

Drivers and possible consequences of a changing population of *Phytophthora infestans* on the GB potato industry

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Background

An increase in the frequency of the A2 mating type of the blight pathogen *Phytophthora infestans* has led to concerns that more sexual oospores are forming in potato crops in Great Britain (GB).

This is a threat as: 1) soil-borne oospores are long-lived and may form a significant source of primary inoculum 2) in the longer term, genetic recombination improves the pathogens ability to adapt to control measures. The Potato Council are thus funding the current project to monitor the GB blight population in greater detail.

Results and conclusions

BPC 'Fight Against Blight' scouts have provided samples from more than 800 GB outbreaks (2003-07). In 2007, the A2 mating type was found in 82% of outbreaks (Fig. 1).

SSR fingerprinting of 2600 isolates shows the population is dominated by a few clones with one A2 clone (genotype 13 shown in blue) increasing dramatically (Fig. 2). We have not observed a marked increase in novel pathogen genotypes that would suggest sexual recombination. Detailed analysis of specific early outbreaks supports this as we have not yet seen outbreaks typical of soil-borne oospore inoculum in GB.

Aggressiveness tests on detached leaves of five varieties have shown that genotype 13 is aggressive and fit. It generated larger lesions with a shorter latent period (LP) than other genotypes (Fig. 3). This combined with resistance to phenylamides and an ability to overcome some sources of blight resistance make control more challenging for growers.

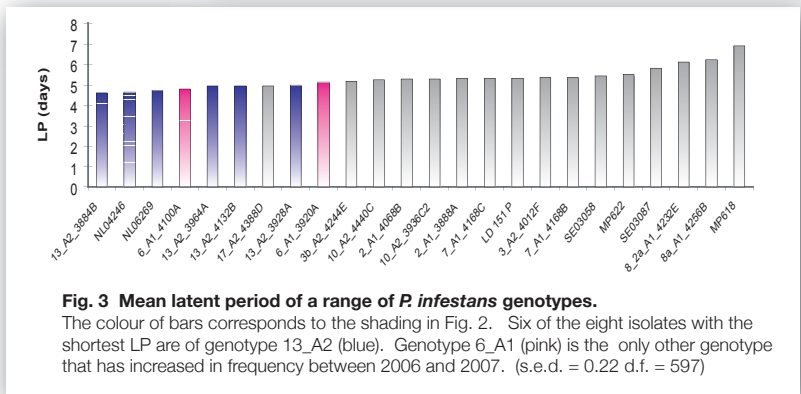
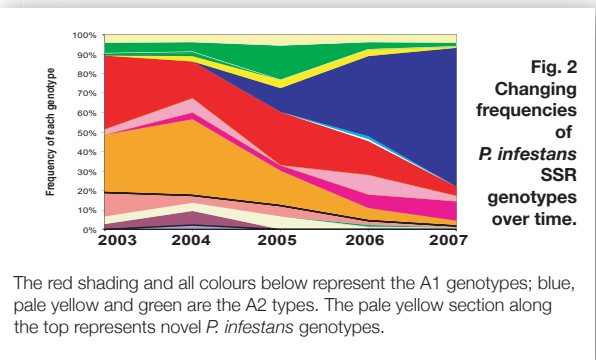
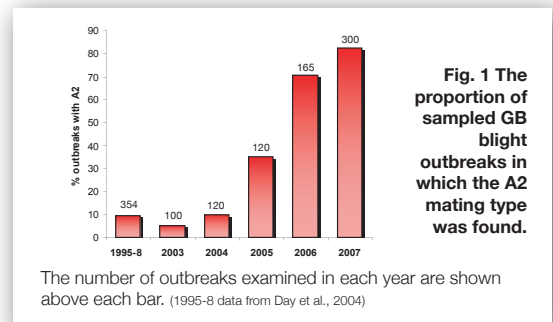


Fig. 3 Mean latent period of a range of *P. infestans* genotypes.
 The colour of bars corresponds to the shading in Fig. 2. Six of the eight isolates with the shortest LP are of genotype 13_A2 (blue). Genotype 6_A1 (pink) is the only other genotype that has increased in frequency between 2006 and 2007. (s.e.d. = 0.22 d.f. = 597)