Sociedad Argentina de Microbiología General

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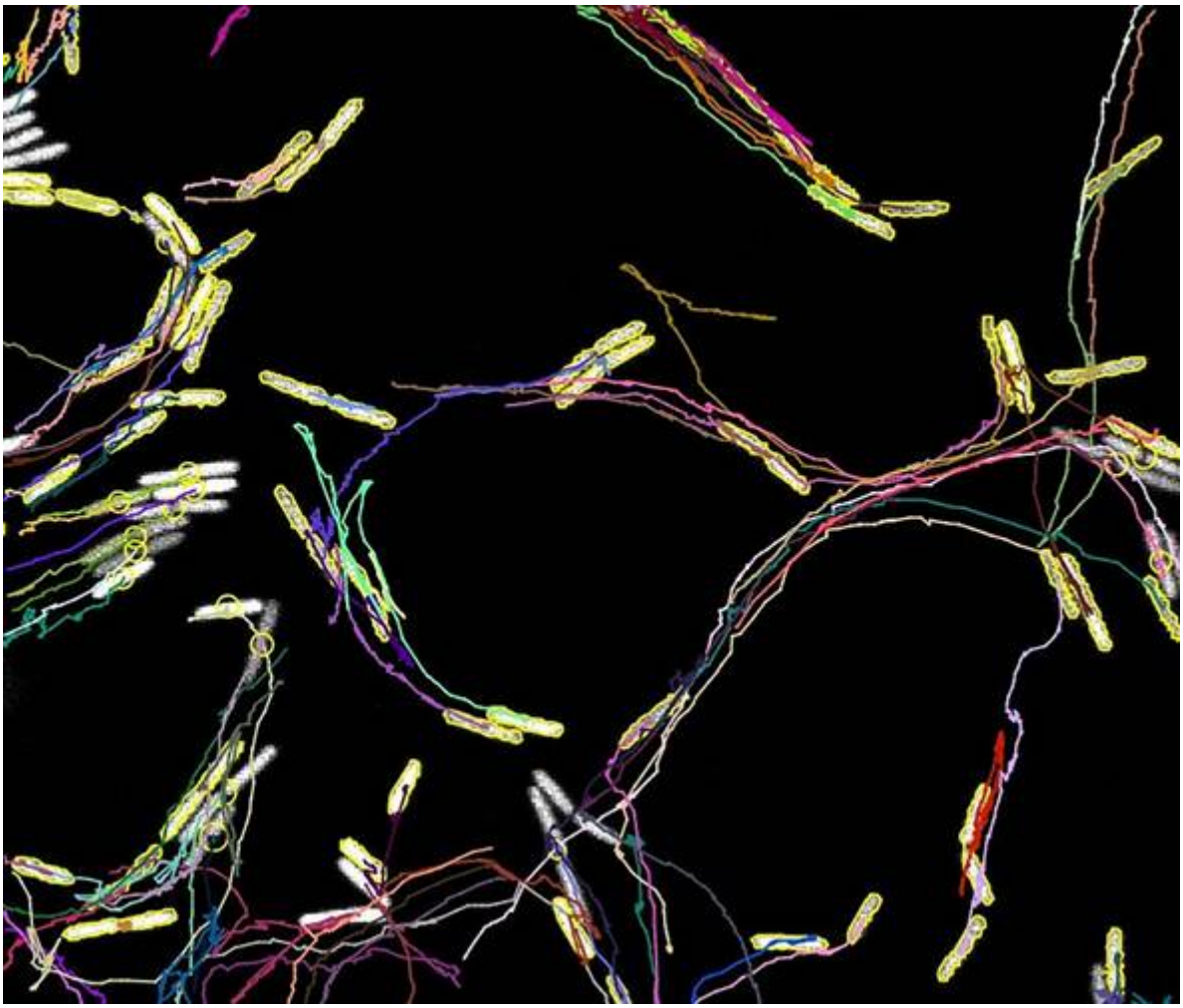

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

EVALUATION OF THE EFFECTIVENESS OF ENTOMOPATHOGENIC FUNGI NATIVE FROM YUNGAS FOR THE BIOCONTROL OF Dalbulus maidis (HEMIPTERA: CICADELLIDAE), VECTOR OF CORN STUNT DISEASE

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Maize (*Zea mays*) plays a fundamental role in the global economy, serving as human food, livestock feed, and a raw material for a wide range of industrial products. In Argentina, maize production has reached approximately 26.5 million tons over the past 5 years, cultivated on 4 million hectares. However, in the last growing season, this crop experienced significant losses due to the population explosion of the "corn leafhopper" (*Dalbulus maidis*), an insect vector of several pathogens that cause corn stunt disease. *D. maidis* transmits *Spiroplasma kunkelii*, a bacteria that causes stunt disease and results in severe crops damage, significantly reducing both yield and grain quality. This pest has led to a decrease in maize planting by between 1.3 and 2 million hectares in recent seasons. In response to this issue, finding sustainable alternatives to chemical control becomes crucial. Therefore, this study evaluated several fungi isolated from the Tucumán Yungas rainforest for the biocontrol of *D. maidis* and its transmitted disease. Eight fungal isolates, selected for their bioactivity (insecticidal and/or phyto-stimulating properties), were tested: LY 4.1, LY 4.4, LY 72.14, TF, HM9, CHW2, CHI1, and CHI3. These were cultured for 14 days on MP20 agar at 30°C in the darkness. From the active colonies (~9 cm in diameter), spores were recovered with a known volume of 0.1% Tween 80 and counted using a Neubauer chamber. The spore concentrations used in the assays ranged between 10?-10? spores/mL, depending on the fungus.
Biocontrol assays were conducted using a spraying inoculation technique of these spore suspensions onto *S. kunkelii*-carrying leafhoppers, maintained in a controlled chamber (25 ± 1°C, RH 70-80%, and 12L:12D). Groups of 5 *D. maidis* adults were sprayed with the various suspensions using an airbrush in hemolysis tubes. After 30 minutes, the insects were transferred to glass cages (15 x 5 cm) with a V2 stage maize plant for feeding. Insect mortality was daily monitored for 14 days. Ten replicates were performed for each fungal suspension, plus a control with 0.1% Tween 80. Mortality rates for *D. maidis* ranged between 64% and 96% after 14 days, with entomopathogenic fungi (CHI1, CHI3, LY 72.14) being the most effective. Fungal virulence was assessed using Kaplan-Meier survival curves, where accumulated mortality was observed throughout the trial. The work will continue with the selection of the best fungal candidate/s and the

formulation optimization. These strategies would contribute to the maize biological protection at the same time of promoting Argentine agroecosystem sustainability, by means of reducing the dependence on chemical products, minimizing environmental impact, preserving biodiversity, and being applicable to integrated pest management.

Palabras clave: Dalbulus maidis - Spiroplasma kunkelii - corn stunt disease - biocontrol - entomopathogenic fungi