

Excerpt (Pages 32-34) from
Wager, V. S. 1931. Diseases of plants in South Africa due to members of the
Pythiaceae. South Africa Department of Agriculture. Science Bulletins. 105:1-43.

BULLETIN No. 105



UNION OF SOUTH AFRICA

DEPARTMENT OF AGRICULTURE

**DISEASES OF PLANTS IN SOUTH AFRICA
DUE TO MEMBERS OF THE PYTHIACEAE**

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THE GOVERNMENT PRINTER, PRETORIA
1931

5780—18/9/31—665

AVOCADO ROOT-ROT.

Occurrence and Symptoms.—This disease was reported from Tomango, eastern Transvaal. The trees die back from the tips or wilt suddenly, but there is no sign or any parasitic organism which might cause the injury to be found in the leaves or twigs. Some of the roots of the affected trees, however, were discoloured throughout, and had a peculiar odour. The tissues were permeated by a non-septate mycelium.

Cause.—The fungus was isolated by Dr. Doidge, and was sent to Kew for identification. It was found to be very similar to *Phytophthora cambivora* Petri (Buisman).

Distribution of P. cambivora.—This is the first record of *P. cambivora* from South Africa. Tucker (19 and 20) reported a disease of Mexican and Guatemalan avocado in Porto Rico, the symptoms of which were a sickly yellow colour in the foliage, gradual defoliation and subsequent death. A *Phytophthora* resembling *P. cinnamomi* was isolated from the roots. Mr. Ashby has examined Tucker's strain, and states that it closely resembles 385 and regards them both as a strain of *P. cambivora*. He further gives the distribution of this fungus as France, Italy, Victoria, Porto Rico, Sumatra, Java, and South Africa.

MORPHOLOGY.

Growth at Different Temperatures.—A culture of Tucker's strain of *P. cambivora* (1007) was kindly sent to the writer from the Imperial Bureau of Mycology, and this fungus was grown in parallel series with 385. Two petri dishes of oatmeal agar of each fungus were placed in each of six incubators running at constant temperatures of 5°, 15°, 20°, 25°, 30°, and 35° C.

The diameter of the growth of one plate of each at the end of the fourth day follows. At both 5° C. and 35° C. there was no growth.

DIAMETER OF GROWTH IN MM.				
	15°C	20°C	25°C	30°C
385	24	56	76	32
1007	15	49	72	27

Tucker's strain is slightly slower-growing, but otherwise behaves in the same way as 385. The minimum temperature is above 5° C., optimum approximately 25° C. and the maximum above 30° but less than 35° C.

INOCULATION EXPERIMENT No. 1.

The Effect of the Fungus on Citrus Fruits.

(Carried out by Dr. Doidge, 1928.)

Citrus fruits were inoculated with the fungus, and it caused a rather firm brown type of rot, but fruit so inoculated had not the odour typical of brown-rot caused by *Pythiacystis citrophthora* Sm & Sm.

INOCULATION EXPERIMENT No. 2.

Effect of the Fungus on Young Avocado Trees.

(Carried out by Dr. Doidge, 1928.)

Young avocado plants growing in tins were inoculated with the fungus, both the stem and roots being injured in some cases. In no case was the disease reproduced.

INOCULATION EXPERIMENT No. 3.

Repetition of Experiment No. 2.

(Carried out by the writer.)

Avocado plants were established in tins, and were growing vigorously and about three feet high.

Eight plants were inoculated with a culture of *P. cambivora* (ten days on oatmeal), and four plants were kept as a control. The roots of six of the inoculated plants were exposed on one side of the tin, and the surface of the roots was scraped. The fungus was placed in contact with the injured roots and the soil replaced. Of the two remaining inoculated plants, the culture was introduced without injuring the roots. The roots of the controls were injured in the same way. The daily temperature was approximately 85° F. maximum and 55° F. minimum.

Result after Three Months.—The plants were not affected in any way, the inoculated plants being as healthy as the controls.

Discussion.—It appear» doubtful whether *P. cambivora* is strongly pathogenic to avocados, or, in fact, was the primary cause of the failure and die-back of the trees from which it was isolated. In all probability the soil conditions were at fault, the soil becoming water-logged for a short period during the rainy season. Good drainage is an important factor in the growth of avocados, and the temporary water-logging of the soil might result in the destruction of, the epidermal layers of roots. A weak pathogen could then gain ingress and complete the rotting of the tissue. The result of the decay of numbers of the roots might not be apparent for some time until the soil had begun to dry out, and then this reduction of the root system would have a marked effect on the tree, producing the die-back of the branches.

Tucker, C. M. 1927. Report of the Plant Pathologist. Report Porto Rico Agr. Expt. St.

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