



Introduction

Coffee berry disease is a major cause of crop loss in Africa and a serious threat to Arabica coffee production. The use of fungicides for the control of CBD is usually effective. However, residual toxicity resulting from the wide spread use of fungicide have necessitated the urgent need for other disease management alternatives (Van der Graaff 1981). Induced resistance may provide an alternative approach to plant protection especially for problems not satisfactorily controlled by conventional methods. Thus we studied potential of exogenous application of plant defense activator in triggering systemic resistance in Arabica coffee against CBD.

Materials/Methods

Effect of exogenous application of Monopotassium phosphate, Dipotassium phosphate, Jasmonic acid and Salicylic acid (SA) in triggering systemic resistance in Arabica coffee against coffee berry disease (CBD) was studied in vitro and in artificially inoculated cultivars with known resistance levels. The greenhouse experiment was designed in RCBD with factorial combination. Data on disease incidence, severity and AUDPC were collected and analyzed using SAS software

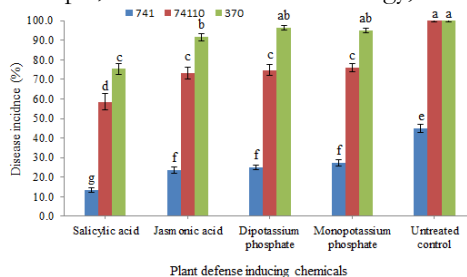


Figure 1: Effect of plant defense inducing chemicals on incidence of CBD

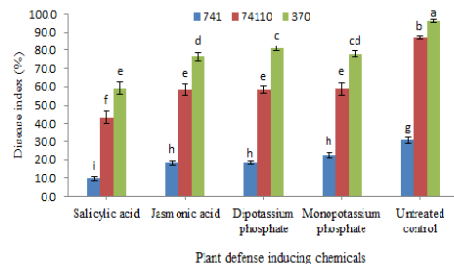


Figure 2: Effect of plant defense inducing chemicals on Severity of CBD

Results/Discussion

The results showed that the chemicals don't have direct antifungal effect at the concentration tested except salicylic acid at its higher concentrations; however, all chemicals significantly ($p < 0.05$) reduced severity of CBD in all coffee cultivars. There was a significant ($p < 0.05$) interaction effect between PDIC and coffee cultivars on disease development.

The highest disease reduction was observed with treatment of the hypocotyls with SA followed by Jasmonic acid. Application of SA at 10.0mM reduced the disease severity by >50% and 65% on standard susceptible 'cv 370' and moderately susceptible coffee cultivar 74110, respectively. Our results suggest that application of SA might have a direct fungicidal effect against *C. kahawae* and also induces host resistance by increased activities of defense-related enzymes by serving as a signaling molecule (Lopez and Lucas, 2002)

Conclusion/Perspectives

Exogenous application of SA can be used to trigger systemic resistance in Arabica coffee and could serve as a tool for the management of coffee berry disease. This clearly shows a potential avenue for the exploitation of plant defense inducing chemicals for the control of coffee berry disease as a safe alternative to synthetic fungicides. Further studies on application of PDIC with other management tools like biological control agents as part of integrated coffee disease management is crucial to reduce yield losses due to coffee berry disease.

References:

- Lopez, A.M.Q. and J.A. Lucas, 2002. Effects of plant defense activators on anthracnose disease of cashew. Eur. J. Plant Pathol. 108: 409–420
- Van der Graaff, NA. 1981. Selection for Arabica coffee types resistant to CBD in Ethiopia. PhD Thesis, Agri. Univ. Wageningen, the Netherlands