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Session 6 - Emerging tools for the management of plant diseases: Agroecology and disease management

Poster presentation

Multiple screening approach for the selection of efficient biological control agents against *Botrytis cinerea* on tomato

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One hundred and twenty one bacterial isolates collected from tomato stems and from soil in the Bejaia region (Algeria) were screened for their potential to control gray mold on tomato. The bacteria were initially tested for their direct *in vitro* effect against two strains of *B. cinerea*. Based on these results, 37 isolates showing *in vitro* inhibition of *B. cinerea* mycelial growth (ranging from 0% to 69% inhibition) were chosen for further analysis. These isolates were identified based on 16S rDNA sequencing. Those identified as potentially pathogens for humans, mammals or plants and able to grow at 37°C were discarded. Twenty five were then selected to evaluate their effectiveness as biological control agents against *B. cinerea* using a tomato plant bioassay. Comparisons of *in vitro* and *in planta* screening methods highlighted the absence of correlation between these methods and confirm that a single screening strategy is not sufficient to select efficient biological control agents.

Among the 25 isolates, 8 exert high and significant antagonistic activity against two strains of *B. cinerea*. Among them, three bacteria belonging to the *Pseudomonas* genus were finally selected for their significant and stable efficiency at 3 concentrations (10^7 , 10^8 and 10^9 CFU/mL) to reduce the lesion development of *B. cinerea* on tomato stem (% protection comprised between 60 and 100%), their ability to grow at 15°C and their inability to grow at 37°C. These three isolates are also able to reduce significantly the sporulation of *B. cinerea* on tomato stem.

This study is a first step in the selection of biological control agents able to protect the tomato against *B. cinerea* and adapted to the greenhouse conditions in Algeria.

Keywords: *Botrytis cinerea*, tomato, biological control agents, screening, *Pseudomonas* spp.