OCCURRENCE OF THE RUST FUNGUS *UROMYCES RUMICIS*, A BIOLOGICAL CONTROL AGENT OF FIDDLE DOCK *(RUMEX PULCHER)* IN WESTERN AUSTRALIA

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Summary. A strain of the rust fungus *Uromyces rumicis,* is widely established as an unintentionally introduced biological control agent on field populations of *Rumex pulcher* in south-west Australia seemingly without attacking other Polygonaceae species. The extent to which the fungus may effect the health of *R. pulcher* populations is unknown.

INTRODUCTION

The rust fungus *Uromyces rumicis* has been reported from Europe and Africa on *Rumex* species in the subgenus *Rumex* and from the related Polygonaceae genus *Emex* (2, 6, 9) and has been long considered a potential biological control agent for these weeds (4, 6). It was first studied in Europe as a control agent for curly dock, *Rumex crispus*, in North America (4, 5). The rust is macrocyclic and heteroecious using *Ranunculus ficaria* as a host for the haplontic phase. The dikaryotic phase is host specific to *Emex* and *Rumex* subgenus *Rumex* (1, 5, 6) and the haplontic phase is specific to *Ranunculus ficaria* (9). The fungus has been proposed as a potential biological control agent for *Emex* and *Rumex* species in Australia (10).

Uromyces rumicis was first reported as an unintentional introduction to Perth, Western Australia, in 1986 (11). The fungus was observed on *R. crispus*, *R. pulcher* and *E. australis* grown in glasshouses and had not been located in the field. Here we report on its distribution and host range in the field in Western Australia.

METHODS

During 1990 - 1992 surveys were made of Polygonaceae throughout the agricultural regions of south-western Australia as part of an assessment of the presence of potential biological control agents. Identification of rust fungi was based on Wilson and Henderson (12), and identification of *Rumex* species on Rechinger (7).

RESULTS AND DISCUSSION

Uromyces rumicis was found on *R. pulcher* at 14 sites in south-west Western Australia. The sites were found west of the area bounded by Namban (30°23'S 116°03'E) in the north, Broomehill (33°51'S 117°38'E) inland and Albany (35°02'S 117°53'E) in the south. The area has over 600 mm annual rainfall.

The following plants and sites were examined during the survey: *E. australis* (31 sites), *E. spinosa* (5 sites), *R. crispus* (39 sites), *R. conglomeratus* (13 sites), *R. obtusifolius* (1 site) and *R. pulcher* (25 sites). Often two or three *Rumex* species were found at the same site yet only *R. pulcher* showed signs of attack. Uredia and telia were evident from the end of spring until plants senesced (November and December) and again in May when the plants produced rosettes.

The host of the haplontic phase, *Ranunculus ficaria,* is not known from Western Australia (3) so consequently was not included in the survey.

The impact of *U. rumicis* on *R. pulcher* has not been assessed, but may be important as indicated by studies on related species. Schubiger *et al.* (8) showed that *U. rumicis* caused severe damage to *R. crispus* grown in a glasshouse, reducing the number of leaves and causing a 55% reduction in dry weight of roots and leaves compared with controls. Less damage occurred to infected *R. obtusifolius* grown in a glasshouse. Inman (5) inoculated field plots of *R. crispus* and observed a lower seed weight and number in infected plants.

The phenology of the fungus in Western Australia indicate that strains adapted to cooler conditions would be more suitable for introduction into the Mediterranean climate of Western Australia. Secondly, the limited host range in Western Australia indicates that strains would have to be selected for each target species of *Rumex* or *Emex.* For example, a strain of the fungus from *E. australis* has been studied (6) and a strain from *R. crispus* has been proposed for introduction into North America (9).

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