

PHYTOPHTHORA, THE PLANTS DESTROYER



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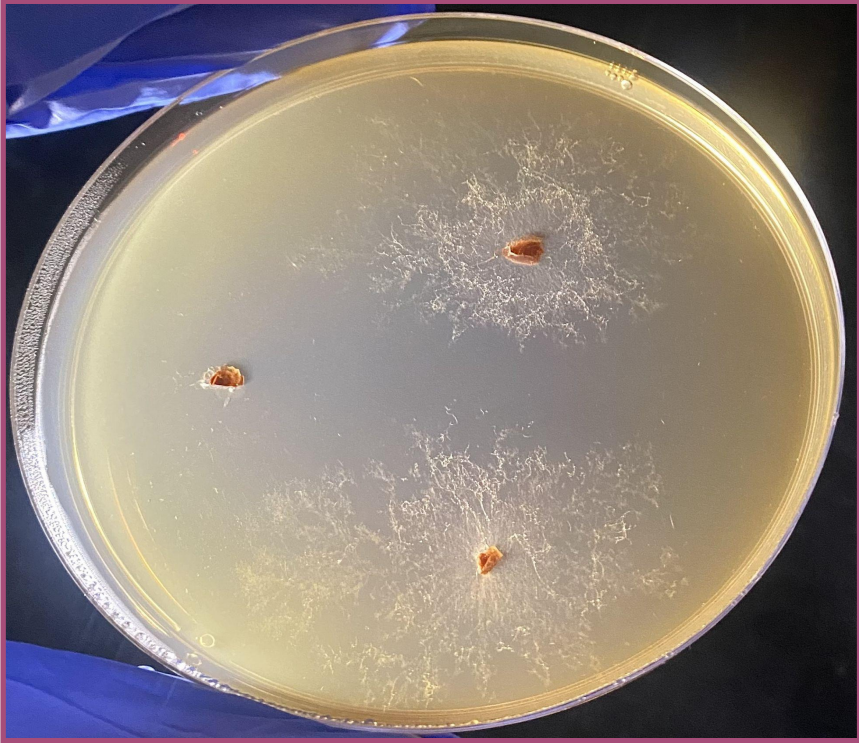
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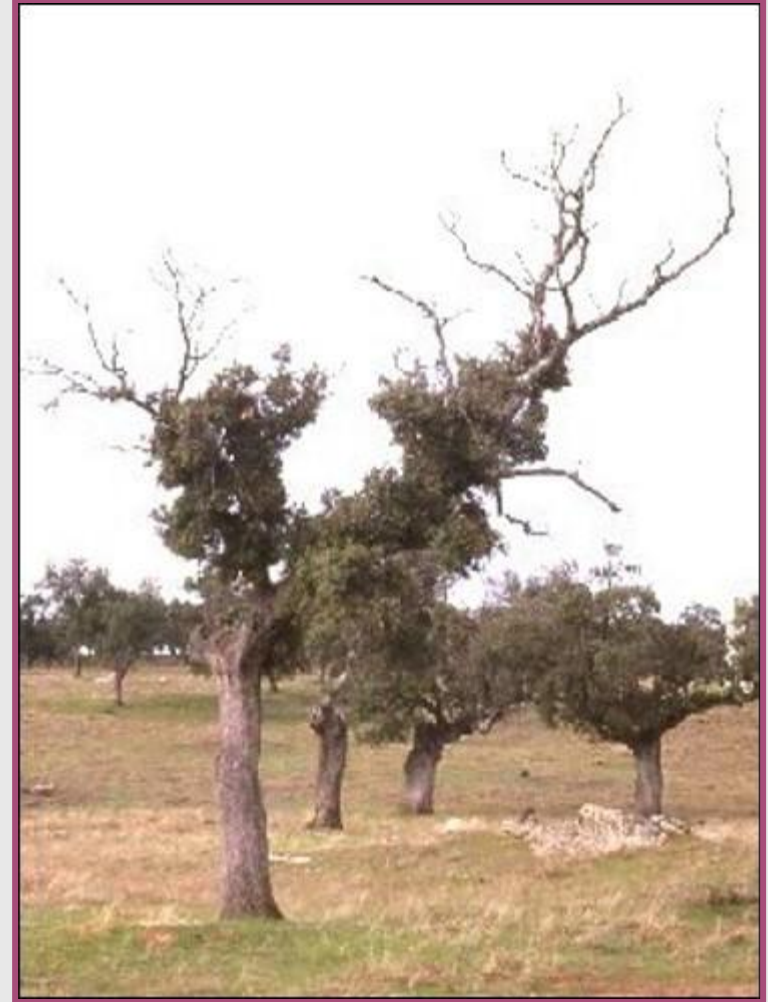
CONTENTS

- INTRODUCTION
- OBJECTIVES
- BASIC CONCEPTS
- METHODS AND MATERIALS
- RESULTS
- CONCLUSIONS
- ACKNOWLEDGEMENTS
- BIBLIOGRAPHY

INTRODUCTION



Phytophthora cinnamomi



Trees infected by the oomycete

INTRODUCTION



INTRODUCTION



+1000 species

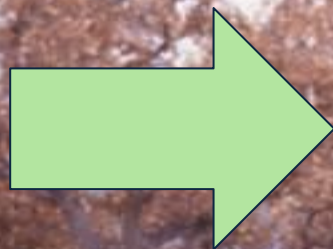


Branch inoculation

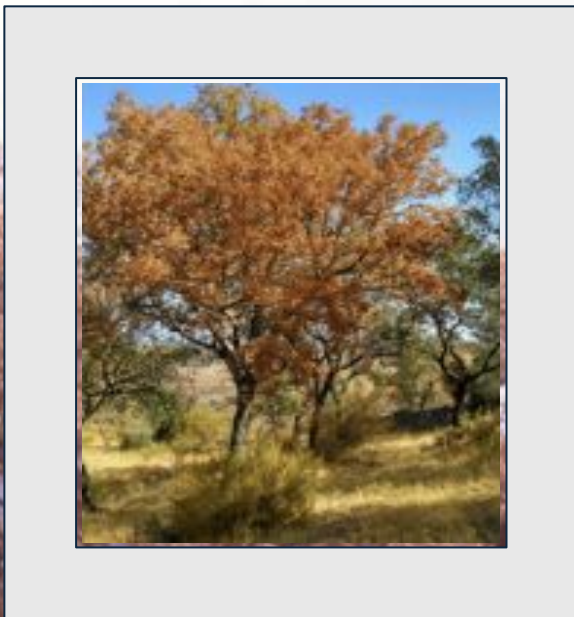
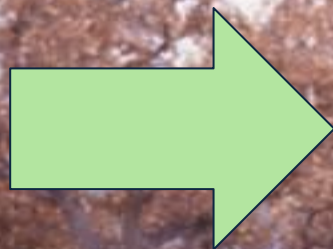
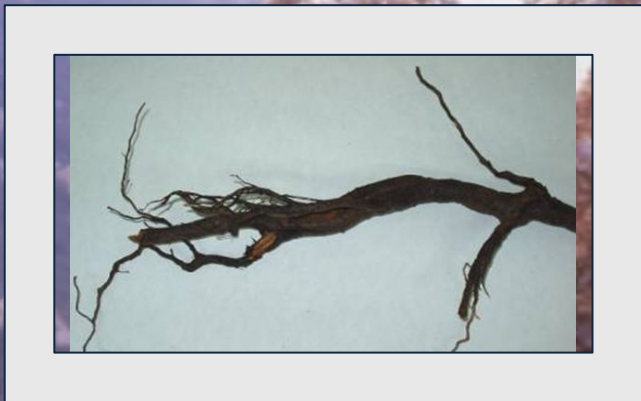


Celtis australis

INTRODUCTION



INTRODUCTION



OBJECTIVES

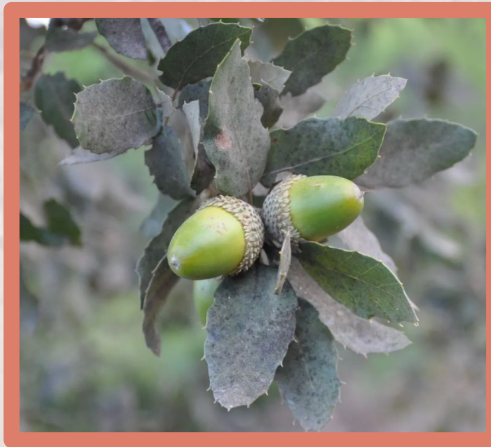
- Analyzing whether there is damage or not in the species of *Quercus ilex* (holm oak), *Quercus suber* (cork holm) and *Celtis australis* (hackberry) after being inoculated with *Phytophthora cinnamomi*.
- Comparing the damage produced in different species, if present.
- Interpreting and discussing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



Holm oak



Cork holm



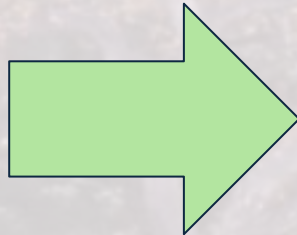
Hackberry

BASIC CONCEPTS

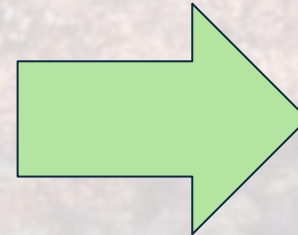
Phytophthora cinnamomi belongs to the kingdom *Stramenopila*, phylum *Oomycota*, class *Oomycetes*, order *Pythiales*, family *Pythiaceae*.



Sporangium
(non papillary)



Oogonia and
antheridia



Hyphae and swellings

BASIC CONCEPTS

Symptoms



Non-absorbent
roots



Sudden
death of the
tree



Point
drying of
branches

Control



Preventive measure
Trunk injection



Application of
carbonate to
reduce *P.*
cinnamomi
population

METHODS AND MATERIALS

First session



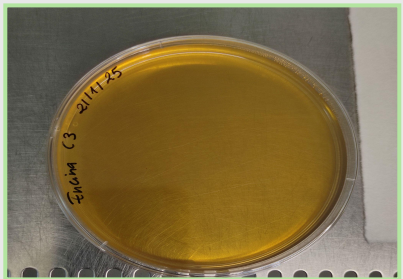
Mycelium
observation
in growth
medium



Preparation of
growth medium
carrot-agar



Transference of
the microorganism
to the medium and
incubation



Petri dish



Autoclave



Scalpel



Laminar flow hood



Blender

METHODS AND MATERIALS

Second session



Cleaning and preparation of the branches



Inoculation of the branches and realisation of a damage



Labelling and storage of the branches for incubation



Scalpel



Beaker and sterile cotton



Punch



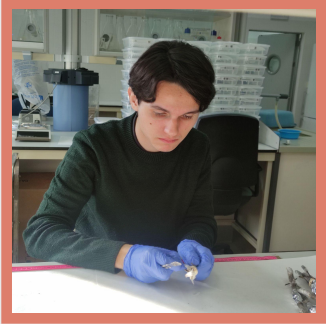
Soap



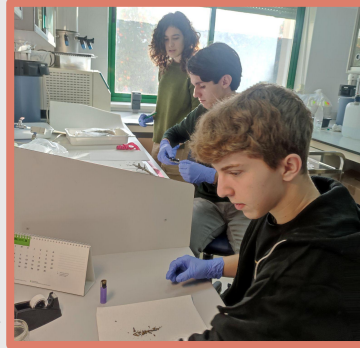
Scrubber

METHODS AND MATERIALS

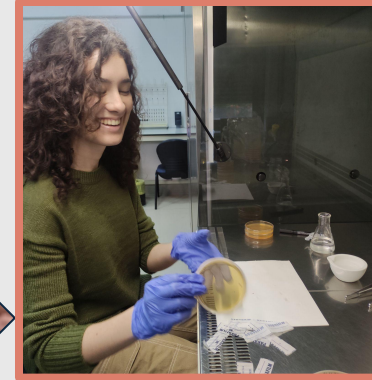
Third session



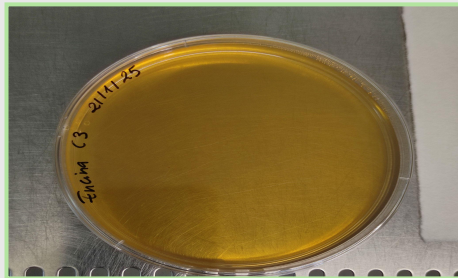
Measurement
of different
parameters



Evaluation of the
damages



Isolation of the
damages in
selective culture



Petri dish



Scalpel



Laminar flow hood

Parameters studied

-Branch length



Measuring tape

Parameters studied

- Branch length
- Branch width



Measuring tape



Caliber

Parameters studied

- Branch length
- Branch width
- Lesion length



Measuring tape



Caliber

Parameters studied

- Branch length
- Branch width
- Lesion length
- Lesion girdling



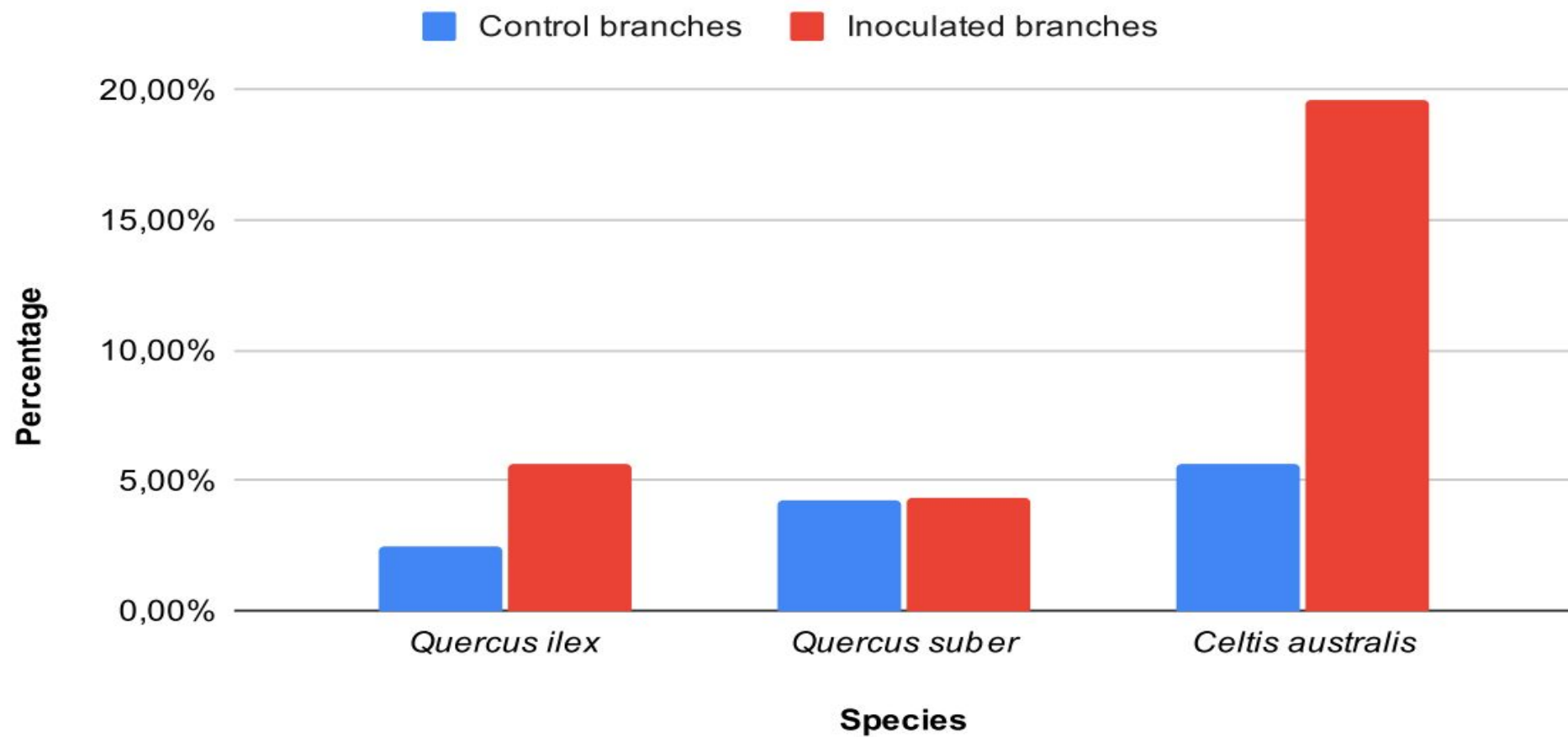
Measuring tape



Caliber

RESULTS

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.

ACKNOWLEDGEMENTS

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THANK YOU FOR YOUR ATTENTION

