Impact of soybean seed inoculation with the levan-producing bacteria Pseudomonas aureofaciens on soil invertase and levansucrase activities under soil water stress and elevated copper level

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The primary objective of this study was to examine the effect of seed inoculation with levan-producing bacteria Pseudomonas aureofaciens on soybean biomass production and invertase and levansucrase activities in the rhizosphere under water and high copper stress. Levansucrase activity increased in the rhizosphere of inoculated plants at reduced water content in agreement with our hypothesis. Bacterial inoculation increased soybean green mass at low water availability (35% WHC). The soybean cultivar Zodiac was not sensitive to high copper levels (300 ppm), but enzyme activities were significantly ($P<0.05$) reduced by copper in both the noninoculated and inoculated rhizosphere soils. Further research is needed to elucidate the biochemical function of bacterial levansucrase, its expression under ecological stresses, and its utility in improving soil physical properties.