

TITLE: PROSPECTING OF *BACILLUS* AND *STREPTOMYCES* TO PROMOTE PLANT GROWTH OF PAUSEN 1103 GRAPEVINE ROOTSTOCK

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The use of plant growth promoting microorganisms has been extensively studied; however researches based on its effects in grapevines (*Vitis* sp.) are scarce. The aim of this study was to evaluate the *in vivo* effect of the microorganisms inoculation in the development of grapevine Paulsen 1103 rootstock. For this, rooted and sprouted Paulsen 1103 grapevine rootstock cuttings were selected. The cuttings were washed in running water, transplanted to plastic bags containing an organic substrat and vermiculite substrate (in a 1-to-1-proportion) and autoclaved for 20 minutes, at a temperature of 121 °C. These were kept in a climate controlled greenhouse for a period of 30 days at a maximum temperature of 25 °C, relative humidity of 60%, and a 12-hour photoperiod. The trial design consisted of six randomized blocks containing five repetitions with four plants each. Treatments were randomized within the blocks, as follows: T1 = *Streptomyces* isolate R18(6); T2= casein starch agar medium; T3 = *Bacillus amyloliquefaciens*; T4 = *B. thuringiensis*; T5 = brain-heart infusion (BHI) medium, and T6 = control without bacteria. The T1, T3 and T4 treatments consisted of substrate inoculations with 20 mL of 1.8×10^8 CFU/mL bacterial suspension. Then, for 60 days, all plants were kept in a controlled conditions in a greenhouse (temperature of $25^{\circ}\text{C} \pm 2$, relative humidity of 70%, a 16-hour photoperiod). A second inoculation was performed after 15 days. The length of the branches and number of leaves were measured weekly. On the 60th day, the plants were collected and the fresh and dry biomass of the aerial part (leaves, branches, stem) and roots were determined. The results obtained showed a 62% and 28% increase in grapevine growth for the T4 treatments with *B. thuringiensis* and T3 with *B. amyloliquefaciens*, respectively. The *Streptomyces* isolate did not influence grapevine growth. The mean number of leaves was higher in T3 and T4 plants (12.2 and 12.3, respectively), followed by treatments T1, T2 and T5. The best result of fresh and total dry biomass was obtained with T4. Thus, the results of this study demonstrated the biotechnological potential of the isolates evaluated, especially *B. thuringiensis*, to promote plant growth of *Vitis*.

Keywords: grapevine, growth promotion, bacteria, *Bacillus*, bioproduct.

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