

Late blight on tomatoes and potatoes in eastern USA in 2011

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As part of an AFRI grant involving more than 20 collaborators from throughout the USA, our lab had received in 2011 more than 80 suspected late blight samples by 19 September 2011. At least 79 were positive for late blight. We received samples from Connecticut, Delaware, Florida, Maine, Minnesota, New Hampshire, North Dakota, Pennsylvania, Rhode Island, Virginia, and Wisconsin. Our major focus was to determine genotype (using microsatellite markers), and convey information as rapidly as possible to extension personnel who submitted the sample. Microsatellite analysis can be done on infected tissue or on sporangia from lesions, so data can be obtained without culturing the pathogen. In many cases, information was returned to the submitter within 24-48 hr of receipt of the sample. The data were uploaded to a national website that reported these various occurrences of late blight.

Preliminary analyses to date (19 September) indicate that the genotypes of *Phytophthora infestans* strains in at least 70 of these samples corresponded to those that had been detected in previous years. These lineages were:

US8 (A2 mating type, resistant to mefenoxam, not aggressive on tomato, very pathogenic to potato, one sample)

US11 (A1 mating type, resistant to mefenoxam, aggressive to tomato and potato, one sample)

US22 (A2 mating type, sensitive to mefenoxam, aggressive on tomatoes, but also pathogenic on potato, 15 samples)

US23 (A1 mating type, sensitive to mefenoxam, aggressive on both tomatoes and potatoes, 39 samples)

US24 (A1 mating type, sensitive to mefenoxam, aggressive mainly on potatoes, 14 samples)

There were at least seven samples containing genotypes that we had not previously seen. We are currently investigating their mating types, sensitivities to mefenoxam, host preference and relative aggressiveness. We are also investigating their relatedness to other strains.

Phenotypic analyses were conducted in the lab on isolates from the US8, US22, US23 and US24 clonal lineages collected in 2010. Isolates from the US8 and US24 clonal lineages had been obtained almost exclusively from potatoes. We found that sporulation on tomatoes was typically only about 10% that of sporulation on potatoes for each of these two lineages. Thus, it seems that neither US8 nor US24 is likely to cause a sustained epidemic on tomatoes. US8 and US23 appeared to sporulate about equivalently on potato, and more abundantly than did US22 or US24, so US8 and US23 may be the most aggressive potato pathogens. In contrast, US22 and US23 were aggressive to both potato and tomato. Using lesion growth rate and sporulation as criteria, US23 appeared to be somewhat more aggressive on both potato and tomato than was US22.

This project was supported by the Agriculture and Food Research Initiative Competitive Grants Program 2011-68004-30104 from the USDA National Institute of Food and Agriculture.