



Press Release (May 26, 2003)



The World Phytophthora Collection at UCR is facing Destruction in 2 months

With the drastic budget cuts facing the University of California this collection which is over 40 years old may be lost forever in just another few months.

The World Phytophthora Collection at the University of California, Riverside currently contains about 5000 isolates representing at least 70 distinct taxonomic species or groups. These isolates are from worldwide sources and a wide range of hosts. The collection is a unique world resource for research on Phytophthora, one of the most devastating plant pathogens on this planet. As such it is the only large comprehensive collection of genetic diversity representative of this extremely important group of plant pathogens. It was started around 1962 and gradually became established as an important resource for Phytophthora research. Initiated by Professors D. C. Erwin and G. A. Zentmyer, it eventually became a major depository for isolates collected throughout the world. Since 1981 it has been under the curatorship of Professor Michael D. Coffey and in the last 15 years it has increased dramatically both in size and genetic diversity. It has acquired important collections from worldwide sources. As an example it houses over 500 isolates of the destructive tropical plant pathogen *P. palmivora* from different hosts and regions. The collection also includes a genetically diverse collection of isolates of *P. infestans*, cause of late blight of both potatoes and tomatoes. This species is one of the most dangerous plant pathogens in the world. The UCR collection houses the largest collection of genetically distinct strains of this plant destroyer. This last year has seen a dramatic increase in interest in Phytophthora within the academic community. The appearance of Sudden Oak Death caused by *P. ramorum* and the possibility of its global impact on oaks and other important hosts has caught the eye of government, media and scientists.

Current status of the collection: In the last 15 years the collection has increased from just over 900 (October 1987) to about 5000 accessions (September 2002). From 1986 the collection has been preserved under liquid nitrogen using cryogenic techniques. It is now 'housed' in 4 liquid nitrogen (LN) storage refrigerators, with automated alarm systems. During 2001/2002 new acquisitions included strains of *P. ramorum* from different native hosts and *P. bisheria* from strawberry. In addition, we received a comprehensive collection of additional genetic reference strains of *P. infestans* from Professor William Fry (Cornell University) and Professor Jean Ristaino (North Carolina State University). The most recent additions to the collection have been new isolates of *P. brassicae* and *P. phaseoli*.

Significance of the collection:

The World Phytophthora Collection is the only major germplasm resource for research into this extremely important plant pathogen. The collection contains important species and varieties preserved under ideal cryogenic conditions, and many of these accessions have been studied using classical modern molecular methods. Important disease problems caused by Phytophthora species include *P. citrophthora* and *P. parasitica* on citrus; *P. cinnamomi* and *P. citricola* on avocado and walnut; *P. megasperma* on deciduous tree crops, alfalfa and asparagus; *P. parasitica* and *P. infestans* on tomato and potato; *P. capsici* on green pepper; *P. syringae* on almonds; *P. fragariae* and *P. cactorum* on strawberry; *P. cryptogea* on kiwi; and *P. cinnamomi*, *P. citricola*, and *P. parasitica* on many different ornamental plants. The taxonomy, genetics, biology, ecology and pathology of many of these Phytophthora species are poorly understood. Many of the diseases are predominantly soilborne and consequently are difficult to control. Losses due to Phytophthora problems run into billions of dollars annually.

The World Phytophthora Collection at Riverside is now widely regarded as a uniquely important center for acquisition, deposition and storage of Phytophthora isolates (see Shaw, D. S. 1988. Chapter 2. The Phytophthora species. Section VIII. Culture Collections. page 47 In: Advances in Plant Pathology Vol. 6). Approximately one third of the isolates in the collection have been the subject of intense genetic study using either isozymes or more modern molecular methods such as RAPDs and RFLP analysis and selected representatives of the major taxonomic groups identified by these methods have also been the subject of ITS 1 sequence analysis.

A comprehensive searchable database is maintained on its own server (<http://phytophthora.ucr.edu>) and allows for printout by accession number, or by species.

Cost factors in Maintenance of the Collection

The major costs are supplies (liquid nitrogen, Nunc cryovials, agar media, petri plates, chemicals) and the occasional repairs to equipment.

In the past, a combination of departmental funding plus the annual GRCP grant takes care of the supplies. Liquid nitrogen supplies cost about \$8, 000 per year. Additional supplies come to about \$4000. So the total needed is ~\$12, 000. An annual grant of ~\$4,000 has been available from GRCP but in view of the state budget crisis may not be available in future years.

Equipment repairs are occasional. This last year our large LN refrigerator had problems with its automated system. Repair costs were about \$800. We also bought new boxes for the inventory system as the old ones are progressively deteriorating beyond safe use. An estimated cost of \$1000 for repairs/ replacement parts is likely to be adequate.

An annual budget of \$13,000 would ensure the continuing survival of this unique and irreplaceable collection of the plant destroyer, Phytophthora.

Michael David Coffey, Professor,
Department of Plant Pathology,
University of California,
Riverside, CA 92521,USA E-mails coffey@ucr.edu, Mdcoffey@aol.com,
m_d_coffey@yahoo.com Phone 909 787-4764, Fax 909 787-4764 / 909 787-4294
<http://www.plantpathology.ucr.edu/index2.php?content=people/coffey.html>
<http://phytophthora.ucr.edu>

Updated 5 June 2003