

## Potential alternative hosts for the pea powdery mildew pathogen *Erysiphe trifolii*

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Powdery mildew is an important disease of peas grown in both greenhouses and in the field. The latter is obviously important for commercial production, but greenhouses are often used to increase the number of generations per year in pea breeding programs. Even though *Erysiphe pisi* (often reported as *E. communis* or *E. polygoni* in earlier literature) is the most commonly documented pathogen species causing powdery mildew of peas, *E. baeumleri* (1) and *E. trifolii* (2) were recorded as powdery mildew pathogens on peas. It has been presumed that the putative breakdown of resistance in previously resistant pea cultivars observed in the US Pacific Northwest (US PNW) was actually due to the presence of more than one species of *Erysiphe* (2). Attanayake et al. (2) observed severe disease symptoms caused by *E. trifolii* on resistant pea cv. 'Lifter' grown in greenhouse conditions. Greenhouse-grown pea breeding materials often get infected with powdery mildew in the US PNW (K. McPhee, personal communication). However, the inoculum source, particularly for greenhouse-grown peas during the winter months, has not been determined. Since during winter months no pea crops are growing in fields in the PNW, inoculum would have to originate from pea debris of the previous growing season, volunteer pea plants or from powdery mildew-infected wild legume plants serving as alternative hosts. Many powdery mildew pathogens are known to have broad host ranges (3). *E. trifolii* has been reported on peas and lentils in the US PNW (2, 4) and on *Trifolium* (as the specific epithet indicates) and other genera of the Fabaceae such as *Acacia*, *Arachis*, *Lathyrus*, and *Melilotus* (5). Species of *Arachis*, *Dolichos*, *Lathyrus*, *Lens*, *Lupinus*, *Medicago*, *Melilotus*, *Phaseolus*, *Trifolium* and *Vicia* are known hosts for *E. pisi* (5). The above abbreviated host lists make it clear that *E. trifolii* and *E. pisi* have numerous hosts, including some hosts in common.

Powdery mildew-infected *Medicago lupulina*, *Melilotus* spp., *Lathyrus* spp. and *Vicia* spp. plants are abundant along road sides, recreational areas and commercial fields during the periods of July-November in the Palouse region of Idaho and Washington. We hypothesized that these weedy legumes can serve as alternative hosts for *E. trifolii*. Detailed studies on host range of *E. trifolii* in the US PNW are lacking, so we tested these common weedy legumes from the region as potential alternative hosts of *E. trifolii*.