

PHYTOPHTHORA, THE PLANTS DESTROYER



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INTRODUCTION

Phytophthora cinnamomi is an organism that affects our *dehesas* causing root rot in *Quercus*, leading indirectly to a scarce production of cork and ham, some of our region's economic power.

This study aims to evaluate the impact that this organism can have in trees like the cork oak, the holm oak and the hackberry, for the which there hasn't been made any further investigation about the illness repercussion, and compare between species for the sake of finding new methods for controlling the infection.

OBJECTIVES

- Analyzing whether there is damage or not in the species of *Quercus ilex* (holm oak), *Quercus suber* (cork holm) and *Celtis australis* (hackberry) after being inoculated with *Phytophthora cinnamomi*.
- Comparing the damage produced in different species, if present.
- Interpreting and discussing the project's results and its most relevant conclusions.

HYPOTHESIS

- The damage caused by *Phytophthora cinnamomi* is similar across all the used species (holm oak, cork holm and hackberry).
- The control branches (non-inoculated branches) don't show any damage produced by the pathogen.

MATERIALS

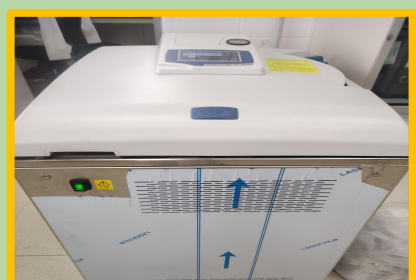


Figure 1. Autoclave



Figure 2. Laminar flow hood

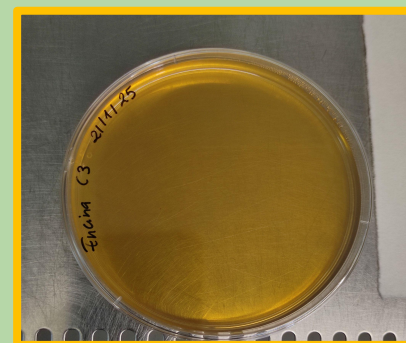


Figure 3. Petri dish



Figure 4. Alcohol burner



Figure 5. Scalpel

METHODS

.1st SESSION

-Presentation of the organism *P. cinnamomi*, elaboration of the culture medium and seeding of Phytophthora.

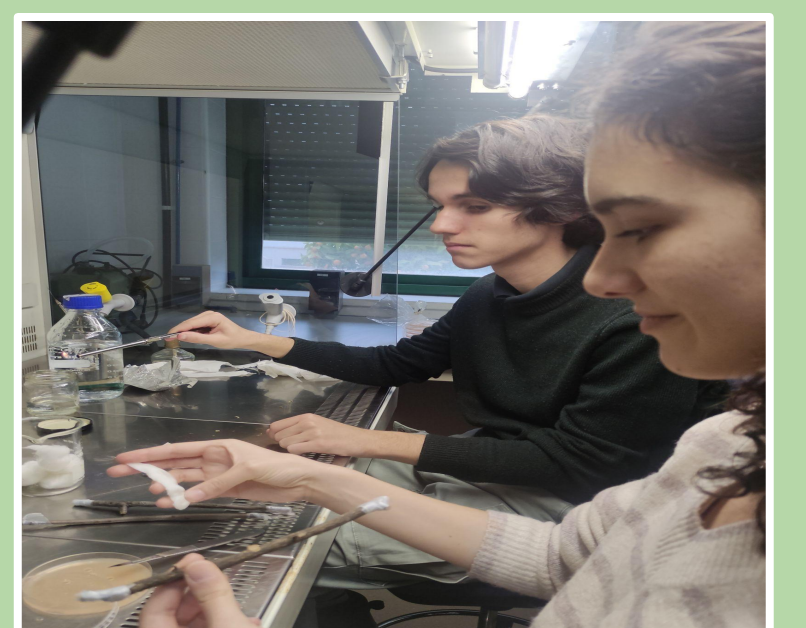
-Visite of the facilities of the AGR-157 (UCOOLIVO) group.



.2nd SESSION

-Preparation of the holm oak, cork holm and hackberry.

-Inoculation of *Phytophthora* and incubation in darkness chamber in controlled conditions.



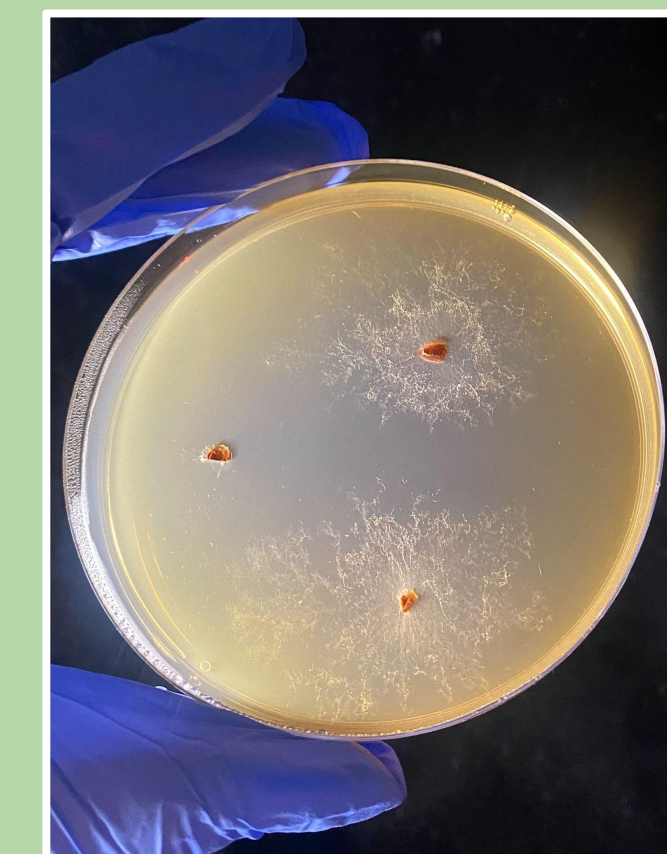
.3th SESSION

-Uncovering of the samples, measurement of different aspects of the branches and evaluation of the damages
-Isolation of the damages in selective culture medium.



.4th SESSION

-Analysis of the results of the isolated samples.
-Evaluation of the data and results collected.



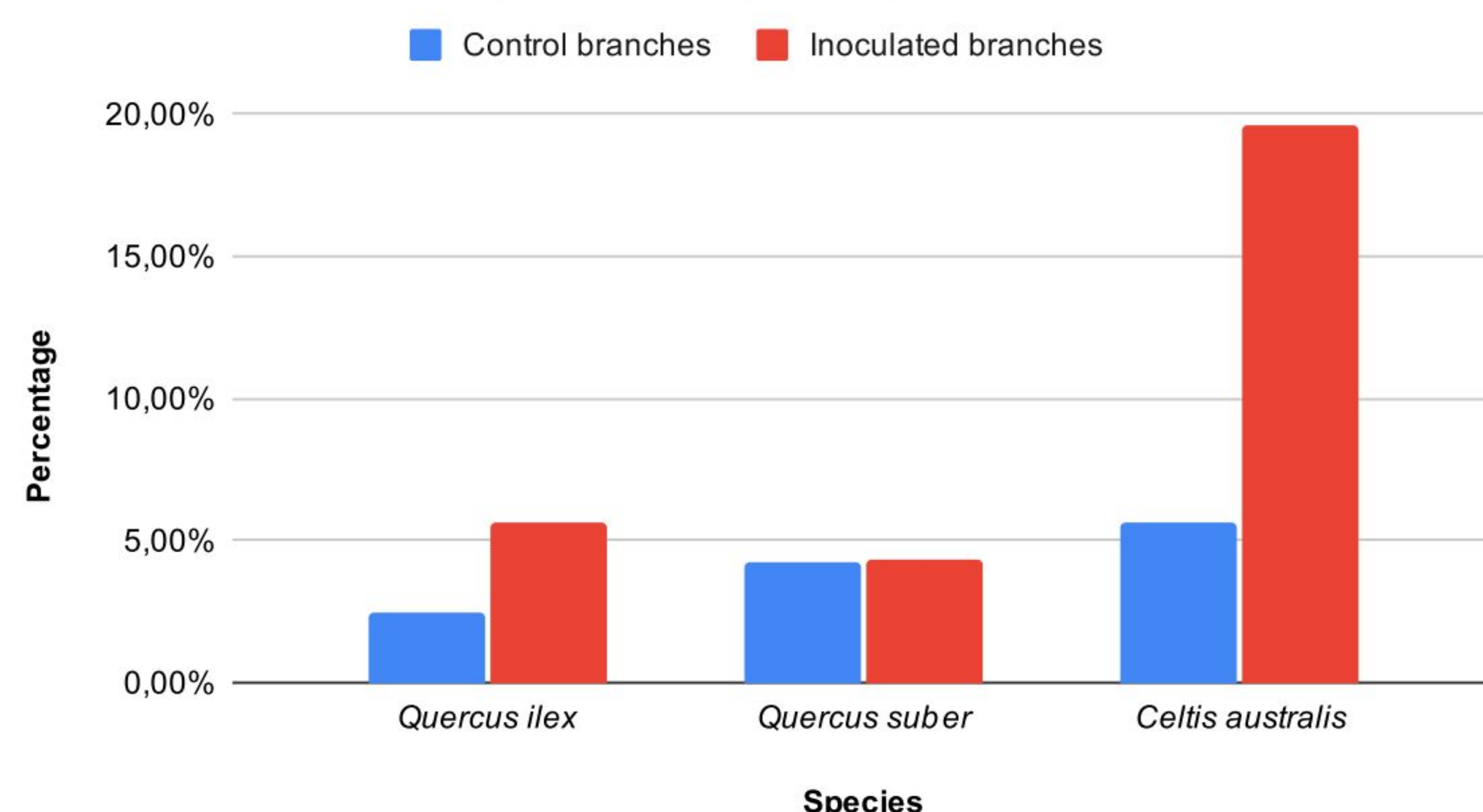
RESULTS

Holm oak (<i>Quercus ilex</i>)					
Branch number	Branch length (mm)	Branch width (mm)	Damage length (mm)	Damage percentage (%)	Ringing
C1	245	6,28	5,5	2,24%	No
C2	215	6,51	5,5	2,56%	No
C3	202	6,07	5,5	2,72%	No
1	220	10,05	12	5,45%	No
2	228	6,51	6,5	2,85%	No
3	197	7,28	20	10,15%	No
4	203	7,03	7	3,45%	No
5	220	8,53	14	6,36%	No

Cork holm (<i>Quercus suber</i>)					
Branch number	Branch length (mm)	Branch width (mm)	Damage length (mm)	Damage percentage (%)	Ringing
C1	209	7,74	13,2	6,32%	No
C2	202	6,35	6	2,97%	No
C3	207	5,95	7	3,38%	No
1	218	7,39	7,5	3,44%	No
2	216	4,48	5	2,31%	No
3	210	7,07	6	2,86%	No
4	204	7,87	20,5	10,05%	No
5	213	9,53	6,1	2,86%	No

Hackberry (<i>Celtis australis</i>)					
Branch number	Branch length (mm)	Branch width (mm)	Damage length (mm)	Damage percentage (%)	Ringing
C1	220	10	11	5,00%	No
C2	240	7,87	15	6,25%	No
C3	225	7,14	13	5,78%	No
1	233	7,64	21	9,01%	No
2	230	6,87	69	30,00%	Yes
3	230	9,05	42	18,26%	Yes
4	202	8,35	50	24,75%	Yes
5	210	9,65	34	16,19%	No

Percentage of branch length covered by damage



CONCLUSIONS

- Lesions caused by *Phytophthora cinnamomi* are similar in the different species used (holm oak, cork oak and hackberry), although they may vary in size depending on the species. It has been observed that *Celtis australis* (hackberry) is more susceptible to the microorganism, not only because of the larger size of the lesions but also because of the presence of banding, absent in the other species analyzed.
- In the branches used as controls (non-inoculated branches) no lesions produced by the pathogen were observed, which shows that the lesions in the inoculated branches are caused directly by the infection and not by other factors.

ACKNOWLEDGMENTS

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