

**IDENTIFICATION OF PLANT GROWTH PROMOTING
RHIZOBACTERIAL ISOLATES AS POTENTIAL BIOCONTROL
AGENTS OF PAPAYA RINGSPOT VIRUS DISEASE**

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Papaya is a popular and economically important fruit crop belonging to the family Caricaceae. Papaya ring spot virus (PRSV) disease has been identified as one of the major biotic threats that limit papaya production worldwide. According to literature, Cucumber Mosaic Cucumo virus, Tomato Mottle virus, Banana Bunchy Top virus were controlled by PGPR. The present study was carried out to isolate potential plant growth promoting rhizobacteria (PGPR) and to determine their potential in reducing the disease development by PRSV. Five *Bacillus* spp were isolated from rhizosphere of papaya and applied by two methods namely, as a soil application and as a spray treatment. Three plants were used for each treatment. In soil application method, papaya seedlings (variety Red lady) were treated separately with cell suspensions having a concentration of 10^8 /ml of each bacterium as a soil drench (50 ml of bacterial suspension/plant). Thereafter, the plants treated with soil application were mechanically inoculated with the virus. In the spray treatment method, inoculated papaya seedlings were sprayed separately with bacterial suspensions having the same cell concentration and volume/plant. Effects of different PGPR isolates on PRSV disease development were assessed by observation of field symptoms and quantification of virus concentration by ELISA (absorbance at 405 nm). Average ELISA values of 0.12083 and 0.05695 were recorded in spray and soil treatments, respectively. Based on visual observations of symptom development and ELISA assay, in general soil application method was more effective than the spray treatment in terms of severity of symptom development and the presence of virus concentration in plants. Isolate B2 Madampe (T5) reduced the disease development in terms of virus concentration in plants significantly when used as a spray treatment. Plant height and the dry weight of the plants treated with different treatments (isolates of PGPR) were not significantly different among each other. More experiments with more replicates are needed to confirm the results.

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