

Quantification of yield loss to pineapple heart rot disease on pineapple cultivars in Uganda

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1 ABSTRACT

Pineapple (*Ananas comosus* L. Merr) is an important fruit crop in Uganda. Pineapple production in Uganda is devastated by pineapple heart rot disease (PHRD) which is associated with serious economic and yield losses. Therefore, this study quantified yield loss on five pineapple cultivars to pineapple heart rot disease in central Uganda. Five cultivars (Smooth Cayenne, Victoria, Sasilimu, MD-2 hybrid and Red Spanish) were tested for latent infection by planting the suckers in buckets containing 10 kilograms of sterile soil for four month. Disease free suckers, four month old, of average size from the five cultivars were planted in pots containing 10 kilograms of sterile clay-loam soil in the screen house in 2016/2017 in a completely randomized design (CRD). Treatments consisted of protected pots, un-protected pots and control pots respectively. Pineapple plants in the protected pots had their suckers dipped for three minutes in a solution of Metalaxyl (Active Ingredients: methoxyacetyl)-N-(2, 6-xylyl)-DL-alaninate 8%) before planting and later sprayed with a solution of Fosetyl Al (Active Ingredients: Aluminum tris 80%) using a backpack sprayer with Hardir flat spray nozzles three weeks after planting. Pineapple plants in the un-protected pots were not treated with any fungicide. The suckers in protected and un-protected pots were inoculated with 10^8 ml of zoospores using needle-mediated leaf base wound technique. Control pots were not inoculated. Data on pineapple heart rots caused by the pathogen was collected from all the pots and thus used to compute yield loss per cultivar. Data was analyzed using analysis of variance (ANOVA) of the GenStat computer program (15th edition). Pineapple heart rot disease (PHRD) significantly ($P<0.001$) reduced pineapple yield in the un-protected pots across all the five cultivars evaluated in both trial one and trial two. Metalaxyl (Ridomil) and Fosetyl Al treatment significantly ($P<0.001$) reduced yield losses in all the five cultivars used in the Protected pots in trial one and trial two respectively. The highest and lowest yield loss was recorded in cultivar Victoria and Smooth Cayenne respectively. PHRD can cause 100% yield loss. Metalaxyl (Ridomill) and Fosetyl Al is recommended for the control of PHRD in Uganda