

RESUMEN DEL SEGUNDO SEMINARIO INTERNACIONAL DE SANIDAD AGROPECUARIA (SISA)

Combining *Trichoderma asperellum* with *Streptomyces griseoviridis* and *Pseudomonas fluorescens* results in root protection in hydroponic growing systems

Resultados de combinar *Trichoderma asperellum* con *Streptomyces griseoviridis* y *Pseudomonas fluorescens* en la protección de la raíz en sistemas de cultivo hidropónico

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Hydroponic growing systems have been increased in Costa Rica in recent years due to new food production and market trends encouraged by the consumer demand of safer and healthier foods. In hydroponic production, the root system is in permanent contact with water and the prevalent tropical conditions facilitate the attack of bacteria and fungi. Our laboratory has identified *Pythium*, *Rhizoctonia*, *Fusarium* and *Pectobacterium carotovora* as the major disease problems under soilless hydroponic conditions. The attack of these microorganisms led to diseased plants and lower yields, with the subsequent close down of an important number of hydroponic farming companies. Chemical management strategies have been unsatisfactory and for this reason it was initiated the search of efficient microorganisms able to contribute to solve this problem. *Trichoderma* greenhouse and field trials showed that a mixed formulation of *T. asperellum*, the actinomycete *Streptomyces griseoviridis* and the gram-negative bacteria *Pseudomonas fluorescens* was the best strategy to overcome the microbial attacks in hydroponics. Moreover, this combination of three beneficial microorganisms can be applied at very low cost, is compatible with organic and sustainable agriculture, and has become very popular among hydroponic farmers in Costa Rica.