

## Development of Molecular Soil Test for Soybean Cyst Nematode in Manitoba

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Soybean Cyst Nematode (SCN), *Heterodera glycines*, is recognized as one of the major pests of soybean worldwide. In 2019, we reported the first occurrence of SCN in Manitoba. This study aimed to develop a quantification method for the *H. glycines* correlated to the traditional counting of eggs in the soil. Twenty soybean fields with a range of SCN levels from Ontario were sampled and used to optimize extractions and PCR reaction procedures. Cyst extraction was performed using the wet-sieving method. The PowerSoil DNA Isolation Kit was used to extract total genomic DNA. Using species-specific primers, CoxIII and SCAR, a SYBRGreen-based real-time PCR assay was optimized. Calibration curves were obtained by adding different numbers of eggs (10,100,500,1000) to suspension and soil debris. The method was validated by quantifying the number of eggs in soil samples collected from a naturally-infested soybean field in central Manitoba. The traditional egg counts were compared to numbers estimated by qPCR. Calibration curves revealed highly significant correlations between the C<sub>q</sub> values and the number of eggs added. There was a high correlation between the egg counts quantified by the qPCR and the conventional method. This study demonstrated a rapid and sensitive quantification method for SCN in soils.

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