

# TAVOIL: how to develop an essential oil-based fungicide against apple scab

Léopold Van den Berghe<sup>1,3</sup>, Clément Burgeon<sup>1,2</sup>, Simon Dal Maso<sup>3</sup>, M. Haissam Jijakli<sup>1,3</sup>

<sup>1</sup> Laboratory of Integrated and Urban Plant Pathology, University of Liège, Gembloux Agro-Bio Tech, 2 Passage des Déportés, 5030, Gembloux

<sup>2</sup> Laboratory of Natural Molecules Chemistry, University of Liège, Gembloux Agro-Bio Tech, 2 Passage des Déportés, 5030, Gembloux

<sup>3</sup> Agronomical Plant Extract and Essential Oil (APEO), 2 Passage des Déportés, 5030 Gembloux, Belgique



The apple is the **third most widely produced** fruit in the world (FAO,2024)

In **Belgium**, more than **200 000 t** of apples are produced each year (FAO,2024)

Apples are an integral part of the **Belgian's terroir**

CRA-W has collected more than **1600 apple landrace** varieties since 1975

## Why ?

*Venturia inaequalis* (apple scab) is known to be **one of the most detrimental pests** for apple production

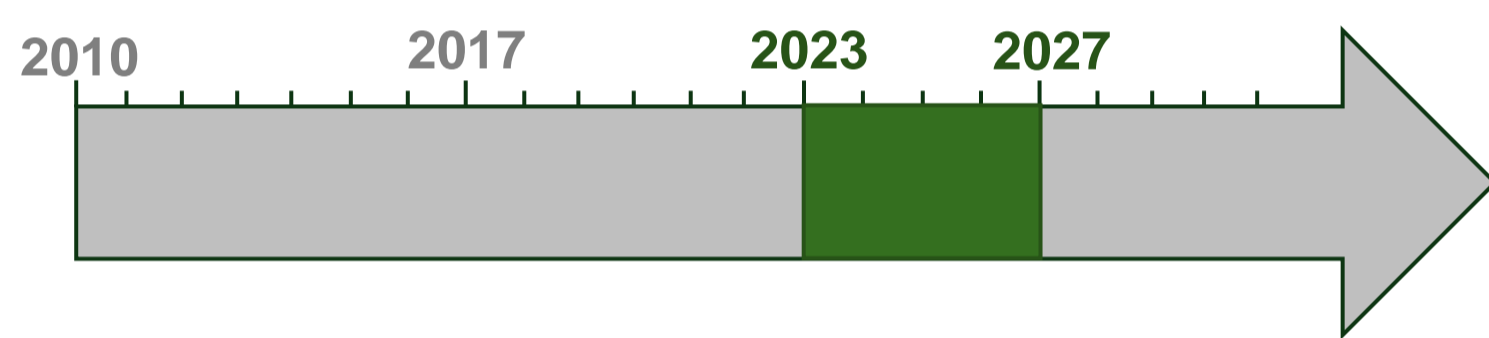
Without proper management, apple scab could lead to **important economic losses**

**10 to 15 chemical treatments** are required each year to prevent infections

There is a **lack of biological fungicides** on the market



## When ?



**Screening phase**  
• 91 essential oils studied  
• On 20 pathosystems

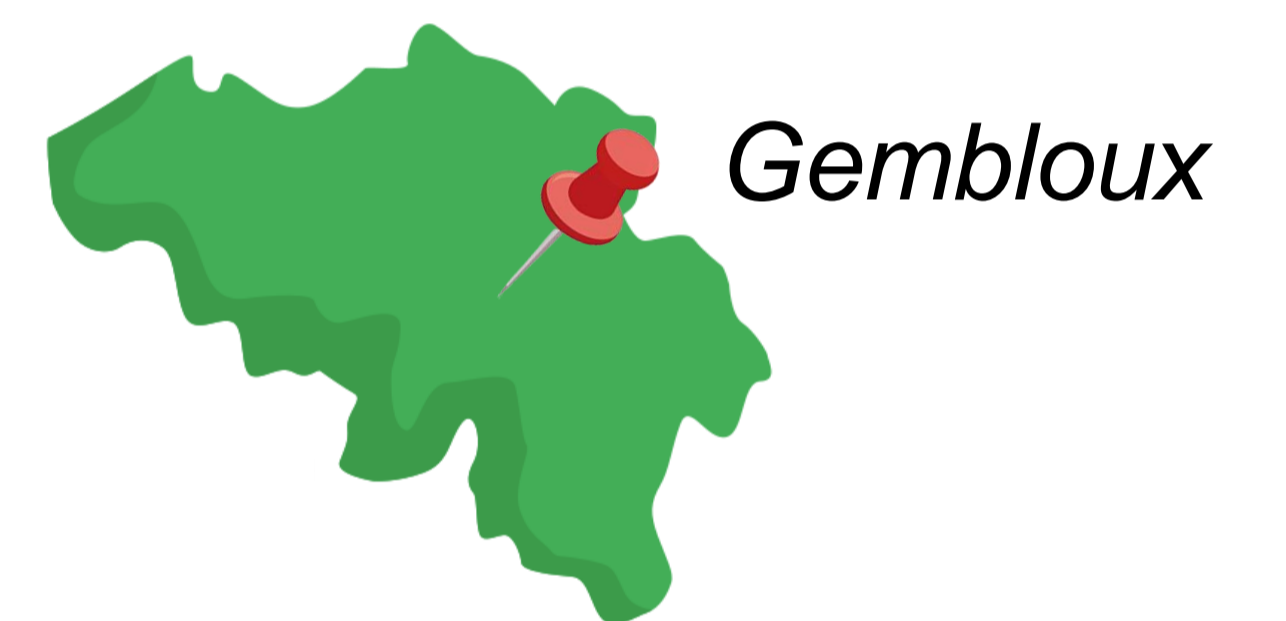
**4 years thesis**  
• Research and development of an innovative PPP

**And after ?**  
• Homologation process  
• Production  
• Commercialization

# TAVOIL

## An essential oil solution against apple scab

## Where ?



## Trials

*From lab to orchard*

2024

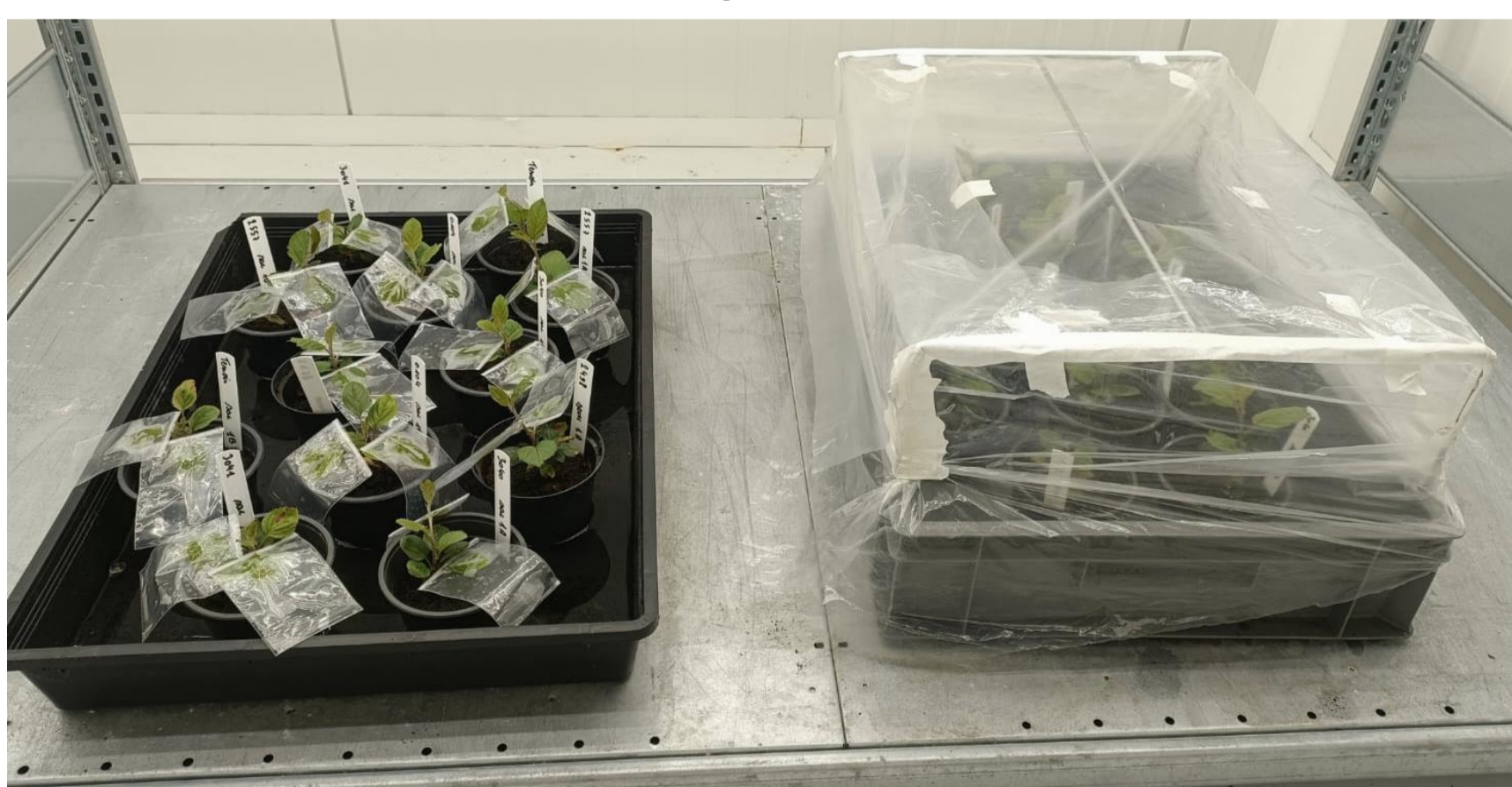


Fig 1. Experimental setup for reproducing scab symptoms on apple trees under controlled conditions

2027



Fig 2. Fungicide treatment in orchards (Kuhn, 2018)

## How ?

### Formulation

*Three real challenges*

- Stability
- Rheology
- Long term protection

## Mode of action

*An increasing precision*

*Physical and chemical experiments*

*Electron microscopy*

*"Omics" analysis*

