leaf tissue. This will facilitate the freeing of the growing leaf tissue attempting to push-out of the whorl. It will reduce the amount of energy expended by the damaged plants to continue its growth and development. However, cloudy, high-humidity, and calm days following the freeze event will prolong the dry-down of the damaged, drooping tissue. This will lead to extensive “tie-back” of the leaf tissue attempting to emerge from the whorl. Thus, more energy will be expended to continue growth and development of the plants, and may prevent some from becoming grain-bearing plants. If the tissue remains moist and slow-growing following the event for extended periods of time, the rotting tissue will become more extensive and eventually destroy the vital growing point.

Probable Impacts on Grain Yields

Potential grain yields will be reduced in proportion to the degree of damage to the plant’s leaf area, the degree of stand reduction, and the amount of energy the plant has to expend to continue growth and development. In some fields the reduction may be considerable.

*For more information see B-6014 entitled: “Assessing Hail and Freeze Damage to Field Corn and Sorghum” published by Texas Agricultural Extension Service; available through your County Extension Agent.

Also see our website at: <http://soil-testing.tamu.edu>

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