

A public pathogen collection for characterizing disease resistance in alfalfa cultivars

Deborah A. Samac¹, Melinda R. Dornbusch¹, and David J. McLaughlin²

¹USDA-ARS-Plant Science Research, St. Paul, MN; ²Department of Plant Biology, University of Minnesota, St. Paul, MN

Standard tests have been developed by NAAIC members to characterize disease resistance in alfalfa cultivars. To support these tests, a collection of pathogens has been made as part of the University of Minnesota Mycological Collection and is available to the alfalfa research community (Table 1). Additional submissions are welcome, particularly for strains isolated from different geographical locations, from different time periods, and for pathogens not yet present in the collection. The collection can be queried at <http://cultures.fungi.umn.edu/>.

In preparation for depositing into the collection, each strain was verified to be a pure culture and identified by sequencing of rDNA. Mycelial plugs from fresh cultures were removed from culture plates, placed in cryovials with a cryoprotectant, cooled slowly (-1°/sec) to -70°C, and then transferred to liquid nitrogen cryogenic storage. Viability of cultures was tested by plating representative samples. For storage of *Clavibacter michiganensis* subsp. *insidiosus*, bacterial cells were suspended in 20% glycerol and frozen at -80°C. Urediniospores of the alfalfa rust fungus were placed in gelatin capsules and stored at -80°C.

Cultures are available upon request. It is the responsibility of the requester to obtain the necessary permits from APHIS (www.aphis.usda.gov), which usually take a minimum of 8 weeks to obtain. A shipping and handling fee will be assessed to help cover costs.

Table 1. Alfalfa pathogens in the University of Minnesota Mycological Collection.

Disease	Pathogen	No. strains	No. contributors
Anthracnose	<i>Colletotrichum trifolii</i> race 1	4	3
Anthracnose	<i>Colletotrichum trifolii</i> race 2	2	1
Aphanomyces root rot	<i>Aphanomyces euteiches</i> race 1	3	1
Aphanomyces root rot	<i>Aphanomyces euteiches</i> race 2	1	1
Bacterial wilt	<i>Clavibacter michiganensis</i> subsp. <i>insidiosus</i>	20	4
Brown root rot	<i>Phoma sclerotoides</i>	25	4
Fusarium wilt	<i>Fusarium oxysporum</i> f. sp. <i>medicaginis</i>	8	2
Lepto leaf spot	<i>Leptosphaerulina briosiana</i>	1	1
Phytophthora root rot	<i>Phytophthora medicaginis</i>	6	1
Rust	<i>Uromyces striatus</i>	1	1
Spring black stem and leaf spot	<i>Phoma medicaginis</i>	30	1
Stagonospora leaf spot and crown rot	<i>Stagonospora meliloti</i>	1	1
Stemphylium leaf spot	<i>Stemphylium botryosum</i> WT	4	2
Verticillium wilt	<i>Verticillium albo-atrum</i>	12	2