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## **FOLIAR APPLICATION OF BACTERIOCINS PRODUCED BY *Pseudomonas fluorescens* SF4c TO BIOSTIMULATE THE GROWTH OF CORN PLANTS UNDER IRRIGATION AND WATER DEFICIT CONDITIONS**

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Corn (*Zea mays* L.) is one of the most significant crops for economic activity, playing a fundamental role in crop rotation and as an input for several agro-food chains. Currently, Argentina is the third largest exporter worldwide, being Córdoba province the main national producer. Water stress is a problem that affects agriculture. In the recent years, severe droughts have reduced the yield of corn, leading to important economic losses. In this context, studies that tend to mitigate the droughts effect will be beneficial for corn cultivation. Over the last few years, research on bacteriocins synthesized by plant-associated bacteria has significantly increased due to their high biotechnological potential as biocontrol agents or as plant-growth biostimulants. *Pseudomonas fluorescens* SF4c is a rhizospheric strain isolated in our laboratory, which promotes plant growth and produces tailocins (phage tail-like bacteriocins) with antimicrobial activity against phytopathogenic bacterial strains. Tailocins are high protein complexes, evolutionarily related to bacteriophage tails. This study aimed to evaluate SF4c-tailocins as corn growth biostimulants under irrigated and water stress conditions. Corn seeds (BRV 8380 PWUE) were surface-sterilized and sown into pots containing peat:perlite (1:1). Then, the plants were maintained in a greenhouse with controlled conditions (16h light, 28° C, 70% humidity, and 8h darkness, 18° C, 80% humidity). After 10 days, differentiated irrigation regime was applied to plants: 100% of the field capacity for optimal irrigation and 10% of the field capacity for water stress. Twenty eight-day-old plants were foliar treated with 3 different SF4c-tailocins doses: 102, 103 or 104 arbitrary units per ml (AU/ml). At 60 days, plants were harvested, and the following parameters were measured: shoot and root dry biomass, shoot length, V7 leaf area and stem diameter. For statistical evaluation of the data, a one-way analysis of variance (ANOVA) was carried out for each variable. Means were compared by Fisher's LSD statistic, with a significance level of  $p < 0.05$ . Under optimal irrigation, plants treated with SF4c-tailocins (104 AU/ml) had greater V7 leaf area (11%), shoot length (8%), stem diameter (27%), shoot dry weight (36%) and root dry weight

(32%) compared to the treatment without bacteriocins. Under water stress conditions, plants treated with SF4c-tailocins showed no differences compared to untreated plants. These results indicate that SF4c-tailocins foliar application in corn has a biostimulant effect under optimal irrigation conditions. Additional studies will be necessary to determine if, under "moderate" water stress, corn growth is benefited by the SF4c-bacteriocins.

Palabras clave: Corn – Tailocins – biostimulants – water stress