

Sugarcane Red Rot Disease ¹

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Red rot is one of the oldest known diseases of sugarcane. It occurs in most cane-growing countries. Although it continues to be a threat in certain subtropical countries, it is of little concern to the Florida sugarcane grower.

SYMPTOMS

Red rot occurs in various parts of the cane plant but it is usually considered a stalk and a seed-piece disease. Its symptoms are highly variable depending upon the susceptibility of the sugarcane variety and the environment. Symptoms may not be readily apparent in the field, especially in the early stages of the disease. In the later stages of the disease, red rot may cause standing cane to "break down" (Figure 1).

Diagnostic symptoms can best be observed by splitting the stalk lengthwise. The infected tissues have a dull red color interrupted by occasional whitish patches across the stalk (Figure 2). These white patches are specific to the disease and are of significance in distinguishing red rot from other stalk rots. Reddened vascular bundles may also pass through to the healthy tissues. In susceptible varieties



Figure 1. Sugarcane lodging caused by Red Rot.

the red color, sometimes along with some gray color, may be seen throughout the length of the stalk. The infection is largely confined to the internodes in resistant varieties.

On the leaves, the pathogen may produce elongated red lesions on the midribs, reddish patches on the leaf sheaths, and, infrequently, small dark spots on the leaf blades. The lesions may eventually develop a straw color in the center.

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Figure 2. Infected tissue.

In seed pieces, the entire seed piece may become rotted and the internal tissues turn various shades of red, brown or gray.

CAUSAL AGENT

Red rot disease is caused by the fungus *Glomerella tucumanensis*. An older name, *Colletotrichum falcatum*, is still preferred by some pathologists. The red rot fungus can be readily isolated from infected tissues. At least two races have been identified. Fungus growth is affected by temperature, pH, nutrition and environmental conditions.

SPREAD OF THE DISEASE

Midrib lesions are probably the major source of inoculum during the growing season. Diseased stalks generate a great deal of inoculum. Dissemination of the inoculum takes place by wind, rain, heavy dews and irrigation water. Infected plant material can readily spread or cause secondary infections. Crop debris or stubble may also provide inoculum to infect

a new crop. Although the fungus is not a true soil-borne organism, spores washed into the soil may produce infection in planted seed pieces. Hosts other than sugarcane are not considered important inoculum sources.

Climatic factors affect both the spread and severity of red rot. In newly-planted cane, the disease is favored by excessive soil moisture, drought conditions, and low temperatures.

PREVENTION AND CONTROL

The use of resistant varieties is the most effective method of prevention and control. The factors determining resistance to red rot are not fully understood. There are two kinds of resistance: (1) morphological, which may prevent or retard the infection process, and (2) physiological, in which the living cells of the plant suppress or prevent pathogen growth. Physiological resistance is considered to be of greater importance.

The incidence of red rot can be reduced through good cultural practices, such as clearing fields of excessive trash and efficient drainage. Agronomic practices that hasten germination are important in reducing seed rotting and obtaining good stands. The avoidance of planting susceptible cultivars during excessively cool and wet weather has been effective in several countries. Regular roguing of diseased plants, burning of trash, plowing out badly affected fields, maintenance of proper soil moisture, and prompt harvesting of infected or susceptible crops are other management practices recommended for red rot control.

Foliar fungicides have not been effective in the control of red rot. However, better crop stands have been achieved from enhanced germination obtained by treating seed pieces with a fungicide before planting. This treatment reduces the incidence of red rot infection in the treated seed piece.

Heat treating of seed cane has also been effective in controlling seed piece infection of red rot.