

**Haudenshield, J.S.** and Hartman, G.L. 2010. A multiplexed, probe-based quantitative PCR assay for DNA of *Phytophthora sojae*. *Phytopathology* 100:S48.

*Phytophthora sojae* (Kaufm. & Gerd.) causes seed rot, pre- and post-emergence damping-off, and sometimes foliar blight in soybean (*Glycine max*). Crop loss may approach 100% with susceptible cultivars. We report here the development of a unique quantitative PCR assay specific to DNA of *P. sojae*, and a matching exogenous control, suitable for multiplexing with other similar pathogen assays. The primers (previously reported) and probe for this fluorogenic, 5'-exonuclease assay target the DNA sequences of a gypsy-like transposable retroelement present in *P. sojae*. The assay exhibited a limit of detection of under 34 fg total *P. sojae* DNA (0.5 genome) in serial dilutions, and suggested that up to 10 copies of the target retroelement were present per genome. Losses during DNA extraction effected a practical detection limit of four zoospores per sample. The assay positively detected DNA from 13 different *P. sojae* isolates pathogenic on soybean, and excluded from detection 17 other species of *Phytophthora*, as well as 13 fungal species pathogenic on soybean. The exogenous internal control target validated negative calls, and the assay was successfully multiplexed with two additional assays to simultaneously detect DNA from the fungus *Fusarium virguliforme* and the nematode *Heterodera glycines*. *P. sojae* DNA is readily extracted from infested soil, seed and plant debris, and may now be quantified by real-time PCR for diagnostic, forensic or research purposes.