Sociedad Argentina de Microbiología General

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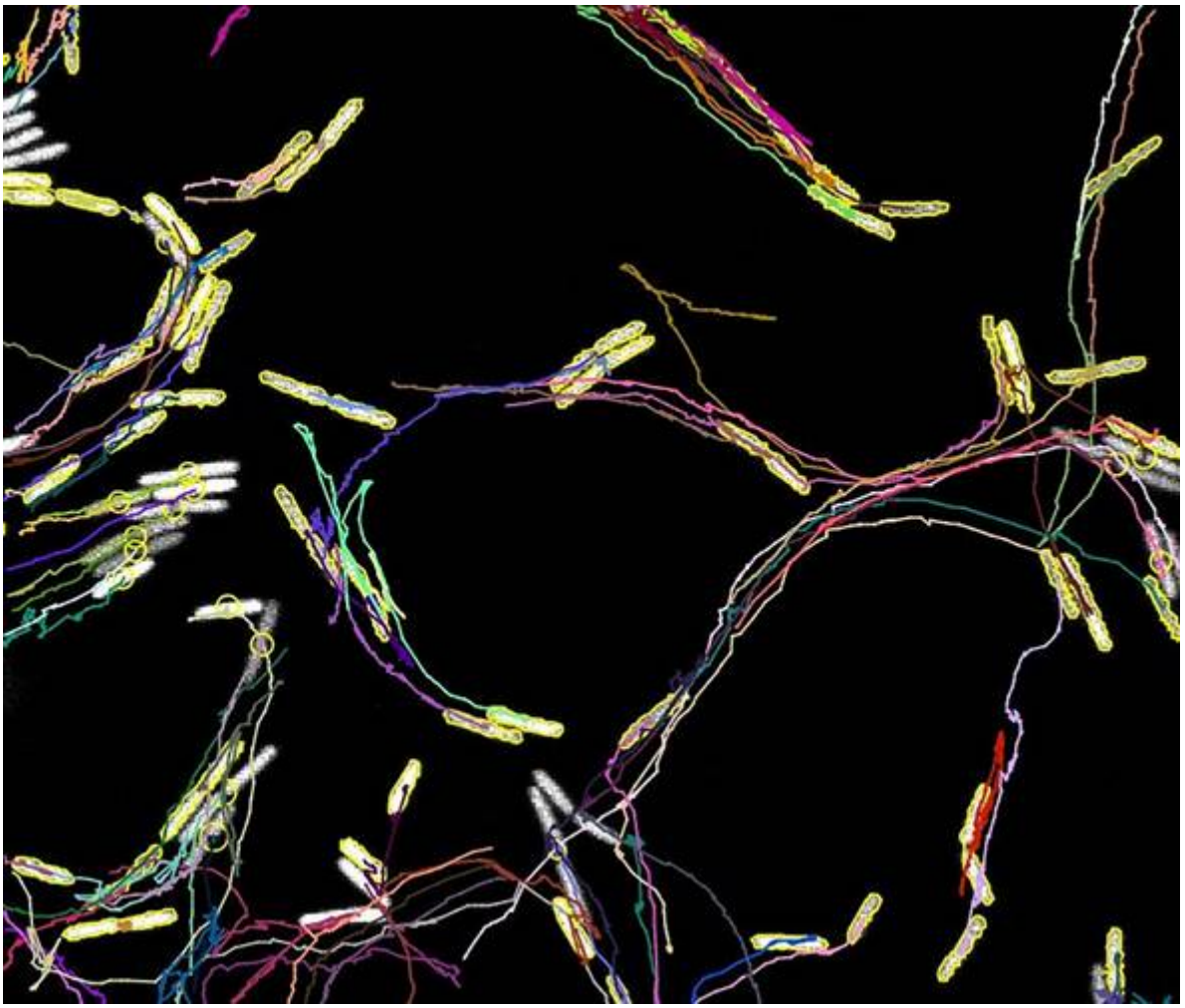

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

BIOCONTROL POTENTIAL OF PLANT GROWTH PROMOTING BACTERIA (PGPB) CONSORTIUMS AGAINST POST-HARVEST DISEASES OF TOMATO (SOLANUM LYCOPERSICUM)

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style="text-align: justify; line-height: 150%; margin: 12.0pt 0cm 12.0pt 0cm;"> Biological control is an integral component of sustainable and eco-friendly disease control strategies. It can be achieved using components derived from vegetal origin or microorganisms. Plant growth promoting bacteria (PGPB), widely known for their beneficial effects, can be used as biocontrolers. Several PGPB species, like *Bacillus* sp., have been reported to have this dual ability. They can protect plants via competition with pathogens, production of bioactive compounds, and through induction of systemic responses. Moreover, synergistic properties may enhance their potential when using two or more bacterial strains. In the present study, four PGPB were evaluated *in vitro* as antagonistic of *Alternaria tenuissima* (CHA8.1), and *Fusarium* sp. The bacterial strains were isolated from *Handroanthus impetiginosus,* native from the province of Buenos Aires, Argentina, and the fungi from tomato fruits. The bacterial strains were previously grown at 24 ± 1 °C for 24 hours with shaking at 140 rpm in nutrient broth. PDA plates (90 mm) were streaked onto with 20 µL inoculum of *Bacillus mycoides* (L25)*, Methylobacterium* sp. (L10)*, Rhizobium* sp. (L12) and *Advenella* sp. (L21), independently and combined in 10 feasible mixed cultures. Subsequently, a 5 mm agar plug with each pathogen's mycelium was placed in the center of the PDA plates. Plates with pathogenic fungi without bacteria were used as controls. All plates were incubated for seven days at 30 ± 1 °C in the dark. The treatments were done in triplicate. The fungal growth was determined by measuring the mycelium diameter every day until the control fungal colony covered the entire plate, and the growth inhibition (%I) was

calculated. The best biocontrol combination for *A. tenuissima* were the mixed cultures formed by three strains (L10 + L21 + L25, %I 65), the four strains together (%I 63) or L10 + L12 + L25 (%I 61). For *Fusarium* sp., the best biocontrol was achieved by the mixed cultures formed by two strains (L21 + L25, %I 64), three (L10 + L12 + L25, %I 63) or the four together (%I 62). A synergistic effect was evidenced in most mixed culture forms; moreover, although L10 had no effect alone on *Fusarium* sp., it had a synergistic effect when combined. The in vitro assays showed promising results for PGPB strains mixed cultures as biocontrolers against *Alternaria* and *Fusarium.* Its further study would contribute to reducing synthetic products' use in agriculture and provide alternatives to promote organic production.

Palabras clave: ANTAGONISM - FUNGI - ORGANIC PRODUCTION