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The expansion of *Phytophthora* clade 8b: three new species associated with winter grown vegetable crops

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Despite its association with important agricultural crops, *Phytophthora* clade 8b is a poorly studied group of species. The clade currently consists of three officially described species (*Phytophthora porri*, *P. brassicae* and *P. primulae*) that are host-specific pathogens of leek, cabbages and *Primula* spp., respectively. However, over the past few decades, several other clade 8b-like *Phytophthoras* have been found on a variety of different host plants that were all grown at low temperatures in winter seasons. In this study, a collection of 30 of these isolates was subjected to a phylogenetic study using two loci (the rDNA ITS region and the mitochondrial *cox1* gene). This analysis revealed a clear clustering of isolates according to their host plants. To verify whether these isolates belong to separate species, a detailed morphological study was conducted. On the basis of genetic and morphological differences and host specificity, we now present the official description of three new species in clade 8b: *Phytophthora cichorii* sp. nov., *P. dauci* sp. nov. and *P. lactucae* sp. nov. Two other groups of isolates (*Phytophthora* taxon castitis and *Phytophthora* taxon parsley) might also represent new species but the data available at this time are insufficient for an official description. This brings *Phytophthora* clade 8b to a group of six species that are all host-specific, slow-growing and specifically infect herbaceous crops at low temperatures.

Keywords: HOST SPECIFICITY; LOW TEMPERATURES; PHYLOGENY; PHYTOPHTHORA; SPECIES DESCRIPTION; VEGETABLES

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