

## ACCUMULATION OF TOTAL PHENOLICS DUE TO SILICON APPLICATION IN ROOTS OF AVOCADO TREES INFECTED WITH *Phytophthora cinnamomi*

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Accumulation of phenols and phenolic polymers in *Persea americana* Mill. roots exposed to the pathogen *Phytophthora cinnamomi* (*Pc*), and treated with potassium silicate was investigated during a field trial. The reported data indicates that potassium silicate application to avocado trees infected with *Pc* increase total phenolic content of root tissue. The trials consisted of three applications (Si x 3) during March 2005 and January 2006. Following elicitation, the conjugated and non-conjugated phenolic metabolites were found to be induced. Significantly higher crude phenolic concentrations are reported in Si x 3 during March and May 2006 when compared to potassium phosphonate (Avoguard ®) and three silicon applications resulted in higher glucoside bound phenolic acid concentrations compared to the untreated control. The integration of the phenolic into the cell wall was found to vary according to the season. However, results indicate that potassium silicate application leads to lower cell wall bound phenols. Data analysis by HPLC separation revealed that all treatments samples contained 3,4-hydroxibenzoic and vanillic acid. The presence of syringic acid could be related to the application of silicon. The study provides further indication that phenolic compounds are affected by silicon application. Data from this study does not excluded the fact that various mechanical resistance mechanisms could also play an important role and some synergism could take place in the plant's defence system. The results of this study provide further evidence for application of silicon as an alternative control measure for *P. cinnamomi* root rot of avocado.