

# TEXAS ROOT ROT IN ARIZONA

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## Early History of the Texas Root Rot; Distribution in the United States and Losses Resultant From the Disease

OF all the plant diseases which harrass the farmer in Arizona and certain other parts of the semi-arid and arid Southwest the most destructive and certainly the most difficult to control is Texas root rot. This disease, although it was first studied in 1888, and has been under investigation more or less continuously since 1906, still presents many baffling problems to both the farmer and the investigator. The fact that Texas root rot attacks nearly all of our taprooted plants, making it very difficult to formulate a satisfactory rotation, together with our inadequate knowledge of its method of overwintering and how long it may persist in the soil under various conditions make it very difficult to conquer or even hold in check.

### Distribution of Root Rot

Root rot is a distinctively Southwestern disease and is at present unknown outside of the states of Texas, New Mexico, Arizona and the narrow strip of cultivated land in California across the river from Yuma, Arizona. It has not yet been reported from Imperial Valley, Calif., probably because the strip of sand hills and desert between the Colorado river and the Valley form a barrier preventing its spread. It is significant that the disease is restricted to semi-arid regions where the soils are noticeably alkaline in reaction, and also to regions of comparatively low altitude where the winter temperatures are not severe. It appears that the fungus is well adapted to the rigorous climatic conditions of the Southwest but cannot withstand acid soils or cold winters.

The disease extends into Old Mexico especially along the borders of our infected states but no definite data is available of its importance there.

In Arizona, root rot is restricted to the southern half of the state, chiefly at the altitude below 4000 feet (where cotton can be grown). It is most prevalent and destructive in certain parts of the great irrigated valleys: the Yuma valley, the Salt River valley, and the Santa Cruz and Gila valleys. It is irregular in distribution, some districts suffering severely every year



Umbrella trees killed by root rot in city park.

while others are almost entirely free from the disease.

### Losses from Root Rot

Although root rot attacks many plants the data concerning losses caused by the disease is restricted to cotton and a few other major crops. Texas, where the disease was first observed and studied, has suffered much greater losses than other states because of her enormous acreage of cotton. The losses have more than kept pace with the rapid increase in acreage of cotton. Conservative estimates give the losses in Texas cotton alone as follows: 1887, \$1,000,000; 1903, \$2,000,000; 1906, \$3,000,000 (1.3 per cent of crop). Figures for recent years carefully compiled by the U. S. Department of Agriculture are even more impressive. In 1918, a dry year, Texas lost 5 per cent of the crop, or 130,000 bales valued at over \$18,000,000 (December 1 price, 28 cents). In 1919, a wet year, the loss was 10 per cent of the crop or 314,000 bales worth \$55,000,000 (December 1 price, 35 cents). In 1920, another wet year, the loss was 15 per cent or 630,000 bales, worth \$41,000,000 at the low price of 13 cents which prevailed that year. The final figures for 1926 are not available, but the reports indicate an unusually severe attack in Texas this year. The Wall Street Journal published figures showing that 2,800,000 acres (15 per cent) of the 19,000,000 acres in cotton in Texas this year were infected with root rot. This

not only means a loss this year but that nearly three million acres in Texas are unsuited to producing a profitable crop of cotton for several years to come.

In Arizona, the losses are much less in amount since our area under cultivation is so much smaller. However, the average loss for the years 1924 and 1925 was 8 per cent of the crop or approximately 8000 bales each year. This amount of cotton on December 1 prices (26.4 cents in 1924 and 21.5 cents in 1925) would be worth \$1,056,000 and \$864,000 for 1924 and 1925 respectively.

Root rot is also an important factor in the production of alfalfa as is shown by the following figures which are averages of the losses for the years 1924 and 1925: Alfalfa, 3 per cent; apple, 4 per cent; pear, 2 per cent; peach, 2.5 per cent; plum, 3.5 per cent; grape, 3 per cent; apricot, 1 per cent; sweet potato, 3 per cent. In addition to the above, there are annual losses to ornamental trees and shrubs, flowers and garden crops, running into thousands of dollars a year.

### Symptoms

The first symptom of root rot on cotton is a slight change in color, sometimes a trace of bronzing or yellowing, noticeable for a day or two before any wilting occurs. Such plants show a definitely higher leaf temperature which can be readily detected

(To be continued)