

Climate change and anthropogenic activities have negatively impacted agro-silvo-pastoral ecosystems across the planet. The global agenda to achieve ecosystem restoration targets has resulted in an increased demand for plant materials that current production systems are unable to satisfy. Under open field cultivation, several species show a low rate of seed germination or need special climatic conditions to germinate or take a long time to establish. Consequently, there is an urgency to preserve and propagate selected genotypes by improving efficient mass propagation techniques. It is necessary to resort to innovation tools, such as in vitro tissue culture technology. Plant tissue culture is used for producing high-quality, disease-free, and true-to-type plants at a fast rate. In vitro propagation can help meet the increasing demand for planting materials aimed at large scale restoration and afforestation programs. Incorporating organic growth additives can stimulate tissue growth and increase the number of shoots, leaves, and roots.

(Photo: Aurel Siebert/dryGrow Foundation)

#### INITIATIVES, PARTNERS AND ESTIMATED USD INVESTMENT

#### LEAD INITIATIVE

VINIT34: Livestock and Climate - Livestock, Climate and System Resilience (\$20K)

#### CONTRIBUTING INITIATIVES

INIT31: Agroecology – Transformational Agroecology across Food, Land, and Water systems

INIT10: **F2R-CWANA** – Fragility to Resilience in Central and West Asia and North Africa

### CONTRIBUTING CENTRES

**℧ ICARDA** − International Center for Agricultural Research in the Dry Areas

#### PARTNERS INVOLVED

INRGREF - National Research Institute of Rural Engineering, Water and Forest -

INAT - Institut National Agronomique de Tunisie – Innovation partner

**DGF** - Direction Générale des Forêts Tunisie – Scaling, Demand partner

dryGrow - dryGrow Foundation - Scaling, Innovation partner



#### **Radical Innovation**

Innovations that are new and replace existing products, systems, services and/or policies but do not cause or require major reconfiguration of farming, market and/or policy/business models.



#### Technological Innovation

Innovations of technical/material nature, including varieties/breeds; crop and vestock management practices; machines; processing technologies; big data and information systems.

#### IMPACT AREAS





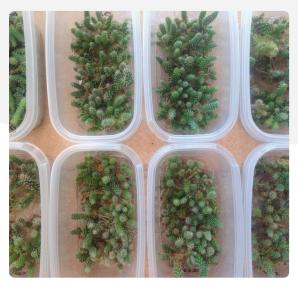




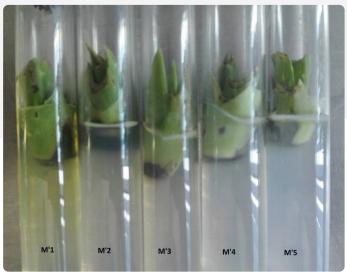




Germplasm collection of aromatic and medicinal plants. (Photo: Mounir Louhaichi/ICARDA)



In vitro propagation applied to Cacti. (Photo: Aurel Siebert/dryGrow Foundation)



Experiment effect of using different rosemary concentrations on enzymatic browning intensity. (Photo: Imtinene Hamdeni/INGREF)

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# **ANTICIPATED INNOVATION USER(S)**

ORGANIZATIONAL CLIENTS



Researchers

Sex and age disaggregation does not apply



Agricultural extension agents

Sex and age disaggregation does not apply

ORGANIZATIONS

Government

☐ National

Private company (other than financial)

Public-Private Partnership

### **RESPONSIBLE INNOVATION**

PROMOTE GENDER EQUALITY AND SOCIAL INCLUSIVITY

O No actions taken yet

O Diversity in expertise

D Disciplinary diversity



# THIS INNOVATION IS EXPECTED TO CONTRIBUTE TO THE FOLLOWING IMPACTS











### **ACKNOWLEDGEMENTS**

We would like to thank all Funders who support this innovation through their contributions to the CGIAR Trust Fund (www.cgiar.org/funders).



# **MORE INFORMATION**

Websites and Documentation

- https://hdl.handle.net/10568/131548
- https://hdl.handle.net/10568/125752
- https://hdl.handle.net/10568/137250
- https://hdl.handle.net/10568/131548

**CONTACT PERSON** 

For more information on this innovation please contact Mounir Louhaichi (m.louhaichi@cgiar.org) in



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#### CITATION

Louhaichi, M., Hamdeni, I., Siebert, A. 2024. Enhanced in-vitro propagation of selected rangeland species for large-scale restoration: IPSR Innovation Profile. First edition, October 2024. Montpellier: CGIAR System Organization. https://hdl.handle.net/10568/159873

### **SEMI-CONTROLLED TESTING**

### **MODEL/EARLY PROTOTYPE**

The innovation is validated for its ability to achieve a specific impact under fully-controlled conditions

#### **CONTROLLED TESTING**

under fully-controlled conditions

#### **PROOF OF CONCEPT**

to achieve a specific impact

#### **FORMULATION**

The innovation's key concepts are being formulated or designed

### **BASIC RESEARCH**

## **IDEA**

1

#### **INNOVATION READINESS JUSTIFICATION**

Incorporation of organic growth additives to enhance in vitro propagation has been the focus of our researches. This is evidence for producing high-quality, disease-free, and true-to-type plants at a fast rate.

Ø shorturl.at/dsCwK (Ø shorturl.at/dZVOK)

CGIAR IPSR INNOVATION PROFILE | ENHANCED IN-VITRO PROPAGATION OF SELECTED RANGELAND SPECIES FOR LARGE-SCALE RESTORATION

2022

2023