

**DEVELOPMENT OF BRONZE WILT
DURING THE GROWING SEASON**
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Abstract

Bronze wilt was evaluated under two fertility regimes and two planting dates. The late planting date had much more expression of the symptoms early in the growing season. Low rates of nitrogen also increased expression of the wilt symptoms. Near the end of the growing season the early planting date showed the greater symptom expression but it was too late to have much influence upon lint yield. Square loss was later to express than other symptoms. It progressed from the top down to the flowering square.

Introduction

Bronze wilt became a major problem in Missouri in 1998, causing major lint yield losses in some fields. Characteristics and an accurate description of the anomaly continue to be a problem. It was found to be more severe in certain varieties, especially those that are descendents of Tamcot SP-37. In 1998 it appeared during flowering and resulted in plants without squares.

In 1999, bronze wilt appeared in western Tennessee in the fall causing a very distinct reddening of the leaves. However many of the varieties having the higher levels of bronze wilt produced high lint yields. Almost all varieties showed some expression of the anomaly. Bronze wilt continued to be an enigma.

Discussion

In 2000 two locations which had shown to have bronze wilt in prior years were planted using Stoneville 373 and Stoneville 474. Stoneville 373 is very susceptible to bronze wilt. Two planting dates were evaluated. One was a normal planting date and the other was past the optimum planting date. The two locations were planted in a split plot with planting date being the main plot and subplots being variety and nitrogen rate with four replications. Eighty and thirty pound rates of nitrogen were applied on June 16. There was not a pre-plant application of nitrogen.

The trials were machine harvested and ginned on a twenty saw Continental gin stand preceded by an inclined cleaner and feeder extractor and followed by one stage of lint cleaning. The lint was classed on a high volume instrument.

In field two we saw the bronze color showing in the STV 373 on July 14. It was much more severe in the late-planted plots with a low rate of nitrogen. The first symptom to appear was the bronze tint plus the lighter green leaves in the upper part of the plant. The leaf angle was more vertical than normal, which would indicate moisture stress. Usually the plants were stunted and were on the ends of skips or near a skip. A few days later the stems would redden and the squares would abort starting at the terminal. The square abortion would occur over a period of two weeks. There was no boll abortion. The leaf temperature of many affected plants would be 1.5 to nine degrees above the healthy plant temperature. Many plants would recover with the addition of moisture however not all plants recovered. The plants that did not recover were stunted. It did not appear that bronze wilt spread from one plant to adjacent plants. Several times the plots would have many plants that had the bronze tint and appeared that bronze wilt would become severe in a short time. However with additional

moisture either through rainfall or irrigation, the symptoms would disappear. Late in the season the high nitrogen plots showed the most bronze wilt plants. The early-planted plants had the greatest expression of bronze wilt in the fall. Discoloration of the vascular tissue in diseased plants was not observed as commonly found in plants infected with verticillium wilt. However in the phloem tissue at the junction of the vegetative branches and the main stalk, a slight discoloration was found in 2/3 of the plants. No necrotic tissue was observed on the secondary or tertiary roots of any plants.

Field one had been in continuous cotton for forty years and had bronze wilt problems in 1998. It showed very little bronze wilt in 2000. We were unable to determine the reason for the difference in bronze wilt expression in the two fields.

Summary

The expression of bronze wilt appeared to be reduced when the crop was not under water stress. The abortion of squares progressed from the terminal down to the flower. Early in the growing season the late-planted cotton expressed the bronze wilt symptoms much more than cotton planted at a normal planting date. Also many of the plants that expressed the bronze wilt symptoms early in the season were near the ends of a skip. High rates of nitrogen appeared to enhance the expression of bronze wilt near the end of the growing season. Vascular discoloration was found only in the phloem tissue. Bronze wilt did not spread from plant to plant down the row. Leaf temperatures were 1.5 to nine degrees Fahrenheit

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