UNIVERSIDAD DE LA FRONTERA

Facultad de Ingeniería y Ciencias

Doctorado en Ciencias de Recursos Naturales

RHIZOBACTERIAL COMMUNITIES ASSOCIATED WITH THE FLOWERING DESERT PHENOMENON AND THEIR POTENTIAL AS PLANT-GROWTH PROMOTING BACTERIA

DOCTORAL THESIS IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE DOCTOR OF SCIENCES IN NATURAL RESOURCES

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“Rhizobacterial communities associated with the flowering desert phenomenon and their potential as plant-growth promoting bacteria”

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Thesis summary

This thesis presents the results of the rhizobacterial consortium formulation from Cisthante longiscapa, a representative plant of the Flowering Desert, in the recovery of tomato seedlings subjected to stress due to water scarcity. The results made it possible to demonstrate the existence of plant growth-promoting rhizobacteria during the Flowering Desert phenomenon, which could be cultivated in laboratory conditions and subsequently assembled in a consortium and applied to tomato plants with different intervals of no irrigation before their transplant. In conclusion, the isolated bacteria, mainly from the Bacillus, Paennibacillus and Brevibacillus genera, were able to express, once the consortia were assembled, the capacities to solubilize P, produce ACCD and auxins and produce exopolysaccharides, characteristics that benefited plants subjected to water stress. Furthermore, rhizobacterial consortia can be formed from bacteria from the Flowering Desert and act as a potential tool for growing vegetables against stress due to lack of water, thus opening up a source of research regarding the usefulness of these bacteria, depending on the use to give them and the phenological stage of the plants in which they will be used.