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# Pokkah Boeng Disease of Sugarcane [1]

R. N. Raid[2]

Pokkah boeng was originally described in Java and the name is a Javanese term denoting a malformed or distorted top. It is caused by the fungus *Fusarium moniliforme* and/or *Fusarium moniliforme* var. *subglutinans*. The disease is present in most, if not all, sugarcane producing areas of the world. Pokkah boeng may cause serious yield losses in commercial plantings. However, there have been many reported outbreaks of the disease which have looked spectacular, but have caused little economic loss. To date, it has not been of major importance to Florida's sugarcane industry.

## SYMPTOMS

The earliest symptoms of the disease are chlorotic areas at the base of young leaves, distortion (wrinkling and twisting) and shortening of affected leaves, and in severe cases, death of the stalk (Figure 1).

The base of affected leaves is often narrower than that of normal leaves. As leaves mature, irregular reddish stripes and specks develop within the chlorotic parts. The reddish areas sometimes develop into lens-shaped holes which have no definite arrangement. This reddish tissue may form ladder-like lesions, often with dark edges. Leaf sheaths may also become chlorotic and develop irregular necrotic areas of reddish color.

The infection in the spindle sometimes continues downward into the stalk and dark reddish streaks may be found extending through several internodes. Also, in the internodes, the infection may form long lesions with cross depressions that give them a ladder-like appearance. These lesions sometimes break through the surface of the rind causing curvature and distortion of the stalk. Exaggerated versions of these depressions may look like neatly made "knife-cuts" in the stalk (Figure 2). In the most advanced stage of pokkah boeng, the entire top (growing point) of the plant dies (referred to as "top rot"). Symptom severity varies with the susceptibility of the cultivar and the environmental conditions governing the development of the organism.

In the stem, the fungus causes a dark-brown discoloration of the infected tissues. The ladder-like

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2. R. N. Raid, professor, Plant Pathology Department, Everglades Research and Education Center--Belle Glade, FL; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

**Figure 1.** Pokkah Boeng Leaf Symptoms

**Figure 2.** Pokkah Boeng Stalk Symptoms

lesions are due to rupturing of the diseased cells which cannot keep up with growth of the healthy tissue.

## CAUSAL AGENT

The fungi *Fusarium moniliforme* and *Fusarium moniliforme* var. *subglutinans* can persist on decaying plant residues and isolates can be collected on specialized media.

The pathogens can infect a wide range of hosts. Rice, corn, sorghum and many other grasses are susceptible to infection. These fungi also cause a wide range of diseases such as seedling blight, scorch, stalk rot, root rot, and stunting in different crops.

## SPREAD OF THE DISEASE

The spread of pokkah boeng is mainly by airborne spores. Dissemination of the disease by seed pieces may occur but is considered of little importance.

Infection usually occurs through the spindle along the margin of a partially unfolded leaf. Spores which enter the spindle germinate and grow into the inner tissue of the spindle leaves.

The fungus reaches the immature portion of the stem by way of the vascular bundles. It may pass through the vascular bundles of the leaf sheath without entering the surrounding tissue, but ladder-like lesions are often found in the sheath.

Pokkah boeng appears to be favored by dry climatic conditions being followed by a wet season. Cane that is three to seven months old and growing vigorously appears to be most susceptible.

## PREVENTION AND CONTROL

Pokkah boeng is seldom serious enough to warrant concern or control. However, if control is desired, the only satisfactory control measure for pokkah boeng is the use of resistant varieties. Fortunately, sugarcane resistance to pokkah boeng has been shown to be highly heritable. In Florida, while pokkah boeng resistance is not actively screened for, the relative susceptibility of prospective clones to pokkah boeng is noted during breeding program field trials. Susceptible clones are typically not released for commercial production, thereby limiting the impact of this disease.