

Disease Notes (continued)

First Report of Infection of *Lygodium microphyllum* by *Puccinia lygodii*, a Potential Biocontrol Agent of an Invasive Fern in Florida. M. B. Rayamajhi, R. W. Pemberton, T. K. Van, and P. D. Pratt, USDA-ARS, Invasive Plant Research Laboratory, Fort Lauderdale, FL 33314. *Plant Dis.* 89:110, 2005; published on-line as DOI: 10.1094/PD-89-0110A, 2005. Accepted for publication 19 October 2004.

Lygodium microphyllum (Cav.) R.Br. (Old World climbing fern), in the family Schizaeaceae, is one of the most invasive (Category I in Florida) weeds in Florida. It has invaded more than 50,000 ha of wetlands and moist habitats in southern Florida and is rapidly spreading in new areas of the Everglades (3). The search and evaluation of biocontrol agents for this fern is currently in progress. *Puccinia lygodii* (Har.) Arth. (Uredinales) (1), previously recorded on *L. volubile* Sw. and *L. venustum* Sw. in South America (2), attacks foliage and severely damages *L. japonicum* Thunb. (Japanese climbing fern) vines in northern and central Florida (4). We hypothesized that since *L. japonicum* occurred mainly in northern and central Florida, *P. lygodii* did not have opportunity to interact with *L. microphyllum*, which primarily occurs in southern Florida. Therefore, we used two inoculation methods to test the possible pathogenicity of *P. lygodii* on the new host, *L. microphyllum*. Method-I was designed to imitate a seminatural inoculation technique in which three containerized (0.45-L capacity) *L. microphyllum* test plants (15- to 30-cm-high sporelings) were intermixed among a group of containerized (5.0-L capacity) *P. lygodii*-infected *L. japonicum* plants (source of inoculum) in a glasshouse. In Method-II, uredospores obtained from pustules on diseased *L. japonicum*

foliage were adjusted to 1×10^6 uredospores/ml (4) and then misted on three *L. microphyllum* sporelings (same size as in Method-I) until foliage was completely wet. The plants were then covered individually with a plastic bag for 3 days to facilitate spore germination and infection. In both methods, three *L. japonicum* sporelings of similar size as *L. microphyllum* were intermixed among diseased *L. japonicum* plants as a positive control. All test and infected plants were placed on 6-cm-high trays filled two-thirds with water and exposed to diffused daylight and a temperature range of 20 to 35°C in a glasshouse. These plants were monitored for the development of rust symptoms (halos and rust pustules) development for 8 weeks. Minute cinnamon flakes that developed into eruptive pustules were seen on the lower surface of the pinnules approximately 42 and 28 days after treatment initiation (in both methods) for *L. microphyllum* and *L. japonicum* (positive control), respectively. Each method was repeated twice. Dimensions ($29.7 [\pm 3.7] \times 23.5 [\pm 2.6] \mu\text{m}$) and morphology of urediniospores from pustules on inoculated *L. microphyllum* were similar to those reported for *P. lygodii* on other host systems (1,2,4). To our knowledge, this is the first report demonstrating the infection of *P. lygodii* on *L. microphyllum*. The potential use of *P. lygodii* as a classical biocontrol agent of *L. microphyllum* in southern Florida will be further investigated.

References: (1) J. C. Arthur. *Bull. Torrey Bot. Club* 51:55, 1924. (2) J. W. McCain et al. *Mycotaxon* 39:281, 1990. (3) R. W. Pemberton. *SIDA* 20:1759, 2003. (4) M. B. Rayachhetry et al. *Plant Dis.* 85:232, 2000.