Field surveys in Queensland have shown that a range of grain sorghum hybrids contract periconia root rot. Cases of premature death, severe grain pinching and lodging despite adequate soil moisture have been associated with extensive root rot. These phenomena emphasize the need to ascertain the role of *P. circinata* and root rot in sorghum lodging, the most serious disease related problem facing sorghum growers in Queensland.

ACKNOWLEDGEMENT

I am grateful to Mr. J. Walker for lending the DAR herbarium specimen.

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Rusts on *Oxalis* and *Mahonia* in Australia

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In April 1976, a specimen of *Oxalis corymbosa* DC., a common weed species, heavily infected with a uredinial rust was found in a garden at West Pennant Hills (DAR 26594). During the following fortnight, several more specimens were submitted from the northern and western suburbs of Sydney. In some, both uredinia and telia were seen, enabling the rust to be identified as *Puccinia oxalidis* Diet. & Ell. This is its first record in Australia.

Puccinia oxalidis occurs in North, Central and South America (1, 2, 4). There is also one record of a uredinial rust on *Oxalis corniculata* L. from North Africa which may refer to this species (3). *P. oxalidis* is a heteroecious, long-cycled rust, with uredinia and telia on *Oxalis* spp. and pycnia and aecia on various species of *Mahonia* (Berberidaceae). In Australia, it has been found to date only on several species of *Oxalis*. Very heavy infection, leading to death of many leaves, has been seen on *O. corymbosa* and *O. latifolia* H.B.K.. Lighter infection has been seen on *O. bowiei* W. Herbert ex Lindl., *O. articulata* Sav. and *O. caprina* L. So far no rust has been found on *O. corniculata* L. and *O. pes-caprae* L. even when they were growing close to heavily infected plants of other species.

Since first reported, the rust has spread rapidly and there are now records from both the far North Coast and the South Coast of N.S.W. It is expected that its pattern of spread will follow that observed with other introduced rusts (5,6) and records from other states and from New Zealand can be expected in the near future.

So far, no infection of *Mahonia* with *P. oxalidis* has been seen in N.S.W. *M. aquifolium* (Pursh.) Nutt. is grown as an ornamental in some gardens and, with the arrival of *P. oxalidis* in Australia, there are now at least three rusts here capable of attacking *Mahonia*.

In September 1975, the rust *Cumminsiella mirabilissima* (Peck) Nannf. in Lundell & Nannf. was found on *M. aquifolium* plants at Rockley, Central Tablelands of N.S.W. (DAR 26021 and other specimens). This rust has not been recorded previously in Australia, but it is not known how long it may have been present on these old, well-established and rather isolated *Mahonia* bushes. To date it has not been detected elsewhere in N.S.W. In December 1975, the pycnial and aecial stages of *Puccinia graminis* Pers., previously found on *Berberis* in Australia, were detected on the same group of *Mahonia* plants (DAR 26024). Inoculations with aeciospores carried out by the University of Sydney Cereal Rust Laboratory at Castle Hill indicated that it was *P. graminis* f. sp. *secalis* Eriks. & Henn..

In recent years, there have been several new rusts detected in Australia, and from the highly susceptible nature of the hosts it seems unlikely that they have been overlooked in the past. They seem to be recent arrivals. Two species of *Melampsora* on poplars, *Puccinia xanthii* on Noogoora burr and now *P. oxalidis* on *Oxalis* are all recent records and one wonders how they entered Australia.

Below are given descriptions of *P. oxalidis* and *C. mirabilissima* prepared from the Australian collections so that they will be readily available to Australian plant pathologists. I would like to thank the many collectors who submitted specimens, especially Mr. J. McGechan and Mr. L. Penrose of the Biology Branch for collections on *Mahonia* and *Oxalis* respectively, and the University of Sydney Cereal Rust Laboratory for the identification of *P. graminis* f. sp. *secalis* on *Mahonia*.

Puccinia oxalidis Diet. & Ell. in Dietel, *Hedwigia* **34** : 291, 1895

Heteroecious, long-cycled.

Pycnia and *aecia* on *Mahonia* not observed so far in Australia. *Uredinia* and *telia* on several species of *Oxalis*. *Uredinia* bright golden yellow to orange yellow, almost completely hypophyllous, very few epiphyllous in heavy infections, single or more usually several clustered, in most susceptible species often covering most of the lower leaf surface, with corresponding yellowing of the upper leaf surface in some cases, some brown necrotic spots developing in heavy infections with withering and death of leaves; sori 0.2-0.5 mm diam., aparaphysate. *Urediniospores* (Fig. 1, a) sub-globose to oval, 15-20 (22) um diam., some larger obovate spores to 24 x 18 um, with a very thin colourless finely echinulate wall 0.5-1 um thick, contents pale yellow, germ pores not obvious but probably several. *Telia* hypophyllous, white to pale cream to pale fawn, at first waxy in appearance, 0.2-0.5 mm diam., sometimes fusing into larger groups and seen as creamy patches amongst the yellow uredinia. *Teliospores* (Fig. 1, a) oval, usually slightly constricted at the central septum, wall very thin, colourless, o.5-1 um, contents yellowish, 17-24 x 11-14 um with a persistent hyaline pedicel usually as a short stub but sometimes to 40 um long, 5-7 um wide at the junction with the spore, pedicel basal, sometimes obliquely placed on the basal cell, a few seen with completely lateral pedicel at the septum (diorchidioid teliospores). In the sorus, teliospores are

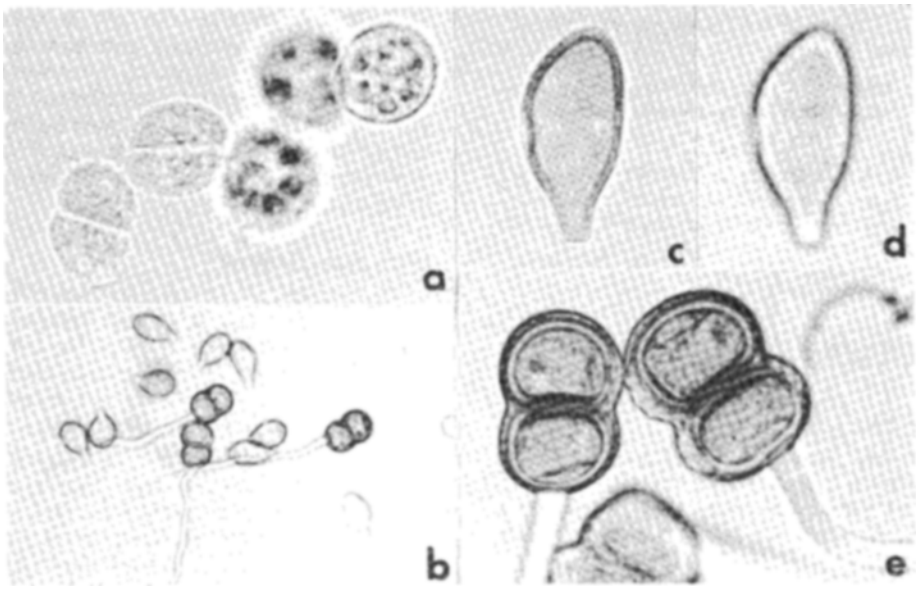

Figure 1 — (a) *Puccinia oxalidis*, Urediniospores and teliospores, one with lateral pedicel (diorchidioid), X1000.

(b-e) *Cumminsiella mirabilissima*, b. Urediniospores and teliospores, X250. c. Urediniospore, equatorial view showing thick wall and germ pores, X1000. d. Urediniospore, surface view showing fine roughening, X1000. e. Teliospores showing thick many-layered wall, X1000.

capable of immediate germination from each cell by a hyaline septate four-celled basidium 20-30 x 4-5 um, each cell with a thin pointed sterigma 6-7 um long bearing a sub-globose to oval hyaline basidiospore 4-6 um diam.. Germination is from the apex of the apical cell and from just below the central septum in the basal cell. Telia germinating have a white downy appearance. See also Arthur (1,2).

Specimens examined: from various Sydney suburbs, on *Oxalis articulata* (DAR 27073), *O. bowiei* (DAR 27070), *O. caprina* (DAR 27071), *O. corymbosa* (DAR 26594, DAR 26294, DAR 26344, DAR 26646, DAR 26953, DAR 26957, DAR 27068), *O. latifolia* (DAR 26435, DAR 26459, DAR 27069, DAR 27072), *O.* spp. (being grown on for species identification, DAR 26429, DAR 26552, DAR 26598, DAR 26608, DAR 26609). From Ballina, on *O.* sp. (DAR 27736). From Gerringong, on *O. corymbosa* (DAR 27833).

Cumminsiella mirabilissima (Peck) Nannf. in Lundell & Nannf.Fungi Exs. Suec. 1507a, 1947.
Autoecious, long-cycled.

Sori hypophyllous, with corresponding small pale to dark purple angular spots 0.5-1 mm diam. on the upper leaf surface, spots often sharply delimited by leaf veins and sometimes fusing into larger irregular dark purple areas. *Uredinia* pale cinnamon brown, 0.2-0.8 mm diam., powdery, erumpent, scattered, aparaphysate. *Urediniospores* (Fig. 1, b-d) broadly obovate to pyriform to clavate, a few sub-globose 25-37 x 17-22 um with a thick double wall; outer wall hyaline 0.5-1 um thick, except over germ pores where it is thickened into a broad colourless papilla 2-3 um high and 6-8 um across at the base, closely and finely echinulate; inner wall pale yellowish 1.5-3 um thick; germ pores 4, equatorial; pedicel of urediniospores hyaline, to 50 um long, deciduous, with a clear line of abscission at pedicel apex. *Telia* formed as teliospores develop in same sori as urediniospores, sori becoming darker cinnamon brown as teliospores develop. *Teliospores* (Fig. 1, b-e) ellipsoidal to oblong ellipsoidal, golden brown to reddish brown, with a single central septum at which they are slightly constricted, 28-38 x 22-27 um, lower cell sometimes slightly narrower than upper, with a complex wall of several layers, the most obvious being an outer colourless wall 1.5-4 um thick, thickest at the sides near the septum, finely and densely roughened but less densely than urediniospores, inner wall golden brown 2-3 um thick; germ pores not readily seen in many spores, two per cell, equatorial; pedicel of teliospores persistent, very long (to 150 um or longer), 2-3 um wide, hyaline or faintly tinted ye lowish, sometimes placed obliquely on the basal cell. *Pycnia* and *aecia* not observed so far in Australian collections (see also C.M.I. Descriptions of Pathogenic Fungi and Bacteria No. 261).

NOTE ADDED IN PRESS

Specimens of *P. oxalidis* have now been received from Queensland (Kenmore, 4.X.1976, E. Johnson, DAR 27939 ex BRIP, first record for Queensland) and Norfolk Island (October, 1976, B. Evans, DAR 27938) and its spread appears to be following the pattern seen with other rusts. I am grateful to Mr. J. Alcorn (BRIP) for permission to note the Queensland record.

Specimens examined: on *Mahonia aquifolium*, property of J.K. McGechan, Rockley, N.S.W., September, 1975 (DAR 26021, DAR 26022), October, 1975 (DAR 26023).

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REGIONAL NEWS

Northern Territory Branch

Mr Rex Pitkethley has been appointed to the senior plant pathologist position with the Animal Industry and Agriculture Branch of the Department of the Northern Territory in Darwin. He replaces Ms Susan Aldrick who left the Branch in April.

Mr Barry Conde, formerly engaged in post-graduate research at the University of Queensland, has been appointed plant pathologist with the Department of the Northern Territory.

Queensland Branch

Dr. J.E.C. Aberdeen retired from his position as Senior Plant Pathologist with the Queensland Department of Primary Industries on 30th July, 1976. During his career in plant pathology Dr. Aberdeen spent periods firstly with the then Queensland Department of Agriculture and Stock from 1936 to 1949 working on vegetable diseases, particularly tomatoes. From 1949 to 1970 he was Senior Lecturer in the Botany Department of the University of Queensland where he gave courses on plant pathology to agriculture and science students. In 1970 he took up a position as Head of the Department of Plant Industries at Queensland Agricultural College. He returned to work in plant pathology, again on vegetable diseases, with the Department of Primary Industries in 1972. In addition to his expertise on vegetable diseases Dr. Aberdeen developed a keen interest in the effective use of fungicides and stimulated considerable work in this area. He has also made a study of the higher fungi, an interest he intends to maintain during his retirement.

Mr. Ian Muirhead was recently granted leave by the Queensland Department of Primary Industries to undertake post graduate studies towards a PhD degree at the University of Sydney. Ian has worked on post harvest diseases of tropical fruit since his appointment as a plant pathologist in 1969. He intends to examine the latent infection phenomena, evident in some of these diseases, under the guidance of Professor B.H. Deverall.

New Zealand Branch

Dr. Roy E. Gaunt has recently been appointed to the post of Lecturer in Plant Pathology in the Department of Agricultural Microbiology, Lincoln College, Canterbury, New Zealand.

Dr. Gaunt graduated from University College of North Wales, Bangor, in Agricultural Botany, and then obtained his PhD. at Southampton University, where he studied the host-parasite relationship of loose smut of wheat with Dr. J.C. Manners and Dr. A. Myers. In 1972 he was appointed Lecturer in the Department of Botany, Rhodes University, South Africa.

His research interests are in the physiological and biochemical interactions between host plants and both symbiotic and parasitic micro-organisms. Present research is on the metabolism of loose smut infected wheat plants, the role of toxins in bacterial and Verticillium wilt of lucerne, and the potential of vesicular-arbuscular mycorrhizal associations to enhance plant growth and disease resistance.

Victorian Branch

Mr. R.H. Brown of the Plant Research Institute, Burnley, has been awarded an Anzac Fellowship to work in New Zealand for 4 months in 1977. He will be at D.S.I.R. Plant Diseases Division, Auckland with visits to Wellington and Christchurch. Rob will be studying cyst-forming nematodes on potatoes, clover, and cereals.

Also in the field of Nematology, Dr. Winoto Suatmadji has recently joined the Victorian Department of Agriculture. Winoto obtained his Ph.D. at The State Agricultural University, Wageningen, and in 1970 joined the staff of the Faculty of Agriculture, University of Malaya, Kuala Lumpa. In 1974 he moved to Serdang, as Head of the Department of Plant Protection and of the Section of Nematology, at the University of Agriculture, Malaysia. In September, 1976, Winoto joined the staff of the P.R.I., Burnley, and his current research program is largely concerned with nematodes pathogenic to fruit crops, and nematode taxonomy.

Dr. D.G. Parbery, of the School of Agriculture, University of Melbourne, is at present overseas. After visiting various research centres in Europe, he spent three months at the University of Aberdeen. Doug is at present at the University of Cambridge and will work there for a further six months.

La Trobe University and the P.R.I., Burnley, have for some years been co-operating in the teaching of plant pathology. This year, two undergraduates undertook research projects at the P.R.I. Ken Waldron studied the efficiencies of various methods of indexing field lettuce for lettuce mosaic virus, and Graeme Guy studied levels of bacterial blights in imported french bean seed. The projects lasted for about three months and were well conducted.

The pathogen-tested potatoe scheme has been attracting overseas attention again. In October, Dr. R.L. Sawyer, the Director General of the International Potato Centre, briefly visited Victoria. Mr. D.E. Harrison, of the P.R.I., Burnley, has recently visited New Zealand and South Korea in his capacity as leader of the Victorian Project. As a result of the Korean visit, two seed potato production specialists, one from Sri Lanka and one from South Korea, will visit Victoria, Tasmania and New South Wales.

While on holiday in the U.K. Dr. R.G. Garrett made brief visits to research institutes at Harpenden, Wellesboune and Invergowrie, and attended a symposium on "Mycoplasmas" at Glasgow. On his way home he also briefly visited the University of California, Davis.