

Hu, C.; Perez, F.G.; Donahoo, R.; McLeod, A.; Myers, K.L.; Ivors, K.L.; Roberts, P.D.; Fry, W.E.; Deah, K.L.; and Ristaino, J.B. 2010. Genetic structure of *Phytophthora infestans* population in eastern North America, 2002–2009. *Phytopathology* 100:S52.

Late blight caused by *Phytophthora infestans*, reemerged in the U.S. in 2009, and was the worst in modern history due to a “perfect storm” of widespread inoculum distribution and conducive weather. Two new genotypes named US-20 and US-21 were found on tomato in FL and NC between 2002 and 2007. More than 80 isolates of *P. infestans* were collected from 11 states and Canada. The US-8 genotype was found in potato crops in 5 states. In addition, three new genotypes, US-22, US-23 and US-24, were recovered from both potato and tomato. US-22 (A2; Gpi: 100/122) was widespread on tomato transplants sold in home garden centers that later spread to nearby commercial tomato or potato fields. US-23 (A1; Gpi: 100/100) was found in four states on both tomato and potato. US-24 (A1; Gpi: 100/100/111) was found only on potato in ND. *P. infestans* populations between tomato and potato were genetically differentiated. Migration analysis suggested that gene flow occurred from tomato to potato in the eastern U.S. populations. Isolates from a home garden in TN, a single site in NY in 2007, and FL in 2008 were also US-22. Coalescent analysis documented that the 2009 populations were derived from the 2007 US-22 population. The data indicate that the US-22 existed before the epidemics of 2009. Genotype diversity was greatest in PA and both mating types occurred there. The severe late blight epidemics of 2009 underscore the need for an improved web-based tracking and monitoring system for the pathogen in the U.S.