

# Use of plant extracts for disease control in temperate fruit trees and its effect on fruit quality

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## Abstract

The use of crude plant extracts for the control of disease in Japanese pears and apples was explored. Ethanolic extracts of neem, lemongrass and guava (1 g DW.5 ml<sup>-1</sup> 95% EtOH) were sprayed on 3-year-old potted plants every 10 d starting at 30 d after full bloom until harvest. Disease incidence was measured at 60 d after treatment. At the same time, total antioxidants and phenolic contents of the leaves were evaluated by DPPH scavenging activity and by Folin-Ciocalteu methods, respectively. The fruits were analyzed for total soluble solids and other quality parameters (i.e. color, firmness and weight) at harvest. Results indicate that lemongrass and neem extracts have considerably reduced the incidence of disease in both the Japanese pear and apple trees relative to the control trees. Leaves of the treated trees showed a significantly higher ( $p < 0.05$ ) amount of antioxidants concomitant with increased phenolic content. More effects were observed in trees treated with neem extract. Consistently, results of in vitro studies revealed antifungal activity of all the extracts against *Venturia nashicola* and *Botrytis cinerea*. Fruits of treated trees were significantly heavier compared to those of the control upon harvest, while all the other fruit parameters measured were comparable. This study provides evidence of the effective use of plant extracts in disease control without adverse effects on fruit quality. These results further support advocacies on the reduced usage of chemical pesticides in view of food safety in the supply chain.