ABSTRACT

Miller, J. S., and Johnson, D. A. 2000. Competitive fitness of *Phylophthora infestans* isolates under semiarid field conditions. Phytopadiology 90:220-227.

Spread of US-1 and US-8 isolates of *Phytophthora infestans* were observed in field plots of potato (cv. Russet Burbank) grown in Pullman, WA, in 1996 and 1997. Infected greenhouse-grown potato plants with similar lesion niunbers for both strains were transplanted to field plots with four replications. Spread of the pathogen was favored by sprinkler irrigation during evening hours. Diseased leaves and stems were sampled over time to determine the spread of US- I and US-8 isolates. In 1996, late blight developed in two of the four replications (105 and 87 total isolates recovered). From those two replications, two US- I isolates were recovered, both from the same replication. Nine isolates from one replication and six isolates from another displayed a phenotype different from the initial isolates, as determined by compatibility type, ailozyme genotype, and re-

striction fragment length polymorphism genotype. These putative recombinant isolates may have arisen from sexual recombination between the US-1 and US-8 isolates. The remaining isolates were of the US-8 strain. In 1997, late blight developed in all four replications (123, 122, 81, and 34 total isolates recovered). One US-1 isolate was recovered (out of 123) from one replication and three (out of 122) from another, and the remaining isolates were of the US-8 strain. Isolates with phenotypes differing from the initial isolates were not recovered in 1997. In both years, oospores were not observed in the plant tissue examined. The low number of putative recombinant isolates in 1996 and their absence in 1997 suggests that sexual reproduction between US-8 and US- I isolates in a field setting is a rare event. The predominance of US-8 isolates recovered is a measure of the increased fitness and aggressiveness of the US-8 isolates relative to the US-1 isolate used in this study. This further substantiates the increased aggressiveness of the US-8 genotype observed on excised tissues and potted plants in previous laboratory and greenhouse studies.