

**15th European
Chestnut Days 2025**

The Eurocastanea protocol for the management of chestnut rot caused by *Gnomoniopsis castaneae*: news from the 2025 season

Andrea Vannini and José Gomes-Laranjo

FIRST TREATMENT (during bloom)

Conditions: full anthesis (phase k in Figure 1). Repeat after 7-14 days.

Options:

Product options	Label	Dosage by label	Mode of use
<i>Fungicides</i>			
Tebuconazole (25-40g/l of active molecule)	Ares 430 SC, TebuStar 45 WSP, Horizon, or equivalent	35-40 mL/hl	crown spray
<i>Bacillus subtilis</i> strain QST 713	Serenade/Rhapsody or equivalent	8L/ha in 500-1500 L/ha of water	crown spray 4 treatments at blooming, 5 days between applications.
<i>Biostimulants and foliar fertilizers</i>			
Soluble Zn (1%), Mn (1%), Mo (0,02%) pH 3,0-3,5	Fungicrops Bio LEA or equivalent	500-600 g/hl	crown spray

Comments: **Do not combine any of the products.** Choose one per treatment (either fungicide or biostimulant). Zn phosphonate can be used in the EU until stocks are available. Tebuconazole has an EU derogation until 30 June 2026 About Ares 430 SC two treatments (14 days each other) per season are admitted during bloom. According to growers’ observations (not experimental data), treatments with Tebuconazole in full bloom might reduce pollination. **Be aware that the commercial products mentioned are those used in experimental trials. Growers might eventually use different labels where available in the country upon contact with national technical support.**

2025 protocol first treatment



2025 protocol second treatment

SECOND TREATMENT (Initial period of burr growth/thickening)

Conditions: Initial period of burr growth/thickening (between the end of August – the middle of September in the Northern Hemisphere depending on the variety). The period of initial burr growth may change slightly depending on geographic areas and varieties (*C. sativa* varieties or hybrid varieties).

Product options	Label	Dosage by label	Mode of use
<i>Fungicides</i>			
<i>Bacillus subtilis</i> strain QST 713	Serenade/Rhapsody or equivalent	8 L/ha in 500-1500 L/ha of water	crown spray
<i>Biostimulants and foliar fertilizers</i>			
Soluble Zn (1%), Mn (1%), Mo (0,02%) pH 3,0-3,5	Fungicrops Bio LEA or equivalent	500-600 g/hl	crown spray



2025 protocol is
published in Italian and
English on the April issue
of CASTANEA



Category	Product options	Label	Dosage by label	Mode of use	conditions of application
Control	Water				
Fungicides	Tebuconazole (25-40g/l of active molecule)	Ares 430 SC, TebuStar 45 WSP, Horizon	35-40 mL/hl	crown spray	- Full anthesis (phase k in Figure 1). - Repeat after 7-14 days.
Fungicides	Bacillus subtilis strain QST 713	Serenade/Rhapsody	4 -8L/ha in 500-1500 L/ha of water	crown spray	- Full anthesis (phase k in Figure 1). - Repeat after 5 days. - Repeat after 5 days. - Initial period of burr - Repeat after 5 days.
Biostimulants and foliar fertilizers	Soluble Zn (1%), Mn (1%), Mo (0,02%) pH 3,0-3,5	Fungicrops Bio LEA	500-600 g/hl	crown spray	- Full anthesis (phase k in Figure 1). - Repeat after 7-14 days. - Initial period of burr
Biostimulants and foliar fertilizers	Zn phosphonate (soluble N 5,4%; P 2 O 2 34%; soluble Zn 10%)	Kalex Zn, Sysstem Zn	200-300 g/hl	crown spray	- Full anthesis (phase k in Figure 1). - Repeat after 7-14 days. - Initial period of burr
Fungicides	Clonostachys rosea souche J1446	Prestop		crown spray	
add	Phosphonate de potassium 755 g/L	Sorial	4 L/ha	crown spray	
Fungicides	Clonostachys rosea souche J1446	LALSTOP	50 g/hL (800 L/ha)	crown spray	
Biostimulants and foliar fertilizers	Soluble Zn (1%), Mn (1%), Mo (0,02%) pH 3,0-3,5	Fungicrops Bio LEA	250-300 g/hl	crown spray	- Full anthesis (phase k in Figure 1). - Repeat after 7-14 days. - Initial period of burr
Biostimulants and foliar fertilizers	Organic acids (OA), bioflavonoids (BF), surfactants (S), micronutrients (MN)	Fla-ONE® PLUS; Green Valley Solutions GmbH, AT	0,25 - 0,5 % empfohlen [2,5 - 5 L / 1000 L]	crown spray	- Full anthesis (phase k in Figure 1). - Repeat after 7-14 days. - Initial period of burr

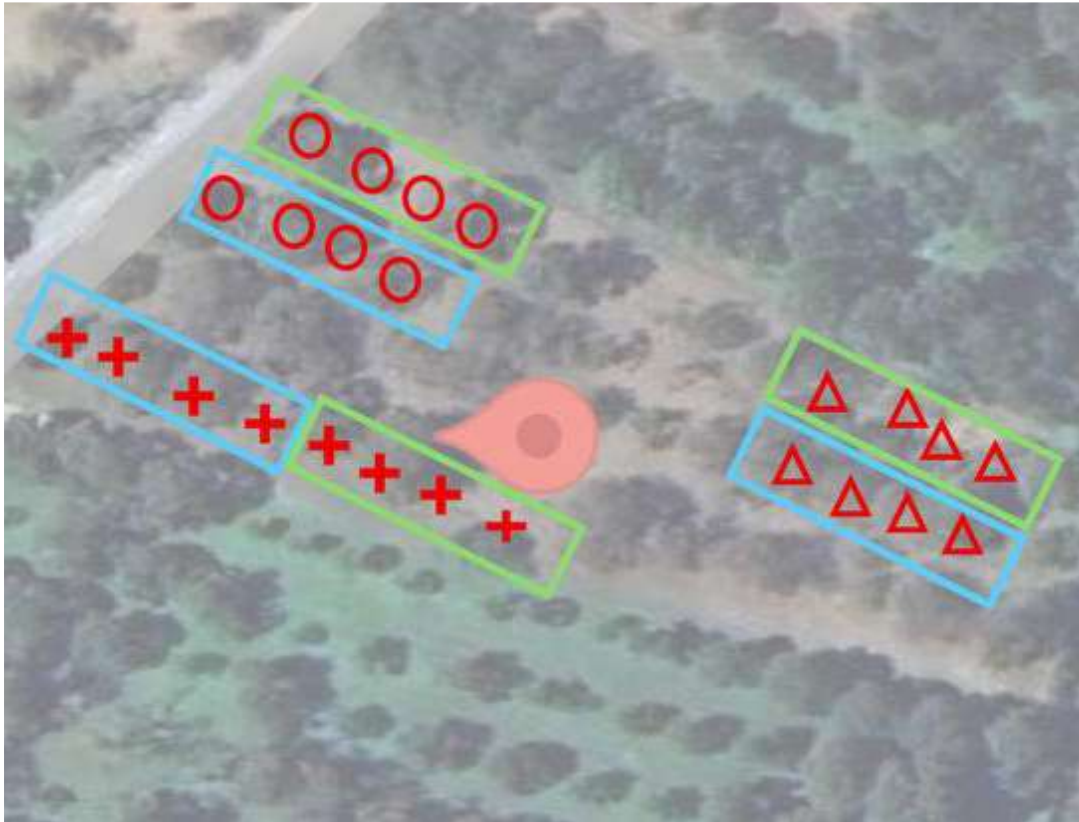
A close-up photograph of a laboratory setting. In the foreground, a multi-well plate is visible, with some wells containing a red liquid. Above the plate, a glass pipette is shown with a small droplet of red liquid hanging from its tip. In the background, a person wearing safety goggles and a lab coat is looking towards the camera. The text "Experimental trials" is overlaid in the center of the image.

Experimental trials

Portugal UTAD: 4 blocks of 4 plants each, 2 treatments plus control. Fungicrops bio (LEA) and LalStop G46 (*Gliocladium catenulatum*, 50 g/hl); **2 treatments in July and 1 treatment in September**

Campo 1

(41,5823113, -7,4914001)



Campo 2

(41.585642, -7.495307)

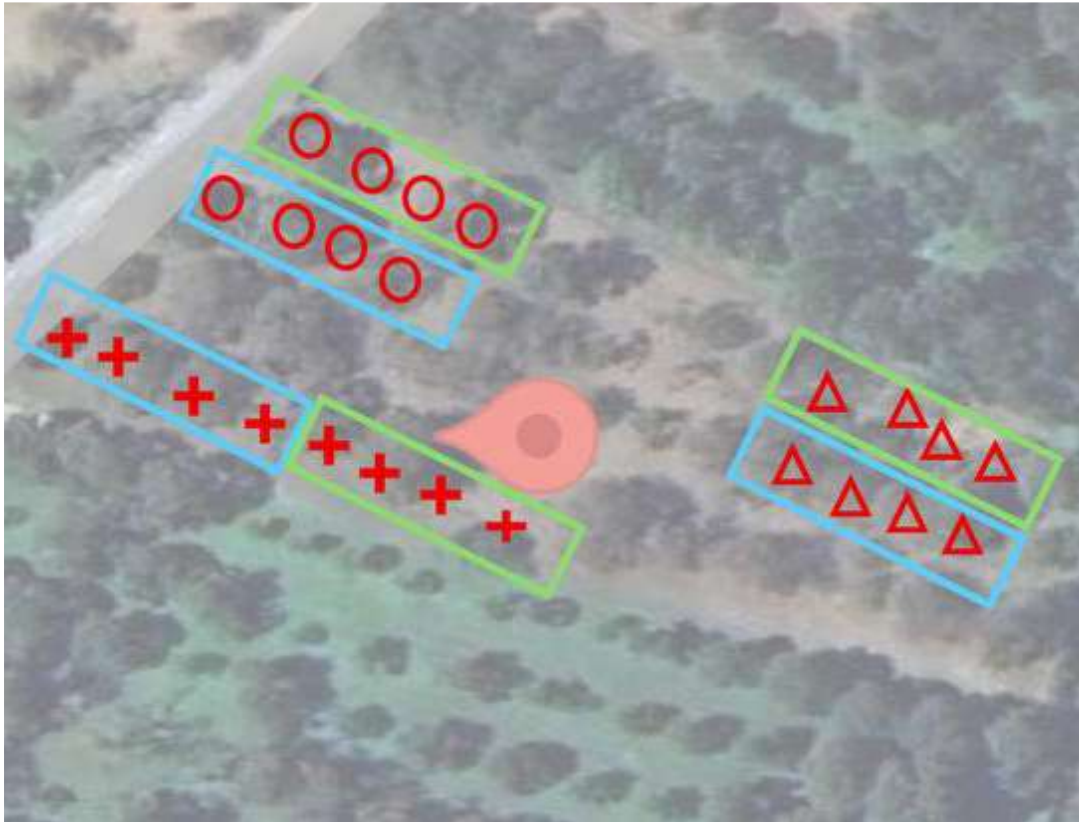


Legenda: ○ - Controlo + - Fungicrops Bio △ - Lalstop

Portugal Polytechnic Institute of Bragança (IPB): FungiCrops Bio; PROBLAD - Aqueous extract of *Lupinus albus* seeds; VitalFit (TimacAgro) – foliar biostimulant; LALSTOP G46nWG (MASSÓ) – Fungus *Clonostachys rosea*; SCORE 250 EC (Syngenta) – difenoconazol; Control (water)

Campo 1

(41,5823113, -7,4914001)



Campo 2

(41.585642, -7.495307)

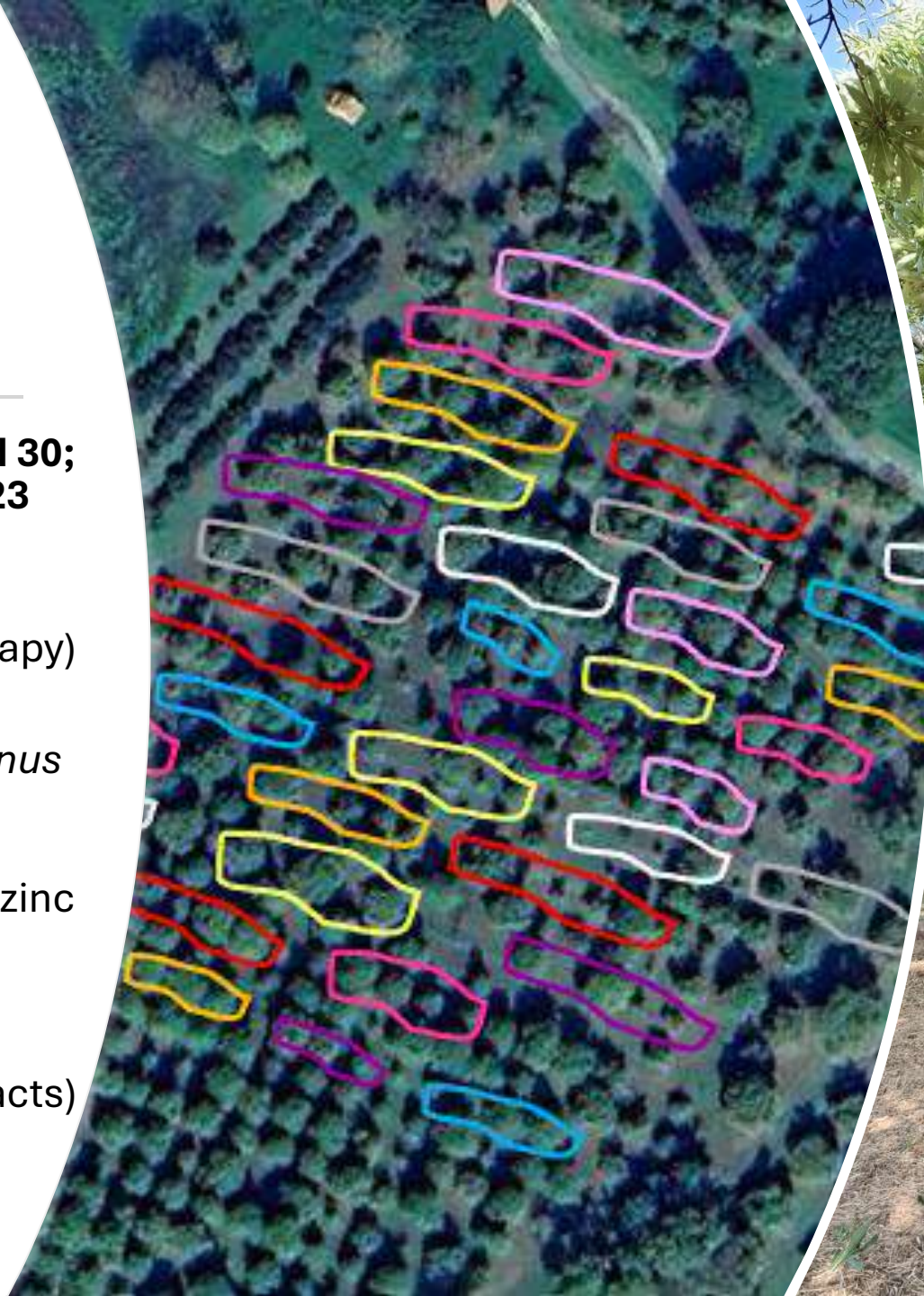


Legenda: ○ - Controlo + - Fungicrops Bio △ - Lalstop

Italy

**First treatment on June 18 and 30;
second treatment on August 23**

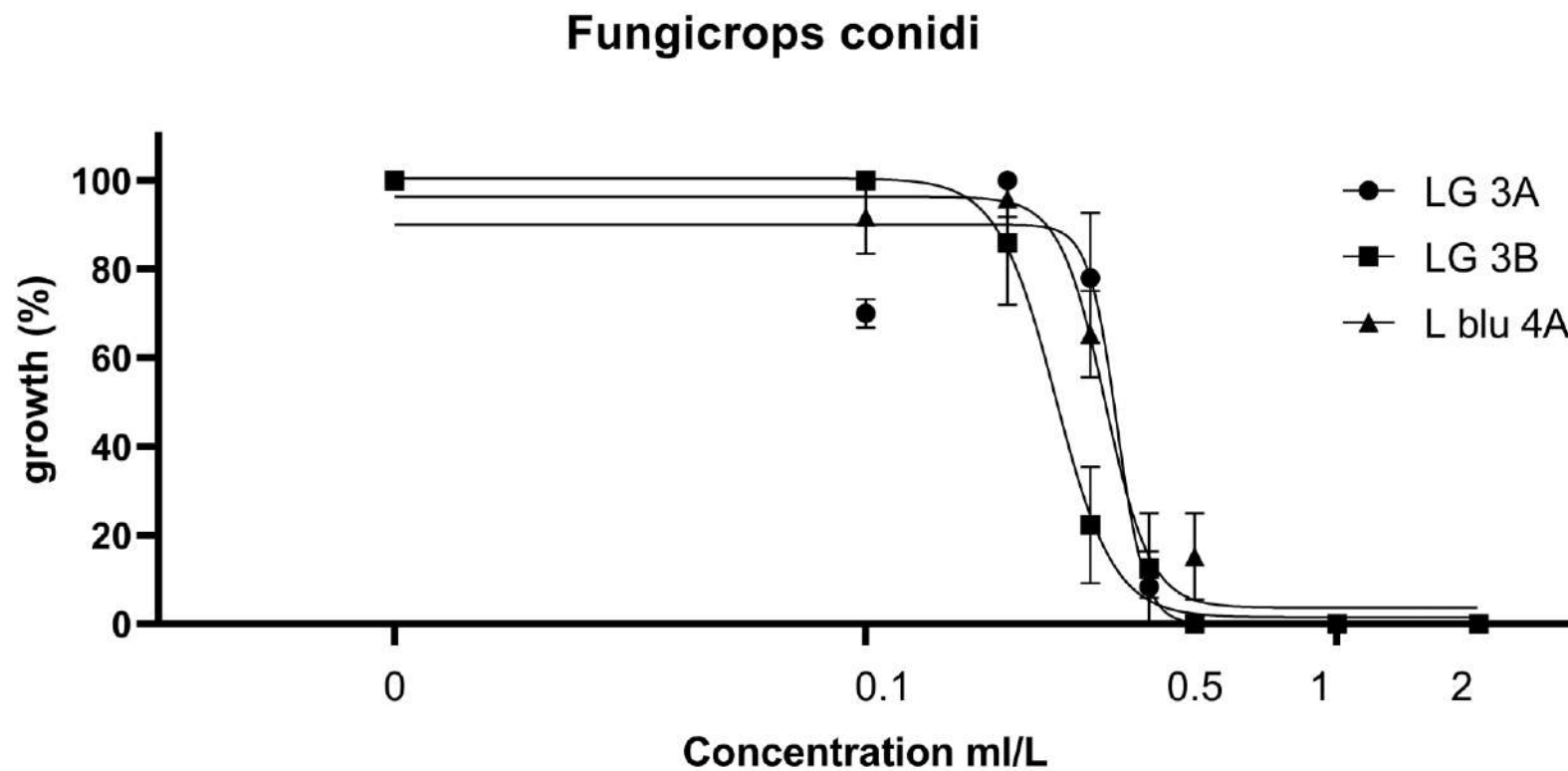
- Fungicrops Bio (LEA, crown spray)
- Fungicrops bio (LEA, endoterapy)
- Kalex Zn (Alba Milagro)
- Problad (Certis Belchim *Lupinus extract*)
- Silacid, Elicin Bz (RAGGIOVERDE, salycilic acid, zinc and boron)
- Skermo (Agriges, microorganisms)
- Xine foliar (Sarion, plant extracts)



Sampling of young flowers treated with Fungicrops Bio after 10 days

Gnomoniopsis castaneae was
recovered only on untreated
controls





IC50
FUNGICROPS
BIO

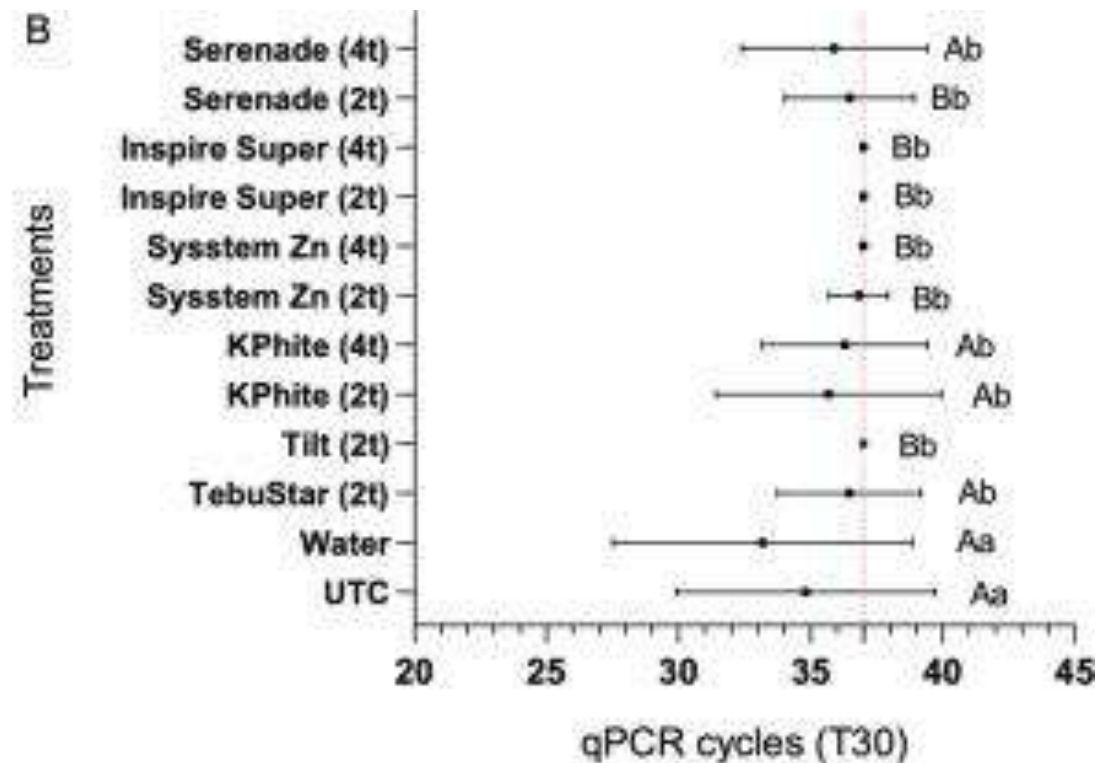
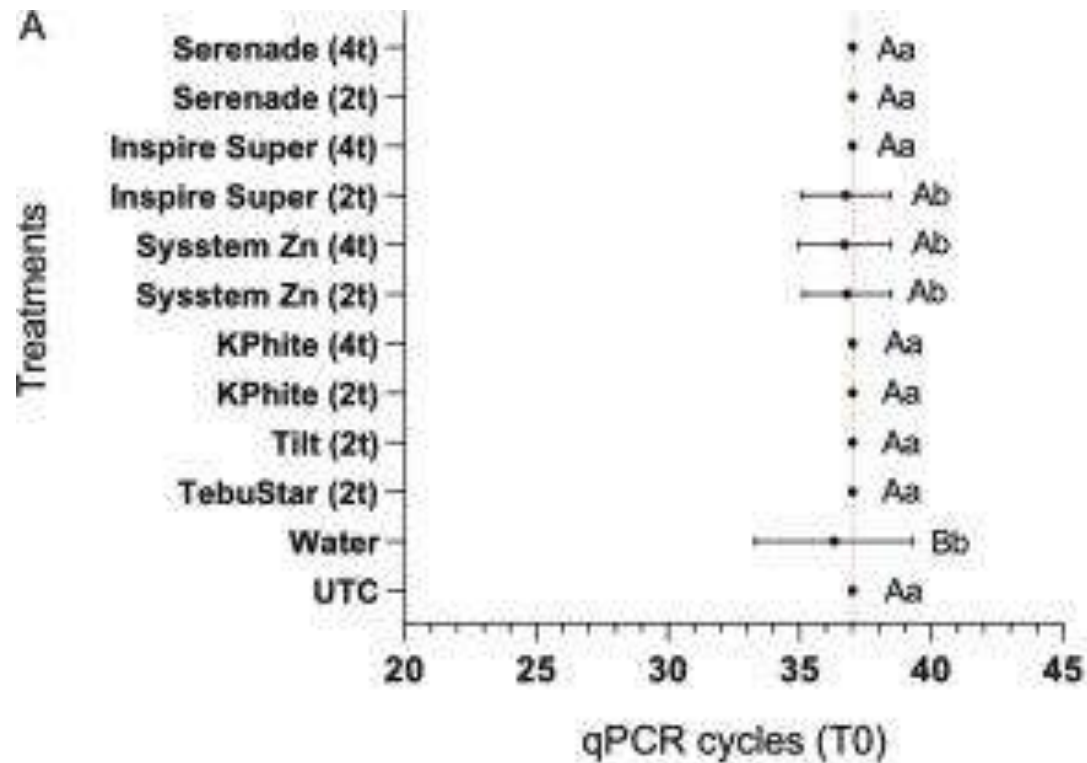


Austria

- Trial with 2 trees each (Bouche de Betizac) in 3 replications and control-plots
- The products are *Fungicrops bio* (LEA) and *Fla-ONE Plus* (Agrostim, Bioflavoniods, Manganese and Copper)
- The dosage was 500 l/ha for both products.
- The first treatment was on June 14th, the second treatment on June 28th, the third August 27



Michigan

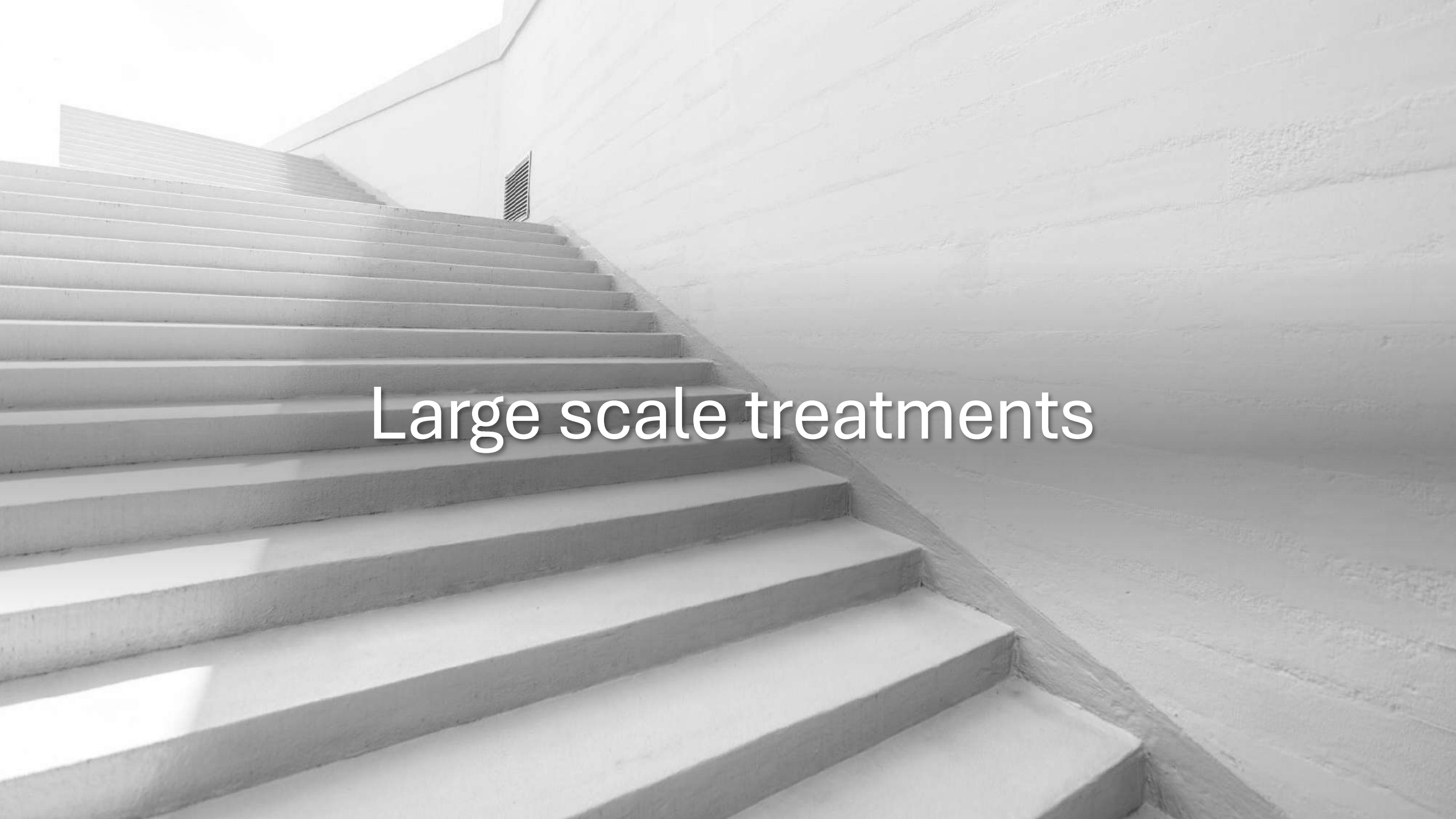




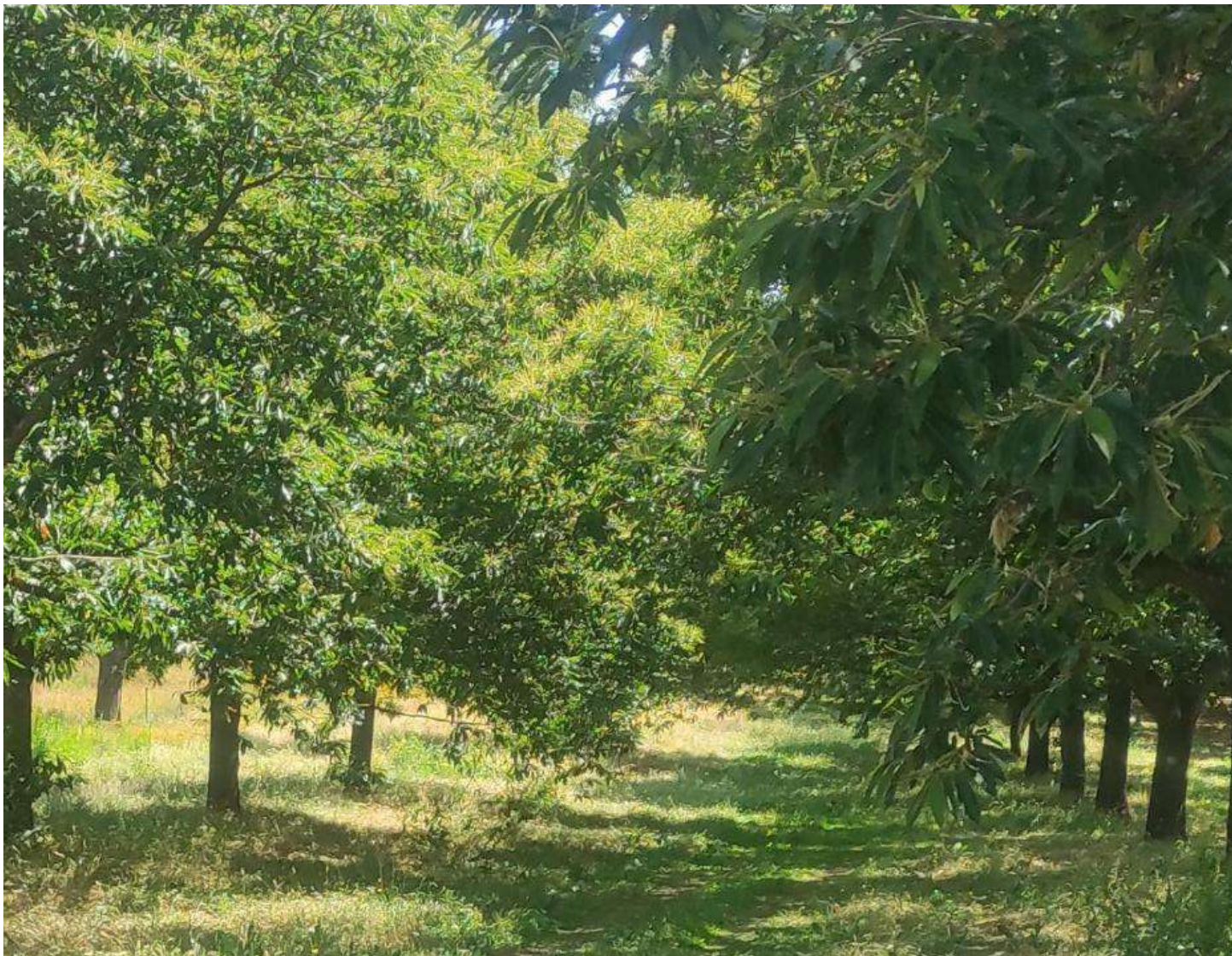
We have not
additional info
from partner but:

Spain and Greece received 5 and 35
litres of Fungicrops bio for
experimental trials, respectively

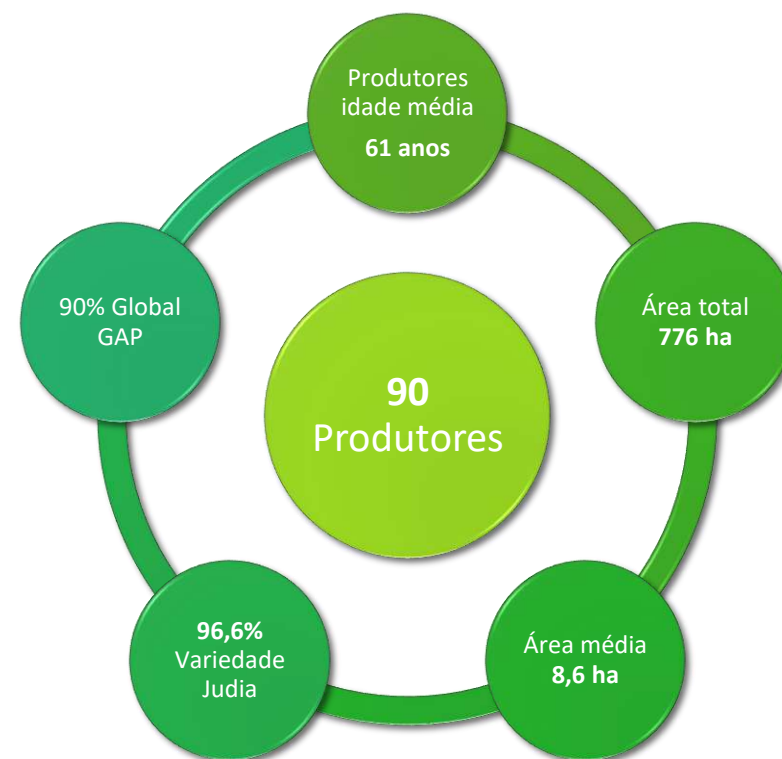


A wide, modern concrete staircase with a textured wall on the right. The stairs are made of light-colored concrete and lead upwards. The wall on the right has a rough, textured surface. The text "Large scale treatments" is overlaid in the center of the image.

Large scale treatments



Portugal



‘Podridão da Castanha’ (*Gnomoniopsis castaneae*)

Equipa Técnica: José Gomes-Laranjo (UTAD), Sónia Andrade (UTAD) e André Pereira (Agromontenegro)

Tratamentos a realizar para a ‘Podridão da Castanha’

Aconselha-se a aplicação de 2 tratamentos em plena floração com Fungicrops Bio LEA (previsão de ocorrência entre a última quinzena de junho e a primeira quinzena de julho) e de 1 tratamento, 9 semanas antes da colheita, com Tebuconazol (primeira semana de setembro). Os tratamentos são de aplicação por pulverização à copa.

Primeiro tratamento:

CONDIÇÕES: aplicar em plena floração (Figura 1). Repetir após 7 a 14 dias.



Tratamento	
Marca	Fungicrops Bio LEA
Composição	Zn solúvel (1%), Mn (1%), Mo (0,02%), pH 3,0-3,5
Dosagem	600 ml/hl em 500 a 1500 L água/ha
Modo de uso	Pulverização à copa

*Autorizada a aplicação em Agricultura Biológica.

Segundo tratamento:

DIRECIONADO: ao controlo da podridão da castanha (reforço do primeiro tratamento), do bicho-do (*Cydia splendana*) e da septoríose (*Septoria castanicola*).

CONDIÇÕES: aplicar no início do crescimento dos ouriços (primeira semana de setembro) (Fig.2).



Tratamento	Podridão	Bichados	Septoríose
Marcas	Horizon**	Affirm Opti**	Cobre Nordox 75WG*
Composição	Tebuconazol	Emamectina	Óxido Cuproso
Dosagem	40 mL/hl	200 g/hl	80 g/hl
Modo de uso	Pulverização à copa em 500 a 1000 L água/ha		

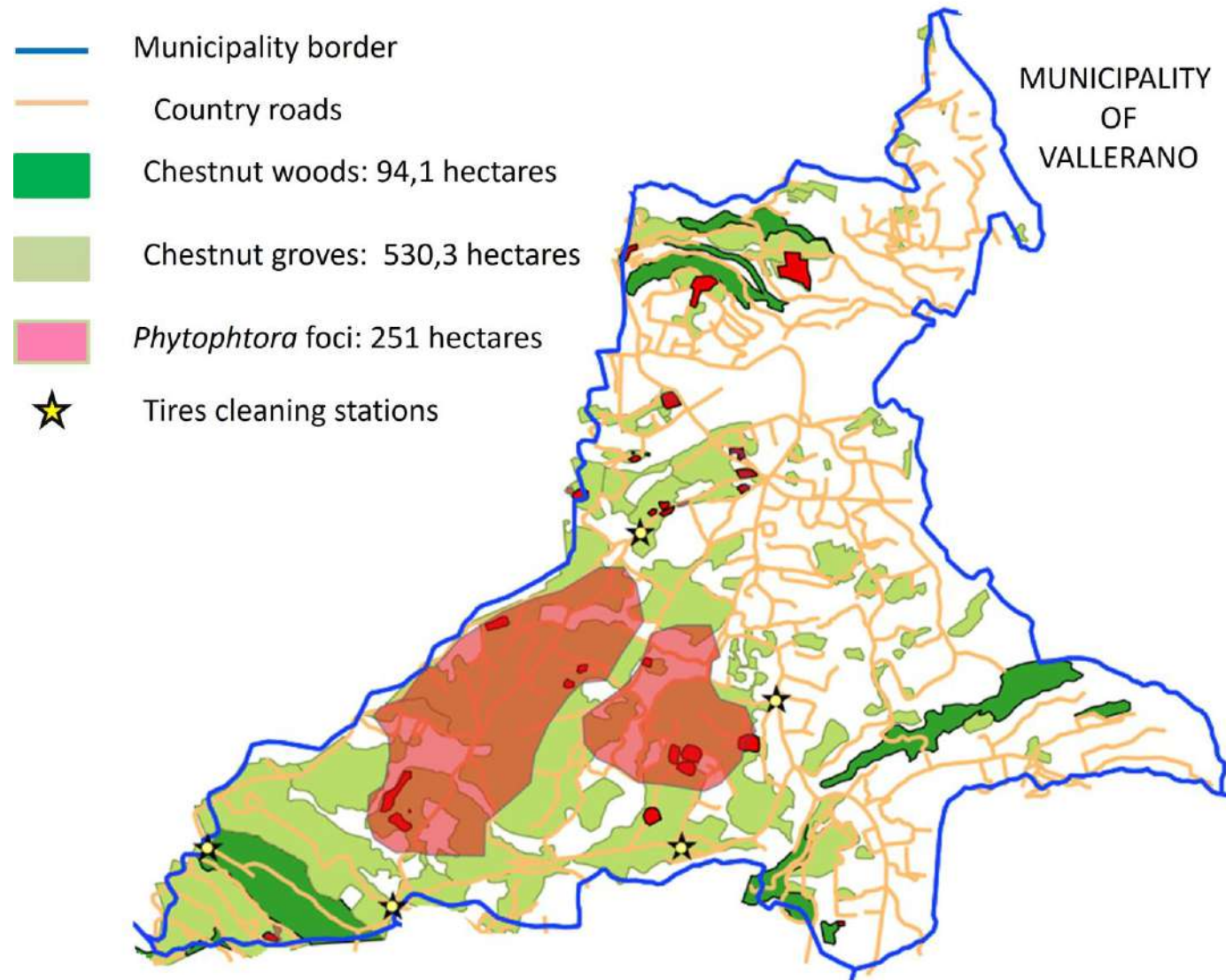
**Produtos podem ser aplicados em conjunto.

Protocol of treatment: organic farms applied Fungicrops bio in both treatments

Up to 10.000 hectares treated with Fungicrops

Salienta-se ainda o facto de os produtos recomendados poderem não estar homologados para a cultura do castanheiro. Os produtores podem encontrar livremente alternativas com composição equivalente ou semelhante.

Vander A., Garcia R., Morais-Rodriguez, C., Lima, O., Pontes, P., Semedo, A., Gomes-Laranjo, J., Rodrigues, P., Leon-Chaparro, M., Cavaleiro, S., Magriani, G. (2023). Primeira revisão da praga para o manejo da podridão da castanha da castanha causada por *Gnomoniopsis castaneae*. Eurocastanea. Propósito comum, traduzido para a língua de cada país membro do Eurocastanea, para a ligação nas florestas nacionais.



Italy:

Two locations in Central Italy using the Eurocastanea protocol 2024 (Kalex Zn) and 2025 (Fungicrops Bio)

Monti Cimini area: ca 250 hectares

Monte Amiata area: ca 45 hectares



Drone treatments

- Alternative to ground treatments, especially in areas not suitable for mechanised ground treatments
- Environmental gain: 1/5 of water demand
- Economical gain: no need for investment in machinery or reduced work/hrs
- Flight plans, drones and their maintenance are provided by specialised companies at competitive costs per hectare
- **We did treatments in Latium and Tuscany region during the 2025 season on a total surface of 50 hectares**

A close-up photograph of a DNA microarray. The background is a grid of small, colorful spots (red, blue, green, yellow) on a white surface. In the foreground, a glass petri dish is partially visible, and a pipette tip is positioned over it, suggesting a laboratory setting. The word "Research" is overlaid in white text on the left side.

Research

France has launched a **new large-scale program on *Gnomoniopsis***, with activities beginning in 2025:

Distribution of *Gnomoniopsis castanea* in relation to weather conditions: spatial and temporal mapping through sampling and analysis of different tree organs.

Understanding varietal sensitivity: analysis of starch constituents.

Evaluation of biocontrol solutions: aerial spraying and microinjection into the trunk.

Identification of microbial and fungal populations on the tree and exploration of potential antagonists.

Establishment of permanent orchard plots to evaluate the effects of cultural practices.

Post-harvest development: sorting techniques based on volatile profiling and optical cameras.

Post-harvest evaluation of thermal treatments.

Post-harvest evaluation of biocontrol treatments applied after harvest.

Post-harvest evaluation of storage methods on rot development.

Evaluation of packaging in Consumer Sales Units (UVC).

Greece has launched a program on Brown rot disease caused by *Gnomoniopsis smithogilvyi* (funded by The Greek Ministry of Agriculture), with activities beginning in 2025:

Distribution of *Gnomoniopsis smithogilvyi* in relation to weather conditions: spatial and temporal mapping through sampling and analysis of different tree organs.

Establishment of pilot sites in 4 different Regional Units (10 meteorological station have been established to measure microclimate in the pilot sites).

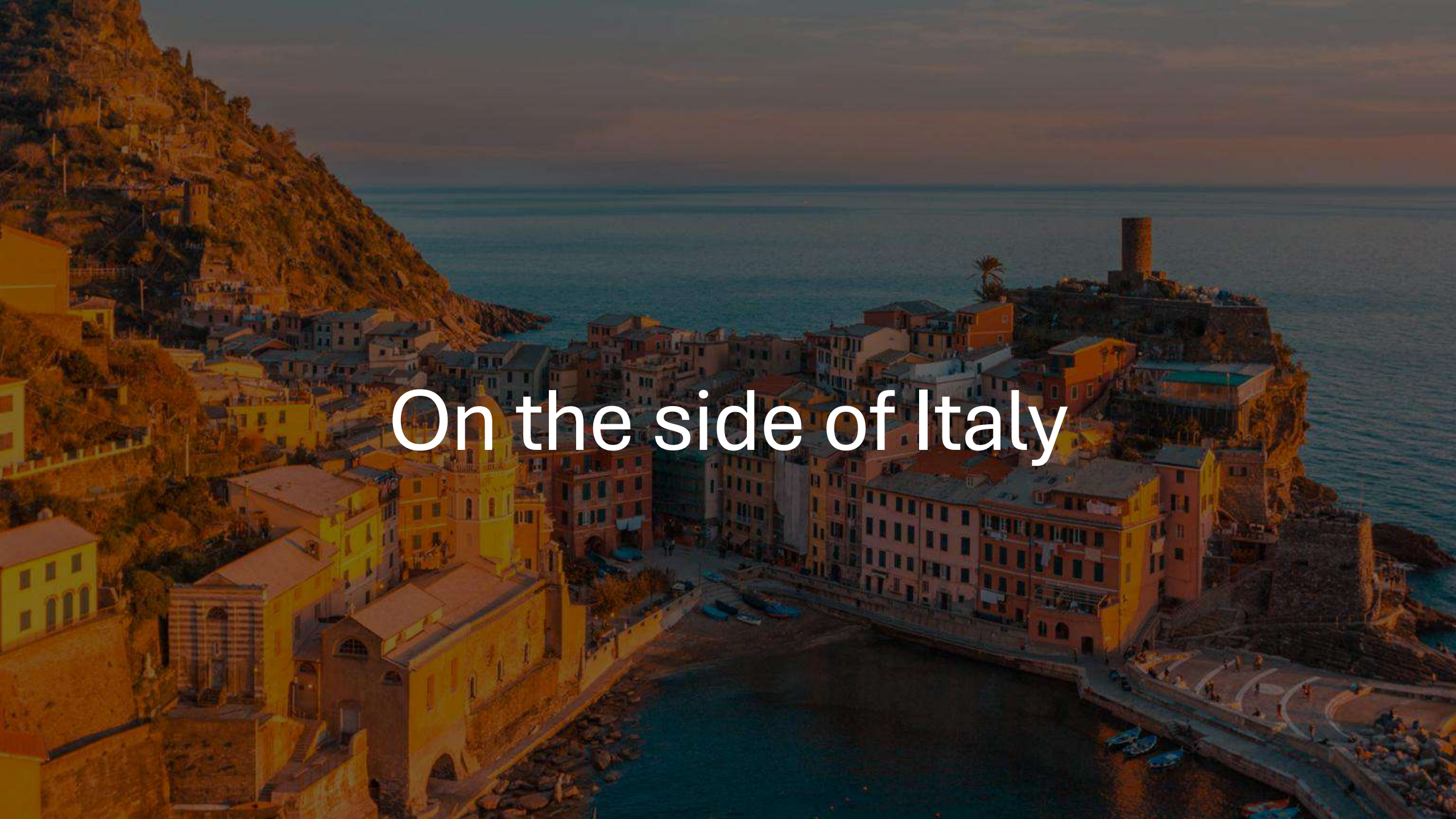
Pilot applications were applied -according to the Eurocastanea experimental design. Pilot applications include application of a chemical fungicide, a natural compound, biocontrol agent, fungicrops and one more plant defense enhancer.

A post-infection experiment (harvest 2024) was also carried out to evaluate the expression of symptoms during storing under different temperatures.

Genetic characterisation of the tree populations

Genetic characterization of *Gnomoniopsis smithogilvyi*

Study on the *Gnomoniopsis smithogilvyi* infection root

An aerial photograph of a coastal town in Italy, likely Cinque Terre, during the golden hour of sunset. The town is built on a steep, rocky hillside that meets the sea. The buildings are colorful, with warm tones of orange, yellow, and red. A prominent church with a dome is visible in the lower left. The sea is a deep blue, and the sky is a mix of orange and blue. The text "On the side of Italy" is overlaid in the center in a white, sans-serif font.

On the side of Italy

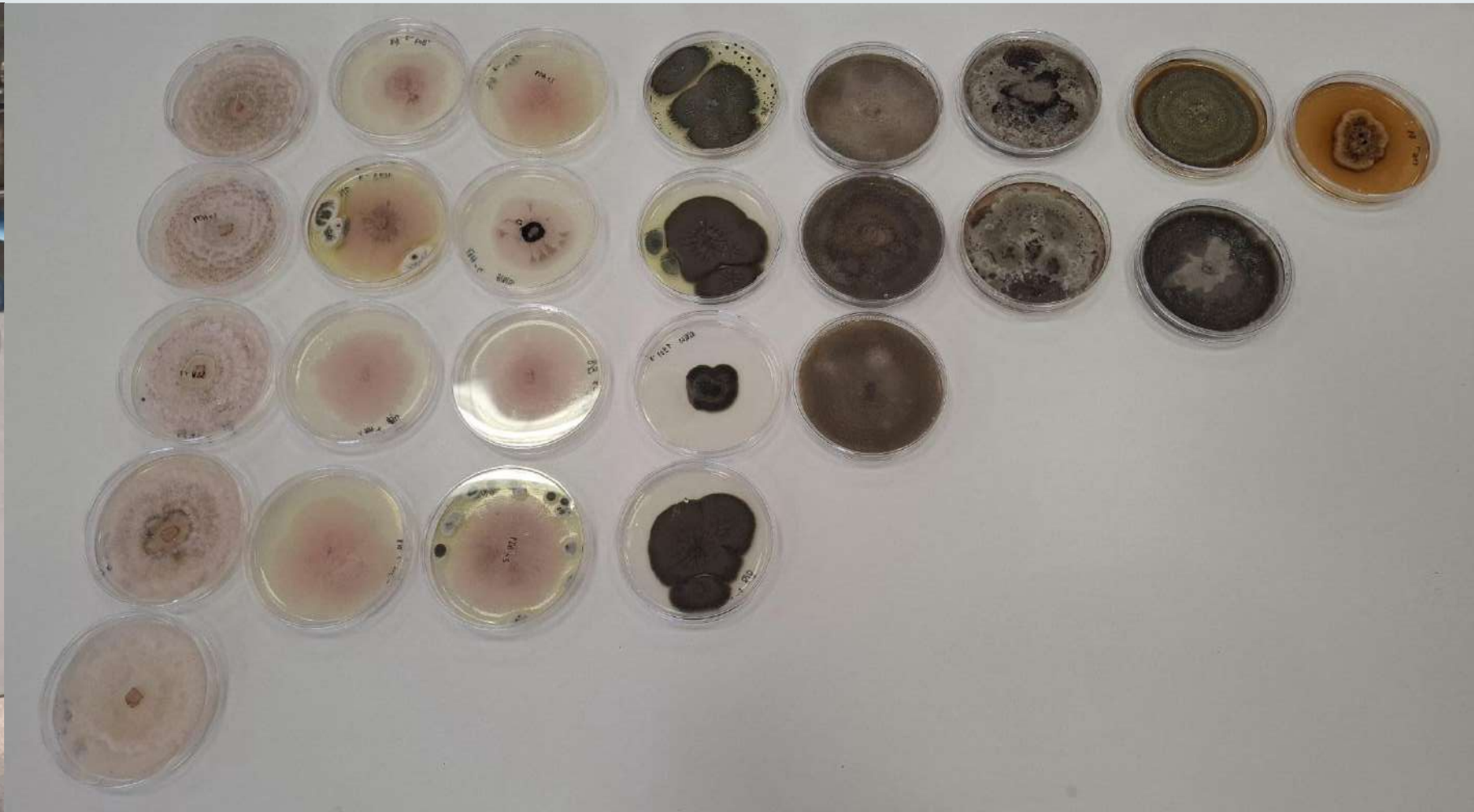
Is *Gnomoniopsis castaneae* carried in pollen?

Pollen was collected from 28 chestnut genotypes from the collection of CNR IRET (Porano, Italy)

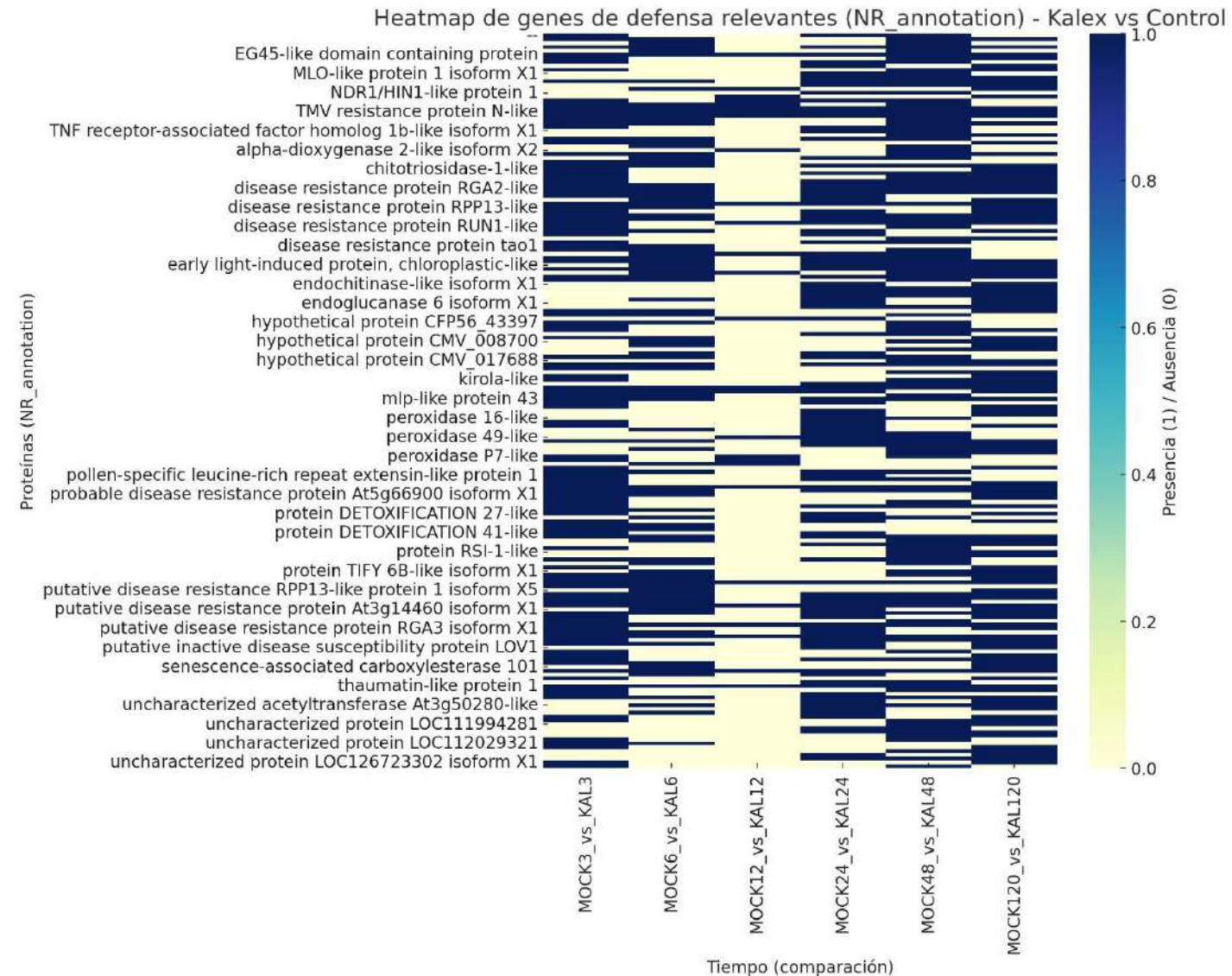


Is *Gnomoniopsis castaneae* carried in pollen?

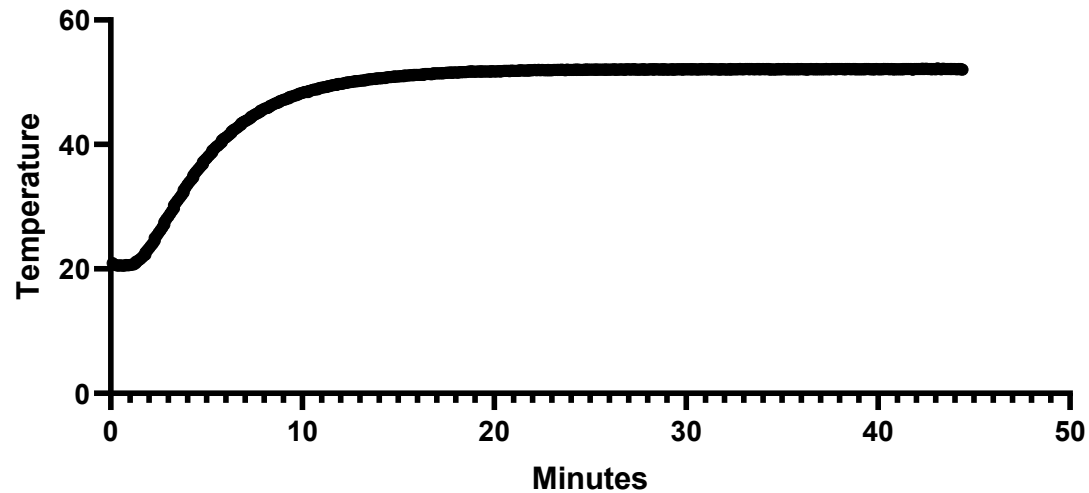
Preliminary results suggest that chestnut pollen is not contaminated by *Gnomoniopsis castaneae*



Resistance induction by biostimulants



SensNut



Good practices in the processing plant (agroindustry)

1. A rapid soaking phase in cold water is important to remove floating damaged fruits and debris.
2. **Carry out the sterilization phase at 50°C for 40-45 minutes. Be aware that after the soaking phase, the fruit stock takes some time to reach the effective temperature of 50°C. YOU NEED EFFECTIVE EXPOSURE OF FRUITS TO 50°C FOR 40-45 MINUTES**
3. Cool fruits in cold water and dry with forced steam
4. Promptly take fruit stocks to the processing plant (better on the same day of harvest) or if this is not possible, store immediately between 0°C and -2°C before delivery. Avoid storage in cold water (*curatura*).





**THANK YOU FOR
YOUR ATTENTION**

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