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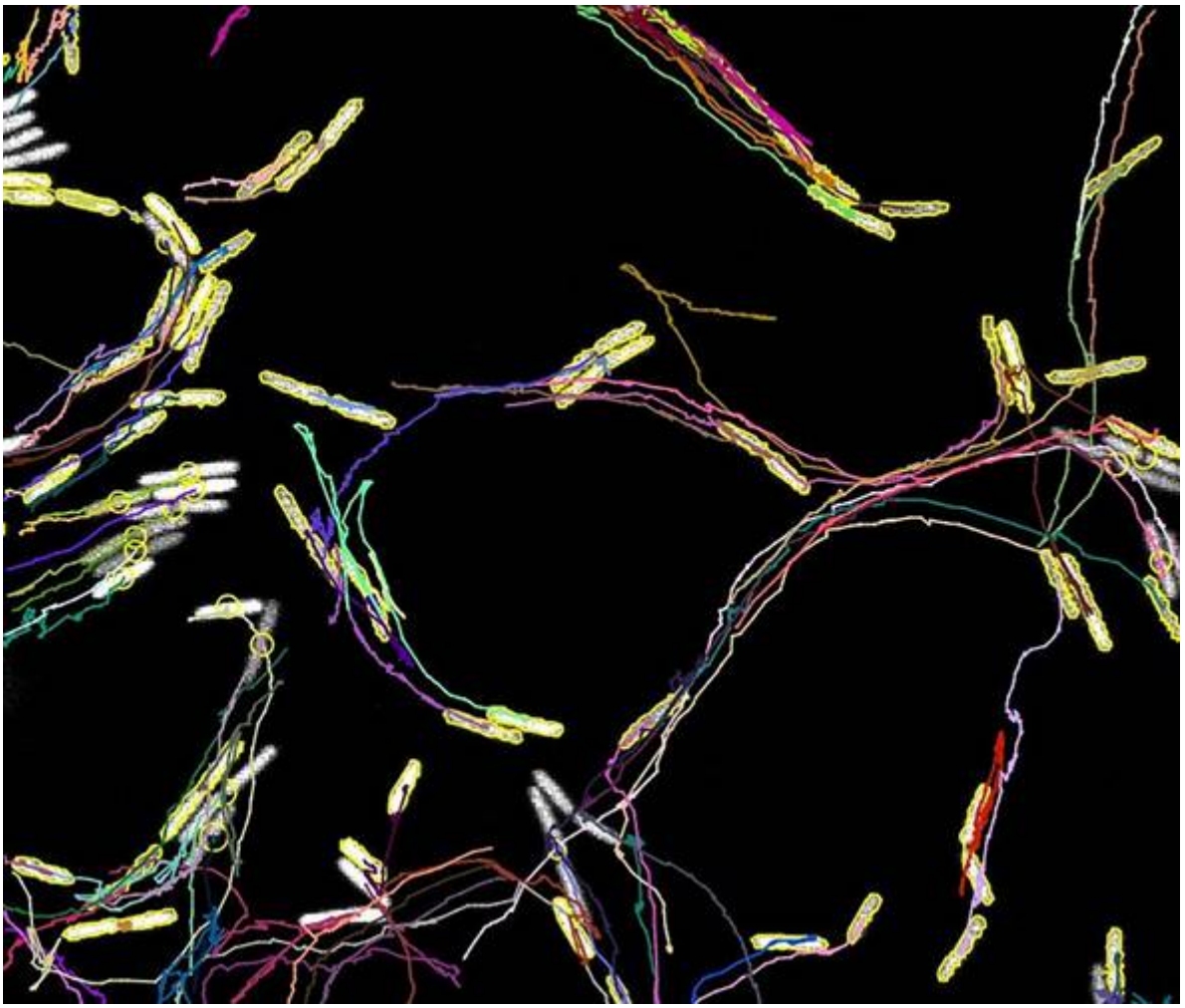

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

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DIFFERENT APPLICATION STRATEGIES OF A BIOFUNGICIDE BASED ON Bacillus velezensis CHEP5 FOR PEANUT SMUT CONTROL

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Fungal diseases are a major limitation in peanut production in Argentina. With the focus on sustainable agriculture, the incorporation of bioinputs to the integrated management of diseases could be a good complement. The antagonistic effect of this biological agent may be mediated by ISR (Induced Systemic Resistence). This phenomenon is defined as the physiological state of plants in which their defensive capacity against a wide spectrum of pathogens is increased. Previous works of our laboratory demonstrated that the native strain, *Bacillus velezensis* CHEP5 (CHEP5), induces systemic resistance in peanut against the pathogen *Sclerotium rolfsii* when it is inoculated in roots. With the aim of contributing to designing a strategy to protect peanuts against fungal pathogens, we proposed the following activities for this study. 1. To identify the appropriate doses of biofungicide based on CHEP5 that applied to seeds or leaves are able to protect peanut against *S. rolfsii*, and to evaluate the states of the plant´s defensive system in trials under controlled conditions. 2. To evaluate different inoculation strategies of the biofungicide CHEP5 to select those more effective to protect peanut crops of fungal disease in the field. Different biofungicide doses were tested in plants growing under controlled conditions. The doses of CHEP5 evaluated were: 1, 2 and 4 L ha-1 applied to seeds at the sowing moment or to leaves 6 days after sowing. On the seventh day the plants were challenged with *S. rolfsii*. At 30 days after sowing, the incidence and severity of the disease were evaluated. Moreover, quantification of soluble phenolic compounds (SPC) were used as defensive response markers. A reduction of disease parameters was observed in plants inoculated with 2 and 4 L ha-1 of CHEP5 to seed or only 4 L ha-1 of CHEP5 to leaves. This protection was correlated with an increment of SPC at 48 hours after pathogen challenge, in plants inoculated with CHEP5 and *S. rolfsii*, compared to those treated only with the pathogen. We select these doses of CHEP5 to carry out field assay. Two trials in the field were carried out in seasons 2022-2023 and 2023-2024. The inoculation strategies evaluated were: 1) CHEP5 applied to seeds 2 L ha-1 (T2), 2) CHEP5 applied to seed 4 L ha-1 (T3), 3) CHEP5 applied to leaves at 70 days after sowing (T4). Untreated plots were used as controls (T1). At harvest moment, the incidence and severity of peanut smut caused by *T. frezzii* were

evaluated. In addition, since CHEP5 foliar application, systemic tissue samples were taken every 7 days in order to determine the content of SPC. A reduction in the disease parameters was observed in plots from T2 and T3, but no changes were observed in T4, compared to T1. This reduction was correlated with variations in SPC. Our results demonstrate that the native biocontrol strain, CHEP5, could be incorporated into a sustainable integrated disease management in peanut crop production.

Palabras clave: Peanut smut - Biofungicida - Bacillus - Bioimput - Sustainable agriculture