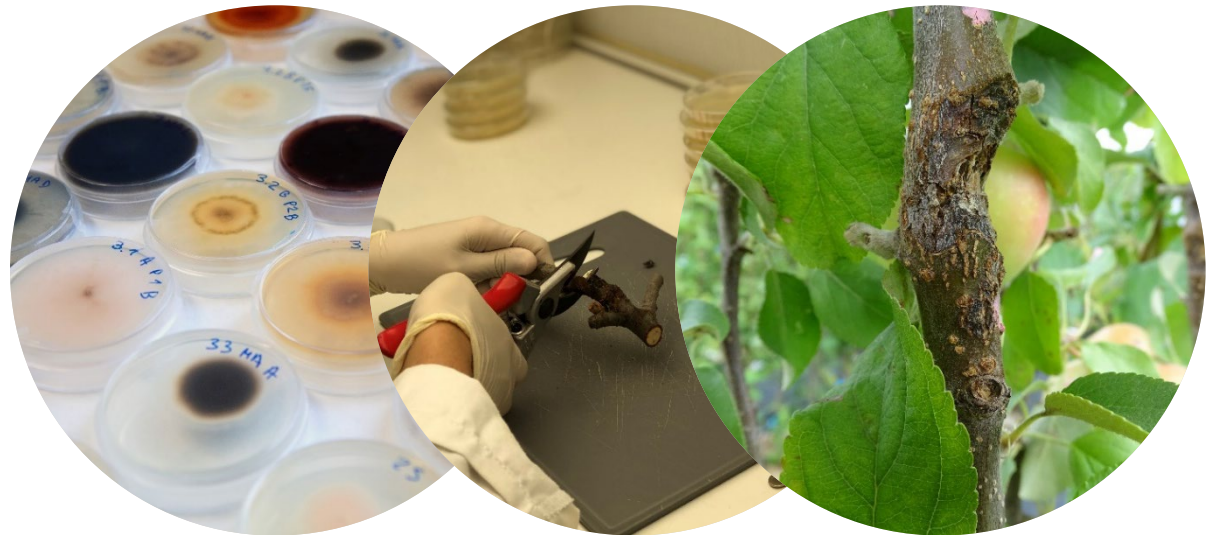


# BioNeedit

New biological control agents against European fruit tree canker disease (*Neonectria ditissima*) in apple: from microbiome analysis towards product development

**Georgina Elena Jiménez**



# BioNedit. Introduction



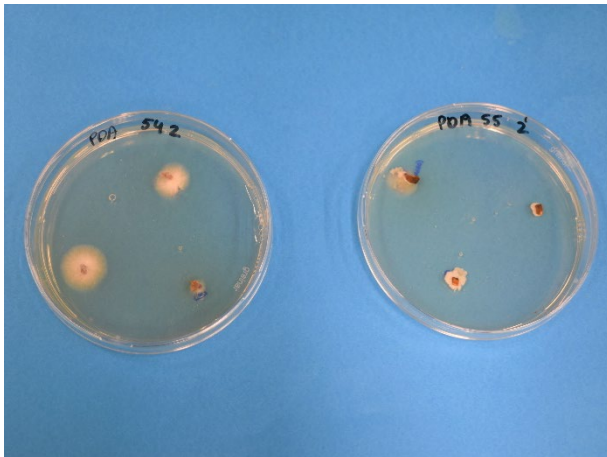
## European Fruit Tree Canker

- Causal agent: *Neonectria ditissima*
- Symptoms: cankers in wooden tissue
- Main infection site: leaf scars, by ascospores and macroconidia
- Control:
  - Removing visible cankers on minor branches
  - Apple cultivars with relative resistance
  - Chemical products no longer permitted
  - **Biological control poorly addressed**

# BioNedit. Objective

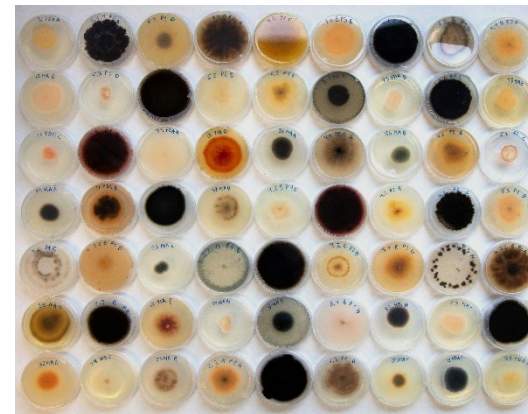
**Development of a new biocontrol product for the management of European fruit tree canker disease by selecting potential antagonistic microorganisms against *N. ditissima***

# BioNedit. Microorganisms Isolation

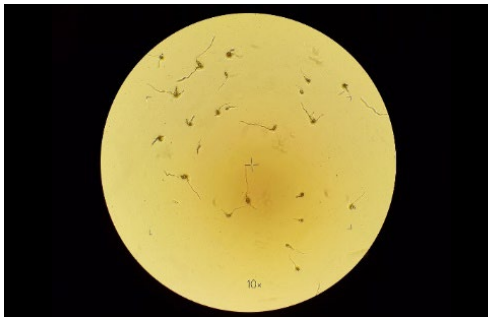
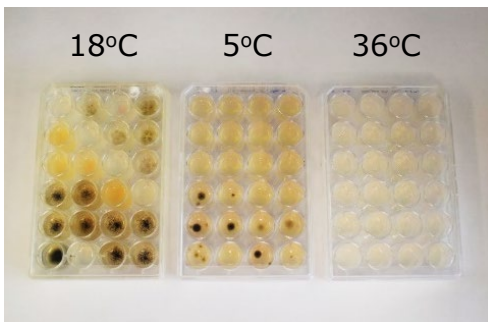


## Isolation of potential antagonists

- Isolations: wood chips from healthy-infected tissue
- Apple shoot samples from Germany, Netherlands, Norway, Sweden
- Milestone: collection of 500 antagonist candidates (hyphal fungi and yeasts)



# BioNedit. Stepwise antagonist screening program



## Spore production, ecological properties and spore survival after storage

- Spore concentration  $> 10^5$  spores/plate
- Ecological properties:
  - Cold tolerance
  - Drought tolerance
  - UV resistance
  - No germination/growth at body human temperature
- Spore survival after storage:
  - 1 month at 18°C, 4°C, –20°C degrees



# BioNedit. What's next?



## Identification and data base mining

- DNA sequencing: ITS, EF,  $\beta$ -tub, CaM
- Risk/ IPR-conflict evaluation

## Efficacy tests on bioassays *in planta*

- Bioassays on apple shoots
- *N. ditissima* + candidate inoculations
- Detection by qPCR assay

## Spore production at industrial scale

- Experiment in bioreactors (e-nema)

# BioNedit

## Thank you

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