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Comparison of a putative novel species of *Phytopythium* to other *Phytopythium* spp. for pathogenicity on soybean seed

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Phytopythium is a new genus in the *Pythiaceae* family that combines characteristics of both *Pythium* and *Phytophthora* spp. and several members are well known pathogens of soybean. Isolates of a putative *Phytopythium* novel spp. were collected in Wood county Ohio from symptomatic soybean seedlings. Sequence analysis of the ITS1 and ITS4 region were assembled and compared to NCBI database using BLAST, indicating only 90% similarity to a voucher specimen *Phytopythium boreale* CBS55188. The objective of this experiment was to compare this *Phytopythium* isolate to other *Phytopythium* spp. in the ability to cause seed rot damage on three soybean genotypes: IA3023, Sloan and Kottman. A pathogenicity seed plate assay was used to evaluate 18 *Phytopythium* isolates (three *Phytopythium helicoides*, one *Phytopythium vexans*, one *Phytopythium litorale* and 13 isolates of the putative novel *Phytopythium* spp.) in a growth chamber set at 20 °C in a randomized complete block design (RCBD) with three replicates. Data on seed rot damage was collected 6 day after the seed was placed on *Phytopythium* colonized PCA plates. A disease ordinal scale was used to rate disease severity from 0 to 3 (0 = 100% germination with no symptoms of infection; 1 = 70 to 99% germination with lesions formation on the roots; 2 = 30 to 69% germination with coalesced lesions; 3 = 0 to 29% germination where all seed tissues were colonized). Isolates Ppheli6 (*Phytopythium helicoides*) and Pp13 (*Phytopythium* novel spp.) were significantly more aggressive than the remaining isolates. Based on non-parametric analysis, cultivar Sloan (p-value = 0.0001) had the highest seed rot damage compared to IA3023 and Kottman. However, there was a significant isolate and cultivar interaction. Species of *Phytopythium* should be further evaluated to develop management practices to reduce seed rot diseases of soybean.