

Root Rot of Safflower in Queensland

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Root and stem rot of safflower (*Carthamus tinctorius*) in Queensland, caused by undetermined *Phytophthora* spp., was first reported in 1964 (2). Collections of safflower plants with root and stem rot were made by the author during 1972 and 1973 in the Biloela and Emerald districts. The symptoms on diseased plants were identical with those described by Erwin (1) for *Phytophthora* root rot of safflower caused by *Phytophthora drechsleri* Tucker in the U.S.A.

Isolations were made from the diseased plants onto 3-P medium. *P. drechsleri* was isolated from the diseased plants from every field except one, where *P. nicotianae* B. de Haan var. *parasitica* (Dast.) Waterh. was consistently isolated. The identifications of *P. drechsleri* and *P. nicotianae* var. *parasitica* were confirmed by the Commonwealth Mycological Institute. As well as the above mentioned fungi, *Pythium* spp. were also isolated, especially from diseased root tissue. In pathogenicity tests on one month old safflower plants cv. Gila, both *P. drechsleri* and *P. nicotianae* var. *parasitica* produced identical severe stem and root rot symptoms. None of the three *Pythium* isolates tested was pathogenic.

Stovold (3) reported that *P. drechsleri* was the cause of root rot of safflower in New South Wales. In Queensland, *P. drechsleri* was the most frequently isolated organism capable of inducing severe root and stem rot, but it should be noted that *P. nicotianae* var. *parasitica* was equally pathogenic to safflower plants in the one instance in the field and in pathogenicity tests.

References

- (1) Erwin, D.C. (1950) — *Phytophthora* root rot of safflower in Nebraska caused by *Phytophthora drechsleri*. *Plant Disease Reporter* 34:306.
- (2) Simmonds, J. H. (1966) — Host Index of Plant Diseases in Queensland, Department of Primary Industries, Queensland.
- (3) Stovold, G. (1973) — *Phytophthora drechsleri* Tucker and *Pythium* spp. as pathogens of safflower in New South Wales. *Australian Journal of Experimental Agriculture and Animal Husbandry* 13: 445-59.

The Mating Type of *Phytophthora cinnamomi* on Black Mountain, A.C.T.

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Black Mountain Reserve is a large native plant community close to Canberra. Approximately 80 hectares of the lower eastern slopes are occupied by the Canberra Botanic Gardens. The gardens are unique, as they consist entirely of Australian native plants.

In recent years *Phytophthora cinnamomi* Rands has been found associated with the death of large numbers of indigenous and introduced plants in the gardens and adjacent reserve (3,4). Because of the extensive disease development in a wide range of named plant species within a confined region, these areas are particularly valuable for study. Part of the research included an investigation of the variation in growth rate and mating type of the local *P. cinnamomi* population.

One hundred and eleven isolates of the fungus recovered from soil and plant roots collected in the gardens and

reserve, were paired on oatmeal agar with A1 and A2 mating strains from the U.S.A. (G. Zentmyer) and Australia (B.H. Pratt). After 5-10 days incubation at 23°C, oospores were produced in 109 of the isolates paired with the A1 and were designated A2. No isolate produced an oospore when paired with the A2. Two isolates failed to produce oospores with either mating strain.

Recent work (1, 2) indicated that 1-3 per cent of *P. cinnamomi* isolates from other parts of Australia were of the A1 mating type. However the A1 is apparently absent from this locality.

Measurements of the growth rates of all isolates on cornmeal agar at 25°C showed that approximately 98 per cent were of the fast-growing type 1, while the remainder were growth type 2 (5).

Since many plants were introduced to the gardens as rooted stock, various mating strains could have been introduced. However the results of this survey suggest that this has not occurred. Further, the similar growth rates of the isolates and the apparent absence of the A1 suggest that the variability of the population is restricted, possibly by selective pressures in the local environment. As there is insufficient data to confirm this, and in view of the great aesthetic and scientific value of the gardens, the maintenance of quarantine measures to prevent introductions of the fungus from other areas seem advisable.

References

- (1) Arentz, F., B.H. Pratt and W.A. Heather (1972) — The occurrence of the A1 mating type of *Phytophthora cinnamomi* Rands on the South Coast of New South Wales. *Australian Plant Pathology Society Newsletter* 1: 27.
- (2) Pratt, B.H., W.A. Heather and C.J. Shepherd (1972) — Transcontinental occurrence of A1 and A2 strains of *Phytophthora cinnamomi* in Australia. *Australian Journal of Biological Science* 25:1099-1100.
- (3) Pratt, B.H., W.A. Heather, J.H. Sedgley and C.J. Shepherd (1972) — *Phytophthora cinnamomi* in natural vegetation in the A.C.T. *Australian Plant Pathology Society Newsletter* 1:13.
- (4) Pratt, B.H. and J.W. Wrigley (1970) — New host records for *Phytophthora cinnamomi* Rands. *Australian Plant Disease Recorder* 22:34-6.
- (5) Shepherd, C.J. and B.H. Pratt (1973) — Temperature-growth relations and genetic diversity of A2 mating-type isolates of *Phytophthora cinnamomi* in Australia. *Australian Journal of Botany* (In press).

Letters to the Editor

Dear Sir,

The New York Academy of Sciences has just published *Mycoplasma and Mycoplasma-Like Agents of Human, Animal, and Plant Diseases*. The book is the proceedings of a conference held by the Academy in January, 1973, under the Chairmanship of Dr. Karl Maramorosch of the Boyce Thompson Institute.

Because the Academy cannot, quite frankly, afford to give wide publicity to the *Mycoplasma* volume, we are asking a small group of individuals (about 150 specialists worldwide) to do what they can to make the publication known to their colleagues. Your name was suggested to us by Professor Fran. Fisher, Editor of the *World Directory of Plant Pathologists*.

We would greatly appreciate it if you would be good enough to make the enclosed information available to interested colleagues in your country.

May I thank you in advance and express our gratitude for any assistance you can provide in bringing the publication of this new work to the attention of your colleagues.

Thomas Houston
Publications Department
New York Academy of Sciences

Sir,

I would like to support the suggestion made by Mr. R. H. Taylor in the 1972 December issue of the A.P.P.S. Newsletter. He proposed that consideration be given to the recognition of our New Zealand and Papua New Guinea members by the substitution of Australasian for Australian in the Society's name. As pointed out by Mr. Taylor, the potential membership of these two countries is about 50 and I believe that the factual recognition of members from these two countries in the Society's name would assist in ensuring future membership and an increased participation by these pathologists. If such a change is ever to be made, I agree that now is the time for it to be given serious consideration by the executive and members of the society.

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Sir,

During the survey of *P. cinnamomi* in commercial nurseries in South Australia, (A.P.P.S. Newsletter 2:(2) pg. 9) it became obvious that most nurserymen were unfamiliar with the advantages of using "sterilized" soil and of adopting high standards of hygiene.

Steam treated soil was used in only two of the 83 nurseries surveyed, and although many nurserymen fumigated potting soil with methyl bromide, this was not to eliminate pathogens, but rather to eradicate weeds.

P. cinnamomi has been detected in a number of potted plants from the Eastern States and it seems that the lack of appreciation of hygiene is common in nurseries of all states.

There is a considerable trade of nursery material between states, for example, during the period January to August, 1971, over 200,000 declared plants were brought into South Australia from other states.

The risk of distributing pathogens (not only *P. cinnamomi*) in contaminated soil and nursery stock is obvious. If nursery registration schemes are introduced and repositories for horticultural planting material are established, nursery hygiene will need to be more critically supervised.

This emphasises the need for uniform legislation throughout the Commonwealth with respect to nursery hygiene and movement of soil and plant material.

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GENERAL ARTICLES

The Earliest Known Record of *Phytophthora cinnamomi* in Victoria.

In a recent paper, Pratt, Heather and Shepherd (2) attributed an early recording of *P. cinnamomi* in Victoria to Dr. Isabel C. Cookson (1) who in fact had identified her isolate as *P. parasitica* Dastur (now *P. nicotiana* var. *parasitica* (Dastur) Waterhouse). This was not mentioned by Pratt et al (2).

The fungus isolated from and proved pathogenic to English Walnut (*Juglans regia*) in the Wandiligong-Bright area of the Ovens Valley (1) was critically compared with 12 *Phytophthora* spp., including *P. cinnamomi*. However, Dr. Cookson considered that the presence of obpyriform sporangia without papillae excluded her isolate from *P. cinnamomi*. She concluded it was nearer *P. parasitica*. According to the descriptions of *Phytophthora* species given by Waterhouse (3, 4) there may be a case for believing that Dr. Cookson's isolate was *P. cinnamomi*. There are, however, several objections to doing so. Firstly, the production of sporangia in sterile media, readily

achieved by Dr. Cookson (1) is most unusual in *P. cinnamomi*. Secondly, while noting sympodial proliferation of sporangia which occurs in both species, Dr. Cookson did not observe the sporangial proliferation through empty sporangia so characteristic of *P. cinnamomi*. Thirdly, the ready production of oospores in pure culture, as obtained by Dr. Cookson, is unusual for *P. cinnamomi*. There would seem, therefore, a strong case for accepting Dr. Cookson's original view that the isolate was not *P. cinnamomi*. In the absence of a culture or specimen neither case can be proven. Consequently, the recording of Dr. Cookson's find as an unqualified occurrence of *P. cinnamomi* in Victoria is quite unjustified.

The main purpose of this letter, however, is to relate the circumstances surrounding what appears to be the earliest record of *P. cinnamomi* in Victoria which was noted, shortly after Dr. Cookson's publication, but not published.

During the early 1930's an outbreak of "beef nodule" among cattle on the Board of Works Sewage Treatment Farm at Werribee, halted the sale of beef from the farm. This constituted a major set-back to the scheme whose management sought a quick-return alternative to offset it. Through a connection with the well known cricket umpire, Robert Crocket who suggested planting bat-willow (*Salix coerulea*) on the farm, the management obtained planting material. This material is believed to have been obtained in Britain by Mr. Crocket. The extensive area planted to bat-willow flourished and within a few years the trees were fairly large and the project was being hailed as a great success. However, during the rather hot January of about 1935 disaster struck. A high proportion of the trees suddenly became severely wilted and began to die. The senior author was asked to examine the planting and report to the Management.

At the time of the examination many trees were severely wilted and some clearly dying. The bark of many trees was split and from the splits there oozed very dark, ink-like sap. These symptoms were similar to those exhibited by chestnuts affected by "ink disease" caused by *Phytophthora cinnamomi*. The dark sap symptom, however, is also produced by plants infected by other *Phytophthora* species (1). Isolates from the dying willows were of *P. cinnamomi*.

The severity of the disease was such that the bat-willow project was doomed, the trees were removed and the area returned to pasture. The beef nodule problem was resolved and the farm returned to beef production. Thus the circumstances surrounding the initiation and death of the bat-willow project were forgotten until the recent upsurge of interest in *P. cinnamomi* in Australia.

It is worth noting that no further reports of isolations of *P. cinnamomi* are available until the early 1960's. About 1964, it was isolated from walnut near Wangaratta and since that time has been isolated frequently from azaleas and other ornamentals from Melbourne suburban gardens (Mr. P.T. Jenkins, Victorian Plant Research Institute, personal communication).

An interesting sequel to the story is the success of attempted isolations from the Board of Works Farm at Werribee since 1935. A recent investigation by the second author of the cause of death of a range of plants on the farm failed to find *P. cinnamomi* in either plant or soil. Although from the same general area these plants were not from the bat-willow site which is still under grass. It might be, therefore, that all that remains of the "ink-disease of Werribee Bat-Willow" is the memory and this tale.

For the sake of completeness, it must be pointed out, that the third author has contributed nothing to the story except to persuade "les belles filles" to commit it to paper.

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