

Rust on Weeping Willow in Australia

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On 10th April, 1978, a rust was found on weeping willow (*Salix babylonica* L.) at Rydalme, a western suburb of Sydney. Only uredinia were found on this tree, but examination of weeping willows within a mile or two showed heavy rust infection present, and abundant development of both uredinia and telia. The Forestry Commission of New South Wales and the Commonwealth Department of Health in Canberra were notified and, in subsequent weeks, specimens were received from a wide area of eastern New South Wales. Collections made in southern Queensland were also sent by the Queensland Department of Primary Industries. These represent the first records of a rust on weeping willow in Australia and, from its widespread occurrence in eastern Australia in April-May 1978, it seems that it had probably been present undetected for several weeks or months.

The only rust known on weeping willow is *Melampsora coleosporioides* Dietel, first described from Japan (3, 4) and known also from China (1, 2) and Hong Kong (specimen IMI 128356 in the herbarium of the Commonwealth Mycological Institute). Examination of several collections of *M. coleosporioides* from Japan, China and Hong Kong and comparison with the Australian rust has shown that it also is *M. coleosporioides*.

Infected trees show abundant development of small (0.2-0.5 mm diam.) bright yellowish orange powdery uredinia on the under surface of the leaves. In the early stages, no other symptoms are shown and it is easy to miss infected trees unless the undersurface of their leaves is examined. All observations made so far have been on trees in autumn and early winter, when leaf fall occurs normally, but heavily infected trees showed browned shrivelling leaves which fell earlier than normal and did not develop the yellow leaf colour seen on unaffected trees. Some trees seem much less affected than others. Urediniospores are mainly obovate to oval in shape, a few subglobose or pyriform to irregular, finely echinulate over their whole surface, with several indistinct germ pores and measure 19-28 x 13-18 μm . Abundant clavate to capitate paraphyses occur amongst the spores. Telia develop as pale amber coloured sori embedded in the leaf tissue. They darken as they mature and eventually are dark brown to almost black, 0.2-0.5 mm in diam. or fusing into larger composite sori up to 1-2 mm across. Teliospores are elongated, rectangular in side view and polygonal due to mutual pressure in surface view. They measure 25-35 x 7-10 μm and have a pale brown wall, uniformly 1-2 μm thick.

With one exception, all records of *M. coleosporioides* in Australia to date are on *S. babylonica*. However, one collection (DAR 31820) made at Rockley, in the central tablelands of New South Wales in April 1978 was on *S. fragilis* L. Infection was moderately heavy and both uredinia and telia were present. In Japan and China, *M. coleosporioides* has been recorded on several *Salix* spp. in addition to *S. babylonica*. These are *S. amygdalina* L. var. *nipponica* Schneid. (3), *S. glandulosa* Seemen (4), *S. heteromera* Hand.-Mazz. (2), *S. matsudana* Koidz. (2) and *S. mesneyi* Hance (1, 2).

M. coleosporioides is the fourth pathogen of widely grown introduced trees to be detected in Australia in recent years (the poplar rusts, *M. medusae* Thüm. and *M. larici-populina* Kleb., and *Dothistroma septospora* (Dorog.) Morelet on *Pinus radiata* are the other three). The con-

tinued arrival of these pathogens in Australia is a matter of some concern and indicates the need for a detailed study to see if the ways in which introductions are occurring can be detected and dealt with. The presence of *M. coleosporioides* in eastern Australia also concerns New Zealand authorities (Dr. G. Latch, pers. comm.). In New Zealand, several *Salix* spp. are widely grown for river bank erosion control and the possible introduction of a rust capable of attacking some of them is a serious matter. Certainly, if the pattern of spread of the poplar rusts is repeated, *M. coleosporioides* will appear in New Zealand within the next year or two. The Australia-New Zealand region is free of many serious tree diseases and more detailed consideration should be given to quarantine and other measures to minimise the chances of further introductions.

Another willow rust, *M. epitea* Thüm. has been known in New South Wales and Victoria since 1972. It is the common willow rust of Europe and North America and, in Australia, has been recorded on several *Salix* spp., mainly *S. caprea* L. and *S. discolor* Muhl. It has not been recorded on weeping willow. It is distinguished from *M. coleosporioides* by its smaller (16-24 μm diam.) subglobose to broadly oval urediniospores.

Observations in future seasons are needed before the effect of *M. coleosporioides* on willows in Australia can be assessed. A more comprehensive account of willow rusts in Australia will be prepared when such observations have been made. I would be glad to receive specimens of these rusts from all states and to be sent specimens of rust on weeping willow as it is detected during the coming season.

I am most grateful to Mr. D. W. Edwards, Miss R. Keirle and the officers of the Forestry Commission of N.S.W. for collecting and forwarding specimens; to Mr. J. Alcorn, Plant Pathology Branch, Department of Primary Industries, Indooroopilly, Queensland for sending Queensland collections and allowing me to quote them; and to Dr. N. Hiratsuka, Japan, Drs. D. B. O. Savile and J. Parmelee (Ottawa, Herb. DAOM) and Dr. B. C. Sutton (C.M.I., Herb. IMI) for lending specimens of *M. coleosporioides* from Japan, China and Hong Kong. Dr. G. Latch, Palmerston North, New Zealand provided information on willows in New Zealand.

REFERENCES

- (1) Cummins, G. B. (1950) — Uredinales of continental China collected by S. Y. Cheo. I. *Mycologia* **42**: 779-797.
- (2) Cummins, G. B. and Ling, L. (1950) — An index of the plant rusts recorded for continental China and Manchuria. *Plant Disease Reporter* Supplement 196, pp. 520-556.
- (3) Hiratsuka, N. (1960) — A provisional list of Uredinales of Japan proper and the Ryukyu Islands. Science Bulletin of the Division of Agriculture, Home Economics and Engineering, University of the Ryukyus No. 7, pp. 189-314.
- (4) Sydow, P. and Sydow, H. (1914) — Monographia Uredinearum Vol. III pp. 367-368.

NEWS FROM THE EXECUTIVE

NEW GUIDELINES FOR RECOMBINANT DNA EXPERIMENTS

The Secretary has received from the Australian Academy of Science, information statements concerning "New guidelines for recombinant DNA experiments". This information will be provided to members who request it.

CONSTITUTIONAL AMENDMENTS

Regional Councillors have recently contacted members regarding the amendment to Clause 39 of the Constitution. The amended clause reads:

"This constitution may be amended by financial members of the Society provided that not less than 3 months notice of the proposed amendment has been circulated to the members and the resolution is passed either by a two-thirds majority of the members voting in a postal ballot or by a simple majority of the members voting at the Annual General Meeting either in person or by proxy."

The amendment is the part in italics.

Could those members who have not voted for this amendment (there are over 100 members who have not) please indicate whether they are "For" or "Against" the proposed amendment.

HONOURS FOR APPS MEMBERS

Two members of our Society have recently been honoured for their professional achievements.

Prof. C. A. Parker, Department of Soil Science, University of Western Australia, has been awarded the gold medal of the Australian Institute of Agricultural Science.

Dr. Allen Kerr, Plant Pathology Department, Waite Agricultural Research Institute, has been awarded two honours.

In April, Allen was awarded the Walter Burfitt Prize of the Royal Society of New South Wales for his basic studies of virulence and avirulence in *Agrobacterium* which have led to a simple and highly practicable method of protecting stone fruit trees from crown gall disease. The efficacy of this method has been tested successfully in South Australia and California where it will save orchardists, particularly peach and almond growers, large sums previously spent in replacing trees debilitated by this disease.

In April, he was elected a Fellow of the Australian Academy of Science in recognition of his theoretical and practical work on the crown gall pathogen. The theoretical aspects of his work, done in collaboration with other scientists at the Waite Institute and overseas, have led to a better understanding of how crown gall is caused. As crown gall is a true plant cancer, the results have had a considerable impact on fundamental studies of cancer induction. An interesting recent development has been the elucidation of the chemical structure of the bacteriocin which is the substance responsible for inhibition of the pathogen.

"WASP" on Colour Cine

Prints are now available of the Waite Institute film "WASP": 16mm with optical sound track, running time 8½ minutes.

The film depicts the use of this novel pruner-sprayer in plant protection, exemplified by sequences illustrating the life history of the vascular pathogen *Eutypa armeniaca* (*Eutypa* dieback of apricot trees and grapevines). Main uses for the film envisaged are for undergraduate courses in plant protection and for horticultural and forestry extension workers.

Enquiries should be directed to Dr. M. V. Carter, or to the Secretary, Waite Agricultural Research Institute, Glen Osmond, South Australia. 5064.

IVth International Plant Pathology Congress, Melbourne 1983

Melbourne has been selected as the venue for the 4th International Plant Pathology Congress to be held in 1983. Further details will be provided in the December issue.

NEW PUBLICATIONS

"Diseases of wheat and their control"

by Y. R. Mehta

This well illustrated book is divided into five sections:

1. Introduction
2. Details of the diseases of wheat recorded in Brazil.
3. Details on field scales for estimating disease intensity.
4. A key for identifying the various diseases.
5. An appendix containing statistical data on wheat cultivation in Brazil.

The text is in Portuguese.

Published by Editora Agronomica Ceres Ltda. Summa Phytopathologica, Sao Paulo, Brazil. 191 pages, recommended price \$US26.00.

CONFERENCES

IX International Congress of Plant Protection, Washington, D.C., U.S.A., 5th-11th August 1979.

The 9th International Congress of Plant Protection has been organised for August 5th-11th 1979, in Washington D.C.

Eleven sections are planned, and these are:

1. Socio-economic aspects of plant protection.
 2. Crop loss assessments: Physical environmental effects.
 3. Crop loss assessments: Biological effects.
 4. Habitat modification and cultural component of plant protection.
 5. Genetic component of plant protection.
 6. Biological component of plant protection.
 7. Chemical component of plant protection.
 8. Environmental protection component of plant protection.
 9. Regulatory component of plant protection.
 10. Educational component of plant protection.
 11. Management of total systems for plant protection.
- In addition, ten "All Congress Symposia" are planned:
1. Integrated Plant Protection for Plantation Crops (banana, palm, coffee, tea, cocoa, sugarcane).
 2. Integrated Plant Protection for Rice.
 3. Integrated Plant Protection for Corn and Sorghum.
 4. Integrated Plant Protection for Wheat.
 5. Integrated Plant Protection for Deciduous Tree Fruits.
 6. Integrated Plant Protection for Potatoes.
 7. Integrated Plant Protection for Soybeans.
 8. Integrated Plant Protection for Cotton.
 9. Integrated Plant Protection for Forestry.
 10. Integrated Plant Protection for Sugar Beets.

Enquiries concerning the program should be addressed to: Dr. J. F. Tammen, or Dr. H. C. Chiang, IX International Congress of Plant Protection, c/o The American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, MN 55121, U.S.A.