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The Differences in Exit Propagation of by Cuttings for Cistus ladanifer and Cistus x cyprius

Jose Plaza[1], Lorena Parra[2], María Teresa Jiménez-Aguirre[1], José Miguel Peña[1] and **Pedro V. Mauri**[1]

[1] Madrid Institute for Rural Development, Agrarian And Food Research (IMIDRA) - Spain

iMiDRA
Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario

[2] Department of Agrarian Production, Technical School of Agricultural, Food, and Biosystems Engineering (ETSIAAB), Polythecnic University of Madrid (UPM) - Spain

POLITÉCNICA
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About me

IMIDRA:

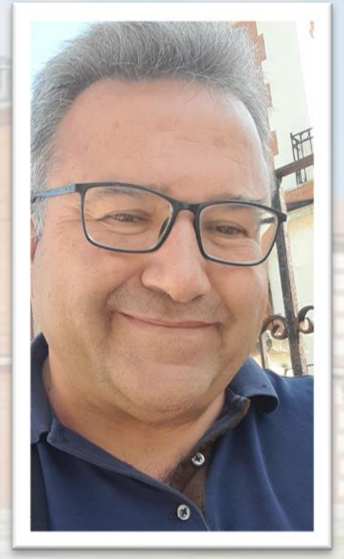
Madrid Institute for Rural Development, Agrarian And Food Research

Pedro V. Mauri Ablanque

- Doctor Agricultural Engineering
- Director of Area

<u>Area Research</u>:

- ✓ Agro-environmental
- ✓ Agri-food
- ✓ Applied Research and Agricultural Extension
- ✓ Transference
- ✓ Animal Production
- ✓ Agroforestry
- ✓ Quality



Current projects

https://www.comunidad.madrid/servicios/medio-rural/investigacion-agroambiental

IARIA

iMiDRA
Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario

AGROCONTROL

- Development of tools for crop control and wildlife monitoring using autonomous aerial and ground vehicles

ALLIUM-MAD

- Study of the feasibility and development potential for growing *calçot* in areas of the Community of Madrid

CICERCAM

- New cultivation methods for chickpeas in the Community of Madrid: intercropping with camelina, biostimulants, soil amendments, and technification to improve biodiversity

GREENNATURE

- Sustainability in grasslands over cities. Technification of green spaces through the use of new cultivation and conservation technologies for urban greening.

ESSENZIALI+D

- Aromatic, medicinal, and culinary plants: a multi-purpose crop alternative to revitalize the bioeconomy in rural areas experiencing demographic decline in the Community of Madrid.

About the project *ESENCIALI+D*

OBJECTIVE:

- To promote the crop of **aromatic, medicinal, and culinary plants** of interest to the cosmetics, perfume, and food industries in the Community of Madrid as a multi-purpose option in areas experiencing demographic decline.

SUB-OBJECTIVES:

1. To improve the productivity and adaptability of rockrose, licorice, sage, Damask rose, and rosemary in the Henares Valley (Madrid, Spain).
2. To optimize the inputs management.
3. To develop efficient production protocols for raw materials derived from aromatic and medicinal plants.
4. To promote the circular bioeconomy in rural agricultural areas.
5. Knowledge transfer to the primary sector.

Introduction

In Mediterranean areas, reforestation and forest cultivation have become more important given the impact of **climate change** and **wildfires** on soil loss and habitat degradation.

Trees and shrubs are being grown for restoration and forest cultivation.

The use of **local genetic material** is essential to ensure that planted individuals are well adapted to the specific edaphoclimatic conditions of the area.

Local individuals help to safeguard the evolutionary potential and genetic integrity of their species.

By the use of forestry species for restoration, some of them can potentially be exploited for commercial purposes.

In the case of **aromatic shrubs**, the extraction of essential oils has become a **valuable resource**.

Foto: Ayuntamiento de Berzosa de Lozoya

Objetive

Evaluate the best conditions for **propagating** specimens of

C. ladanifer and ***C. x cyprius*** for production purposes.

Materials and methods

Sampled Area Description

Continental climate:
- ➢ Average Temp: 10.4 °C
- ➢ Annual precipitation: 520 mm
  - ▪ Spring and autumn

Soils:
- ➢ Very stony
- ➢ Inceptisols/Entisols (FAO)

Vegetation:
- ➢ forests of oaks and pine
- ➢ Richness of Mediterranean shrub
  - ▪ mainly the Cistus genus:
    - ▪ *Cistus Ladanifer*
    - ▪ *Cistus x Cyprius*

Materials and methods

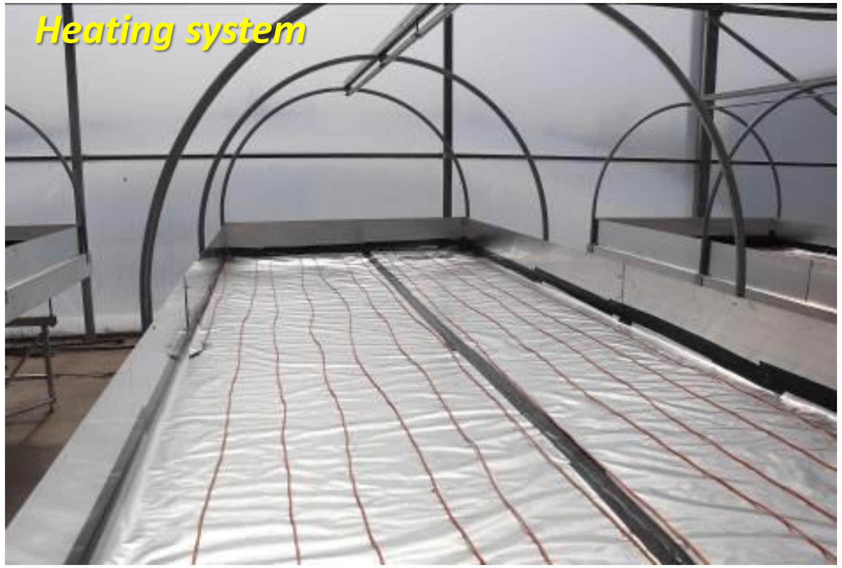
		Cistus Ladanifer	Cistus x Cyprius
Geographical spread		Mediterranean	Mediterranean
Farmed		S. XVIII - Currently	Up to ≈ S. XIX
Seeds fertility		Viable	Extremely low
Essence	Type	Amber fragrance	Amber fragrance
	Quality	Very good	Excellent
Crop expansion		Low	Null

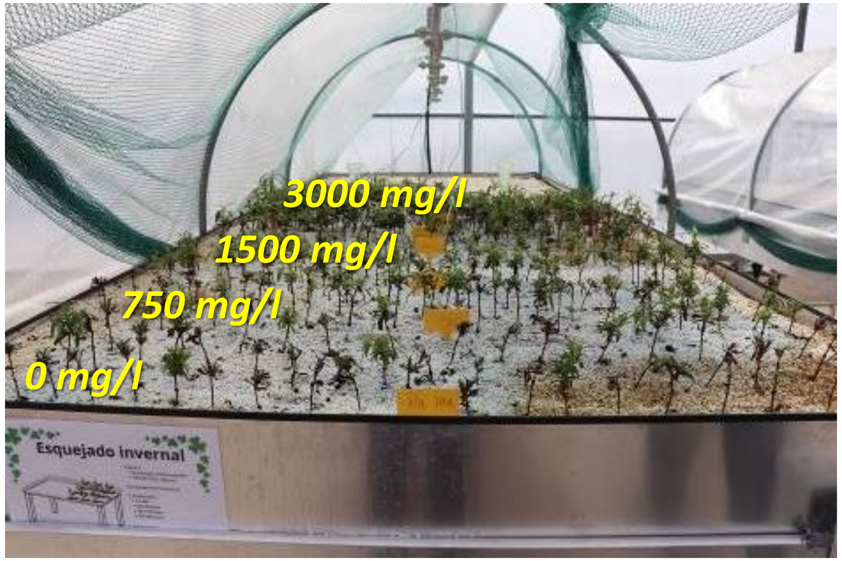
Relevance for cutting propagation

Materials and methods

Sample Collection and Treatments

- Four collection seasons: Winter, Spring, Summer and Autumn.
- Four temperatures on hated tables with : 20, 24, 28 and 32 °C.
- Four inodolebutyric acid (IBA) doses: 0, 750, 1500, 3000 mg/l





Materials and methods

Cultivation

- Green house tables: covered with plastic
- Irrigation: to maintain saturated atmosphere
- Fungicide treatment: as needed

Measurements

- Four months after planting
- Successful rooting (3 scenarios):
  - Presence of roots
  - Absence of roots
  - Death of the cutting
- Root length (in case of presence)

Results

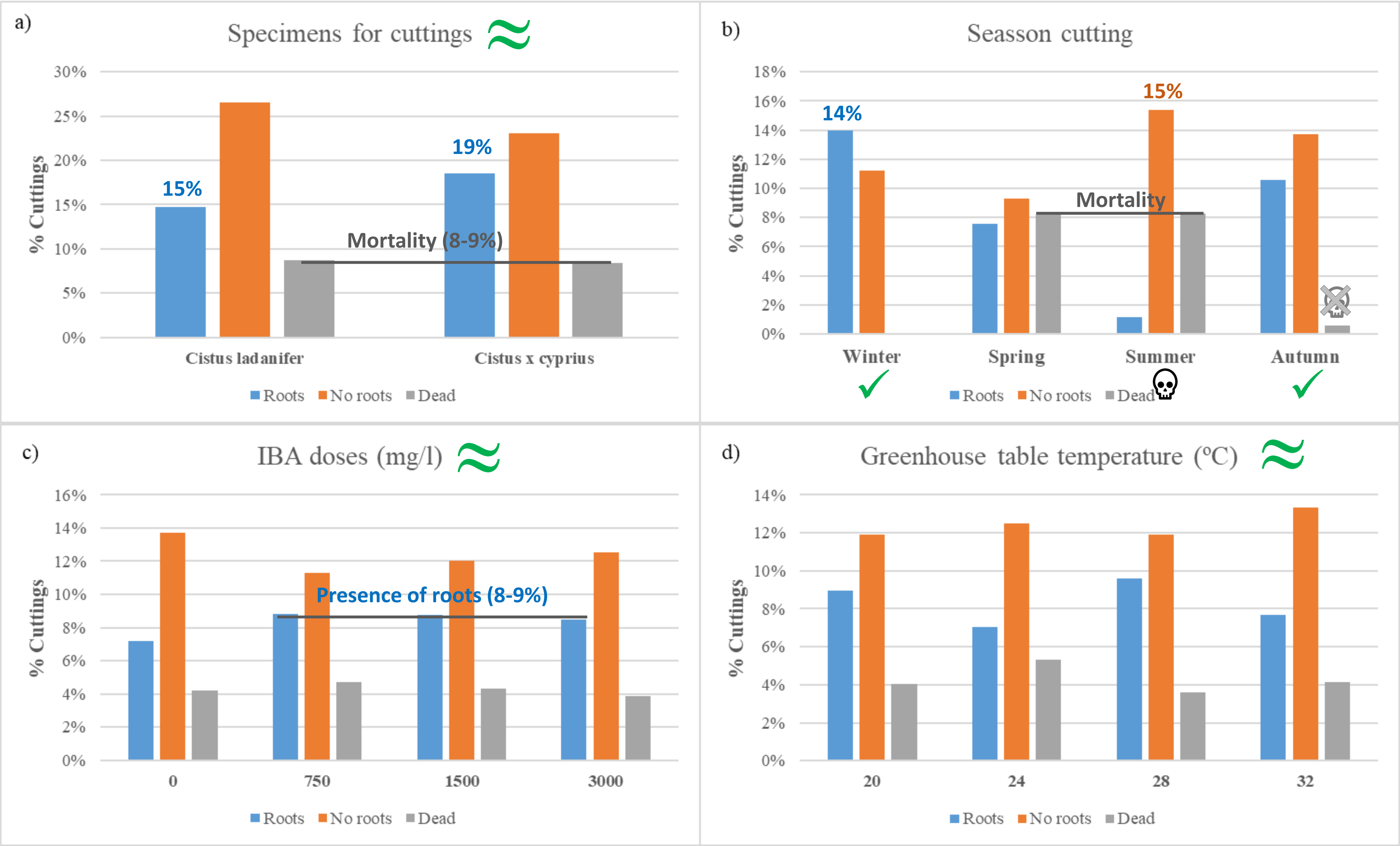
Successful Rooting

a) b/w* Species:
- n/d** in mortality
- Success in rooting

b) b/w Season cutting:
- NO mortality in winter and autumn
    - ↑ rooting in winter
- ↑ mortality in spring and summer
- ↑ no rooting in summer

c) b/w IBA doses:
- Slight difference if IBA is applied

d) b/w Temperature:
- n/d



* b/w: Between
** n/d: No Differences

Results

Root Length

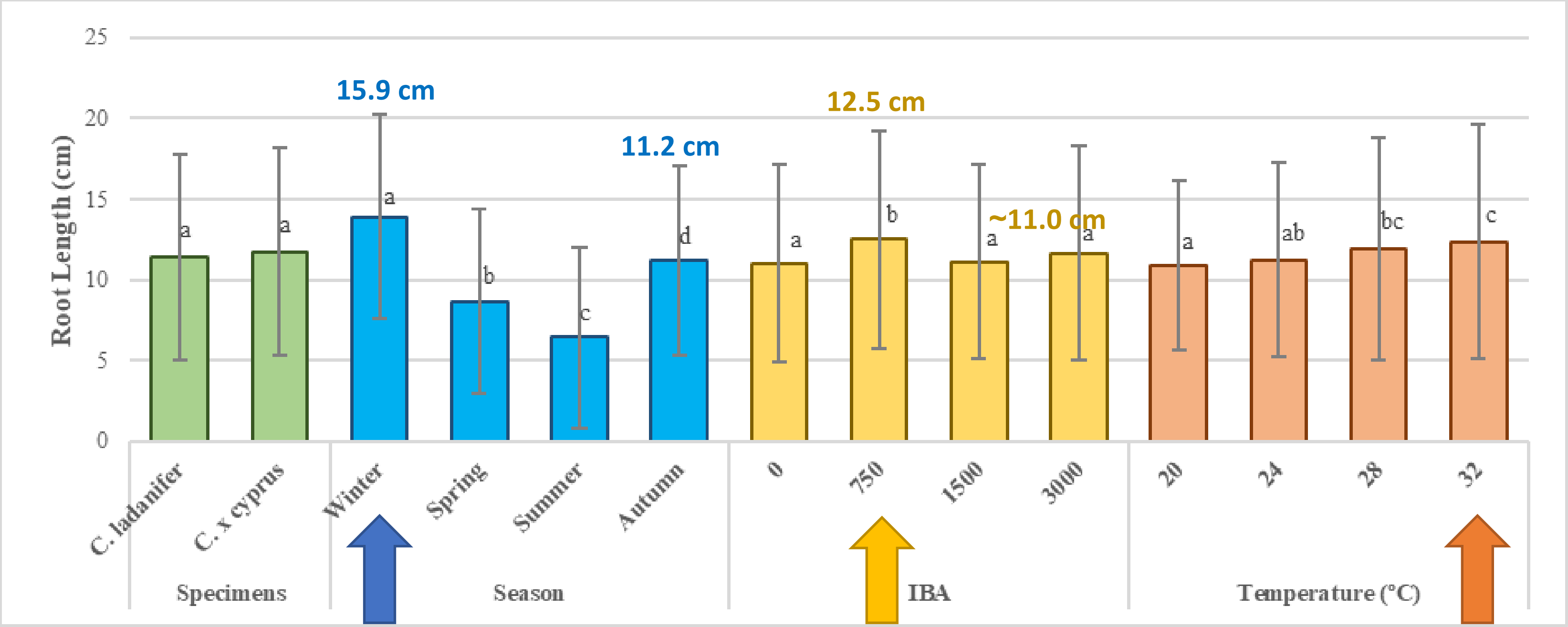
Ranged: 0 – 45 cm
Average: 11.6 ± 6.4 cm
Median: 11.0 cm
N: 2,119 indivuals

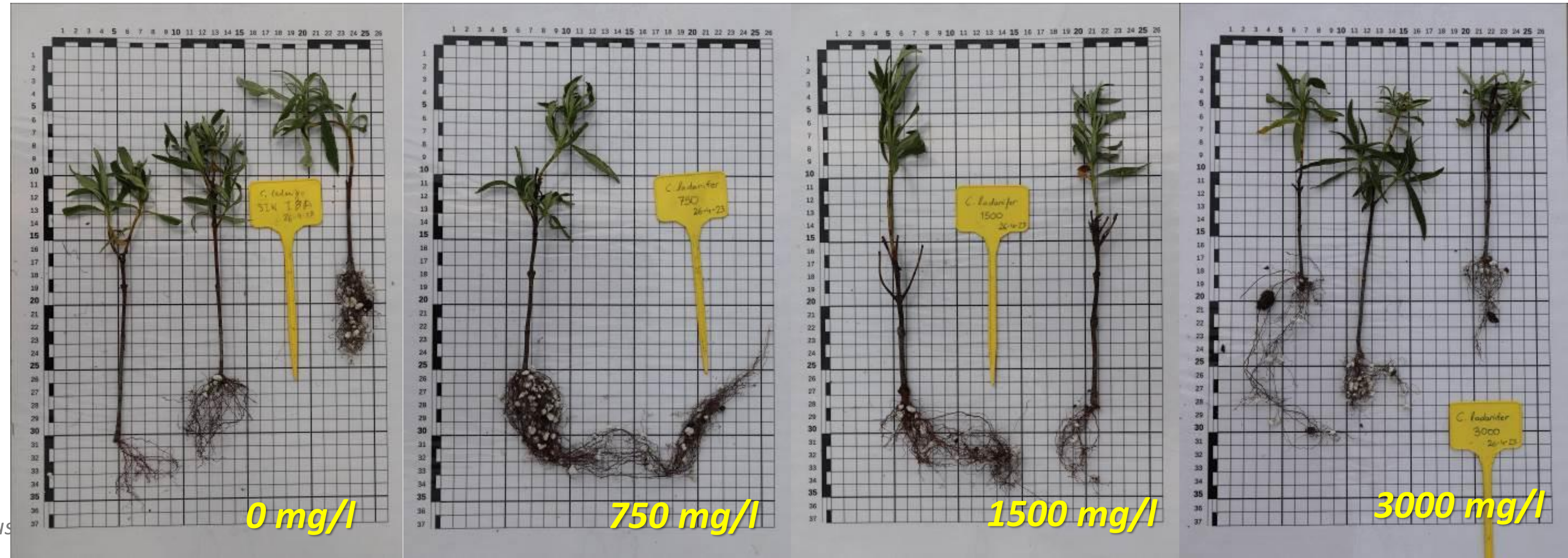
a) b/w* Species:
- n/d**

b) b/w Season cutting:
- All with differences
- Winter (↑↑) and autumn (↑)

c) b/w IBA doses:
- Maximum absorption capacity 750 mg/l

d) b/w Temperature:
- All with differences, but related





* b/w: Between
** n/d: No Differences

Conclusion and Future Work

- Research has shown rooting capacity of both species:
  - ⇒The best combination resulted in:

Winter / Autumn + IBA 750 mg/l + Temp: 32 ºC

  - ⇒ If cutting is carried out in spring, the table temperature can be reduced to 24 ºC.
  - ⇒ Cuttings should be avoided during the summer months.

- In future work,
  - ⇒ The evaluation of other aspects, such as flower development of the cuttings and their adaptation and survival in field conditions.
  - ⇒ Intermediate doses of IBA.
  - ⇒ Conduct in vitro propagation to reach higher success.

THANKS FOR YOUR ATTENTION

Questions?

Pedro V. Mauri
pedro.mauri@madrid.org

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