Sociedad Argentina de Microbiología General

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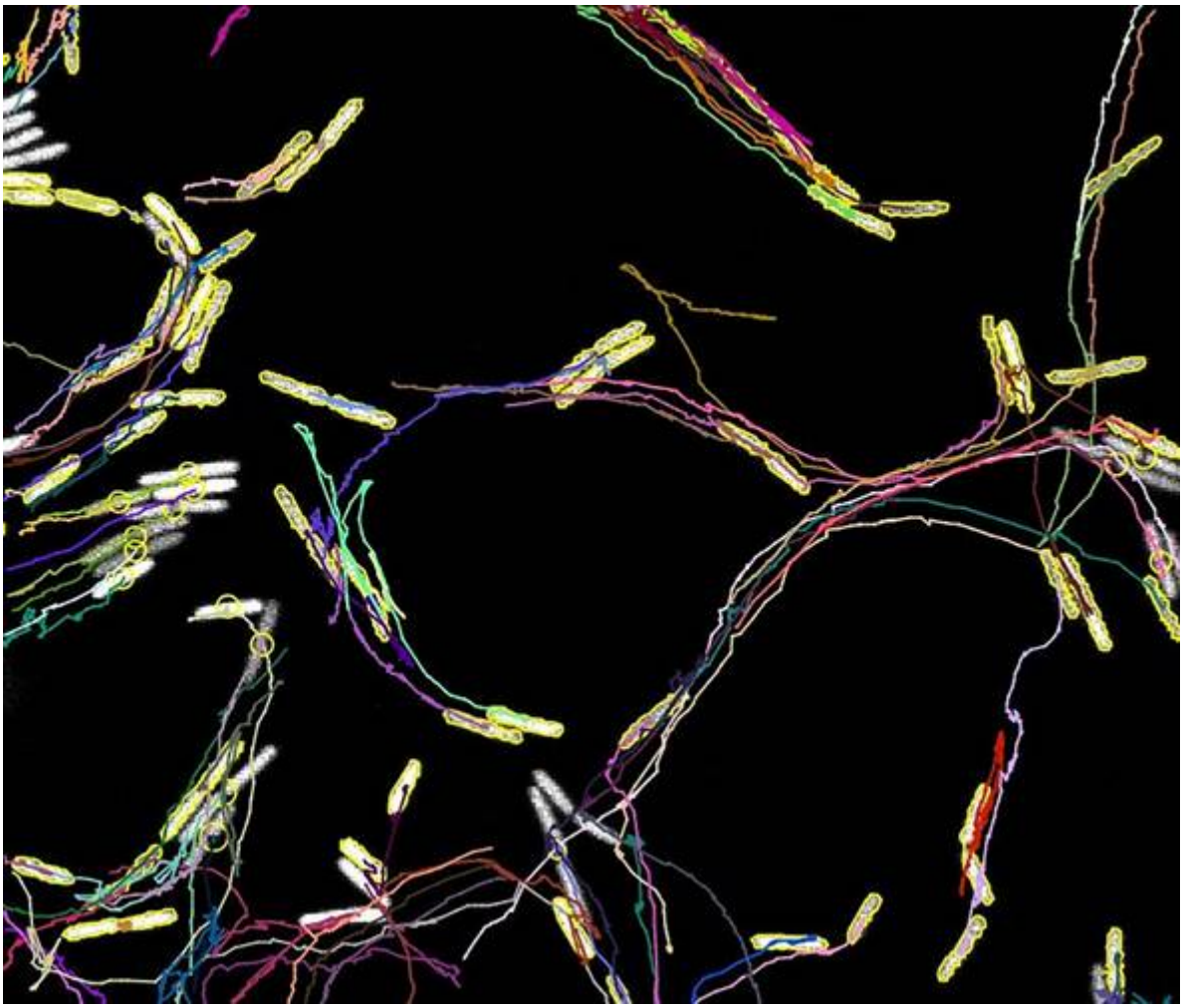

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

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IN VITRO METHODS TO EVALUATE THE BIOCONTROL POTENTIAL OF BACTERIAL CONSORTIUMS AGAINST ALTERNARIA AND FUSARIUM

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Changes in weather patterns and the indiscriminate use of synthetic fungicides favor adapting organisms with shorter life cycles, with the consequent spread of new, more resistant diseases and pests. For this reason, there is interest in studying microorganisms' role as biocontrol agents in this new production scenario. Biocontrol generates a coevolution between pathogens and biocontrolers, making the development of resistance difficult. In addition, control based on synthetic fungicides impacts human health and the environment and becomes less efficient under a climate change scenario. In this sense, we evaluated the effect of dual consortium represented by plant growth promoting bacteria (PGPB) of the genera *Bacillus mycoides* (L25), *Methylobacterium* sp. (L10), *Rhizobium* sp. (L12) and *Advenella* sp. (L21) as antagonists of two *Alternaria* species: *A. alternata* (A9) and *A. teunissima* (A6) and a strain of *Fusarium* sp., isolated from tomato (Solanum lycopersicum) fruits. An in vitro experiment was performed in Petri dishes (90 mm diameter) with PDA medium. The bacterial strains were previously cultivated at 24 ± 1 °C for 24 hours with shaking at 140 rpm in nutrient broth. Two inoculation methods were used: direct contact (MDC) and dual culture (DCC); the first consisted of the seeding by exhaustion of two bacterial strains (20 µL) in one-third of the plate each, and the remaining third was seeded with the combination of both. In the second method (DCC), a micro drop (20 µL) of two antagonists was seeded by a confrontation at 2.5 cm from the center of the plate, separately and combined. A portion of mycelium (5 mm) of fresh culture of the pathogenic strain was inoculated in the center of the plate in both methods and incubated for ten days at 24 ± 1 °C. The treatments were performed in triplicate. The control consisted of inoculating the pathogen in PDA without an antagonist. The mycelial growth (diameter, mm) was

evaluated at 3, 6, and 10 days, or until the fungal colony covered the plate and the % inhibition was recorded. Both methods showed bacteria-fungi antagonism, although some differences were observed between them. After the incubation period, the highest inhibition was observed in the MDC method: L10 and 25 strains showed a %I 49 on *Fusarium* sp., L12 and L21 showed a %I 53 on *A. tenuissima* and a %I 50 on *A. alternata*. In contrast, the DCC method showed no inhibition on *Fusarium* sp. and a %I 41 by L12 and L21 on *A. teunissima* as the best results. Furthermore, was observed that *Alternaria* isolates delayed their growth before being in contact with some PGPB strains (L12, L21 and L25). This suggests that induced organic volatile compounds might play a role that should be further studied.

Palabras clave: ANTAGONISM - FUNGI - PLANT GROWTH PROMOTING BACTERIA