

# 46. Mimosa Wilt

Mark W. Andrews

The mimosa or silk tree, a native of eastern Asia, is widely grown as an ornamental and has become naturalized in the southeastern United States and in the southern Great Plains. The tree is valued for rapid growth, graceful foliage, colorful flowers, and capacity to thrive in unfavorable soil conditions. Mimosa wilt, caused by *Fusarium oxysporum* f. sp. *perniciosum*, is a destructive vascular wilt disease of this ornamental.

## Hosts and Distribution

Mimosa wilt was first observed in North Carolina in 1953, and since has been found from New York to Florida and into Mississippi and Louisiana.

In inoculation tests, *Albizia julibrissin*, *A. lophantha*, *A. kalkora*, and *A. procera* were susceptible to the causal fungus; *A. thorelii* and *A. pudica* were resistant. Seedlings of native leguminous species *Cercis canadensis*, *Gleditsia triacanthos*, and *Robinia pseudoacacia* were found to be resistant to the pathogen.

## Symptoms and Signs

The first external symptom is wilting of the leaves. The leaves then become dry and shrivelled, usually remaining green but sometimes yellow. The leaves fall from the tree soon after they dry (fig. 46-1). The defoliated parts then die; usually the entire tree is dead within 1 year

Figure 46-1. Mimosa tree exhibiting foliar wilt and dieback symptoms.



Figure 46-2. Vascular discoloration indicative of mimosa wilt.

from the time the first wilting is apparent. In Louisiana, trees frequently defoliate and die within 1-month of the first visible symptoms. Cross sections of wilted branches show a reddish-brown to black discoloration in the outer sapwood, especially in the springwood vessels of the last annual ring (fig. 46-2). Discoloration is most intense in the roots, and diminishes in intensity in the stem and branches.

### Disease Cycle

*F. oxysporum* f. sp. *perniciosum* is a soilborne organism that enters host roots either through wounds, or directly through root hairs or the epidermis of small roots. The production and release of microconidia into the sapstream then results in rapid colonization of above-ground parts. The fungus causes the development of gum-like substances in vasicentric parenchyma cells. These substances are exuded into the vessels, thereby plugging them and causing the diagnostic vascular discoloration. The vascular discoloration symptoms of mimosa wilt differ from other vascular wilt diseases in that tyloses are not observed in vessel elements.

Once systemic invasion has occurred, wilt symptoms develop rapidly and kill the tree. The pathogen moves laterally from vessel elements into the cambium and phloem through ray parenchyma. The pathogen emerges from the host through lenticels in the bark, where sporodochia develop and produce masses of macroconidia. During this time the roots decay and the fungus is released into the soil.

### Control

There is no effective control for this disease. Toole and Hepting developed, by selection and propagation, lines of mimosa resistant to the disease. Two cultivars, "Tyron" and "Charlotte", were released to nurseries in



1949; however, resistance of these cultivars was reported as ineffective after 15 years.

The systemic fungicides benomyl and thiabendazole were shown to control mimosa wilt, but in most cases both fungicides failed to eradicate the fungus within mimosa. Thus their practical use may be limited to periodic preventive applications.

Where the disease has appeared, it is recommended that mimosa be replaced with other species because mimosa can no longer be successfully grown there.

### Selected References

- Attabhanyo, Anusorn; Holcomb, G. E. Control of Fusarium wilt of mimosa with systemic fungicides. *Plant Disease Reporter*. 60: 56-59; 1976.
- Gill, D. L. Wilt of mimosa wilt-resistant cultivars. *Plant Disease Reporter*. 48: 648; 1964.
- Phipps, P. M.; Stipes, R. J. Control of Fusarium wilt of mimosa with benomyl and thiabendazole. *Phytopathology*. 65: 504-506; 1975.
- Phipps, P. M.; Stipes, R. J. Histopathology of mimosa infected with *Fusarium oxysporum* f. sp. *perniciosum*. *Phytopathology*. 66: 839-843; 1976.
- Toole, E. Richard; Hepting, George H. Selection and propagation of Albizzia for resistance to Fusarium wilt. *Phytopathology*. 39: 63-70; 1949.