

Hanson, S. and Peiman Williams, M. 2010. Study on the genetic diversity within *Phytophthora capsici* with nuclear, mitochondria and SNPs markers in New Mexico. *Phytopathology* 100:S47.

Phytophthora species are devastating plant pathogens in both agricultural and natural environments. *Phytophthora capsici* is a severe pathogen on chile peppers grown in the desert southwest where it can cause up to 100% losses in severely affected fields. Pathogenicity and phenotypic studies have indicated a high level of diversity among *P. capsici* strains isolated from chiles in the desert Southwest. Prior work with several commonly used phylogenetic molecular markers such as ITS regions, B-tubulin, LUS, and Cox-II showed that these markers were uninformative as they were unable to distinguish strains of *P. capsici* based on location, time, or phenotypes such as pathogenicity. The development of informative molecular markers for distinguishing different strains of *P. capsici* would be useful for resistance breeding and epidemiological studies and is the long term goal of this project. Herein we report the evaluation of several single-nucleotide polymorphism (SNP) markers for their utility as molecular markers that are predictive of *P. capsici* phenotypic diversity. Ongoing studies suggest that several of these markers may be useful as markers to identify different strains of *P. capsici*.