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Phenotypic variation among short-season soybean varieties to *Pythium* spp. causing seed rot and damping-off in Ontario

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*Pythium* spp. causing seed rot, seedling damping-off and root rot of soybean under the cool, moist conditions prevalent early in the growing season in Canada. The objectives of this work were to characterize the pathogenicity of isolates from soybean fields and evaluate short-season soybean cultivars and breeding lines for resistance to highly pathogenic *Pythium* spp. Of the 99 isolates representing seven common species of *Pythium* from soybean fields in Ontario, all of the 54 isolates of *P.*

*ultimum* var. *ultimum* and four isolates of *P. ultimum* var. *sporangiferum* were highly pathogenic, resulting 97-99% of inhibition of seed germination (IoSG) of a susceptible cultivar Williams. The remaining isolates, including one of each from *P.*

*atrantheridium* and *P. hypogynum*, five from *P. dissotocum*, two from *P. irregulare*, and 32 from *P. sylvaticum*, were either non-pathogenic or weakly pathogenic to Williams

soybean, causing <37% of IoSG. Of the 92 short-season soybean genotypes screened for resistance to two isolates of *P. ultimum* var. *ultimum* using an in vivo seedling damping-off assay (layer inoculum method) in the greenhouse, 85 were susceptible, with seedling mortality (SM) of 76-100%, on average of both isolates and compared to the untreated control. Six genotypes had 50-75% SM and were intermediate. Two genotypes, Maple Arrow Brown and Maple Ridge Brown, had <50% SM and were considered moderately resistant. These intermediate and moderately resistant genotypes constitute a source of *Pythium* resistance to improve future short-season soybean cultivars in Canada.