Reduction of Resting Spores of *Plasmodiophora Brassicae* with Wheat and Lime

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Plasmodiophora brassica, the cause of clubroot, survives as persistent resting spores in soil. Clubroot of canola is managed with genetic resistance in Canada, but resistance is not durable. Applying lime to soil to increase the pH can reduce clubroot severity, possibly by suppressing the germination of resting spores. Growing grasses and cereal crops can stimulate the germination of resting spores and reduce inoculum in soil. It was not clear if combining lime and a cereal crop would counteract each other or further decrease resting spore numbers in soil. Controlled environment studies were conducted with soil inoculated with resting spores of *P. brassicae*. The pH treatments were no lime (pH 6.4) and calcium hydroxide applied to achieve a pH of 7.0 and 7.6. Spring wheat cv. ACC Connery was seeded at 10 seeds per pot. There was a no plant (bare soil) control. There were six reps (pots) per treatment. The study was conducted over 8 weeks. The concentration of resting spores was determined using qPCR. The log of the spore concentration was analyzed as a factorial with crop and pH as main factors. There was no interaction between crop and pH. The spore concentration was slightly lower in wheat than in bare soil, 2.7×10^6 vs. 3.7×10^6, respectively, and slightly lower in soil at pH 7.6 than pH 6.4, 2.4×10^6 and 4.0×10^6, respectively. The greatest reduction in resting spore concentration was achieved with wheat at high soil pH.