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ITAP
INSTITUTO TÉCNICO AGRONÓMICO PROVINCIAL, S.A.U.



Midas

The **MIDAS** project and the experience of ITAP with the industrial crop of guayule in marginal lands

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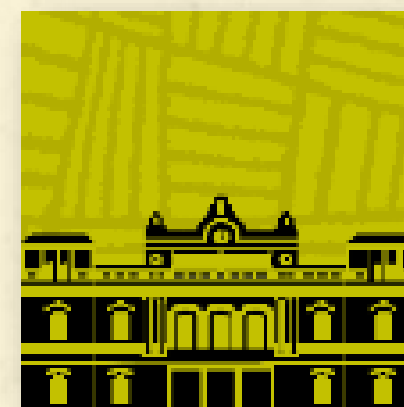


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Almudena Olivas del Rey:
The MIDAS Project
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Introduction to guayule crop and the research trajectory of ITAP



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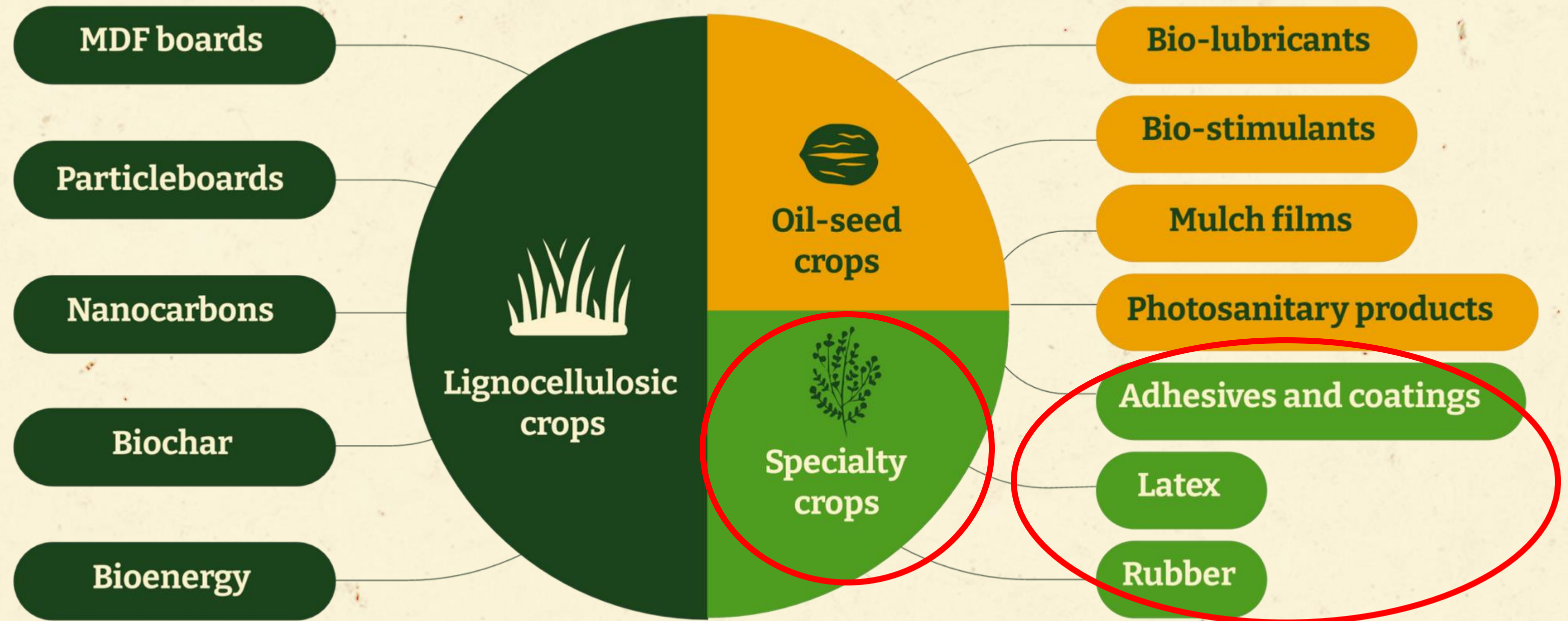
Agenda

1 Introduction of guayule cultivation, agronomic characteristics and history of the crop

2 The experience of ITAP in industrial guayule production

Products

MIDAS adopts a resource-efficient biorefinery concept to develop a wide range of bio-based products, obtained from innovative value chains and from diverse biomass feedstock produced on marginal land.



2

Introduction of guayule crop



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What is guayule crop?



Parthenium argentatum A. Gray (family: Asteraceae)

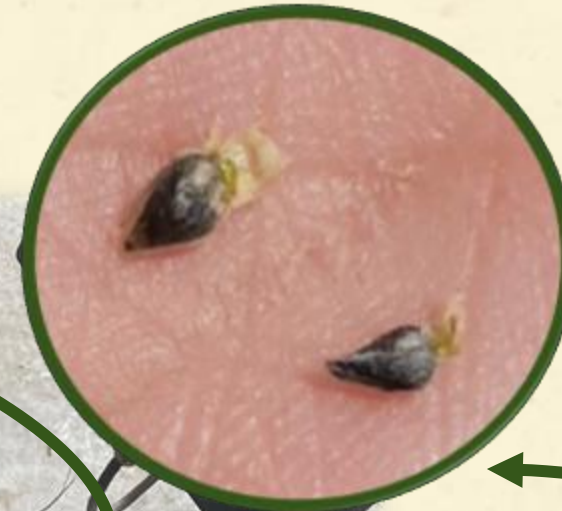
Morphology of guayule



Leaves
Greenish grey, long
and narrow



Stems
Silver-grey, exuding
resin



Seeds
Dark, small size

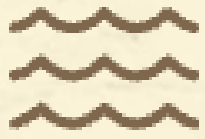


Flowers
Very small, arranged in
flower heads



Roots
Central root with
lateral roots

General description of guayule



Low nutrient and water demand

- Requires minimal resources for its development.
- Tolerates prolonged drought conditions.
- Grows in poor soils without intensive fertilisation.



Pest resistant

- Less need for phytosanitary treatments.
- Contains compounds that naturally repel herbivorous insects.
- Reduces maintenance costs.



Able to regrow after harvest

- Allows multiple productive cycles.
- Develops new biomass from the base.
- Optimises initial crop investment.



Non-invasive

- Does not displace native species.
- Maintains sustainability compromise in commercial plantations.



History of the guayule in the world



1906-1929

Collection and selection of wild stands
Production of up to 24 % of the total rubber
imported into the USA.



1970s

Significant yield increase
Improved cultural practices
Consideration of co-products



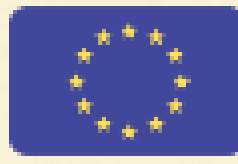
WWII

Extensive knowledge of basic biology
Germplasm development



Currently

Significant increase in rubber yields
Co-products



History of Guayule in Spain

First Trials(1950-1967)

- 1 — Ambitious plantation**
4,000 hectares of guayule were established in arid areas in the southeast.
- 2 — Creation of SEMZASE**
The Service for the Exploitation and Improvement of Arid Zones in Southeast Spain.
- 3 — Productive objective**
It was planned to produce 1,500 tonnes of natural rubber annually.
- 4 — Project abandonment**
Technical difficulties in extraction led to the suppression of the experiments.



History of Guayule in Spain

Proyect EU-PEARLS (2008-2012)



Revival of interest

The EU-PEARLS project revitalised guayule research in Spain after decades of neglect.

It was looking for alternative sources of natural rubber to reduce dependence on imports.

Completion of the project

Despite promising results, the experimental plot was withdrawn in 2018..

He left valuable data on the adaptability of the crop to the Spanish climate.

History of Guayule in Spain

Current Situation(2017-Present)

GUAYULE AND HYBRIDS GERMPLASM AT SCDZ



The largest guayule germplasm in Europe

3

The experience of ITAP in industrial guayule production



The experience of ITAP in industrial guayule production

Who are we?



Experimentation, development, technology transfer and technical progress in agri-food activities.





Pioneers in Europe

First centre in Spain and Europe to test and maintain the crop in the long term.



Agronomic trials

More than 7 trial fields on adaptation, productivity and management.

European Projects

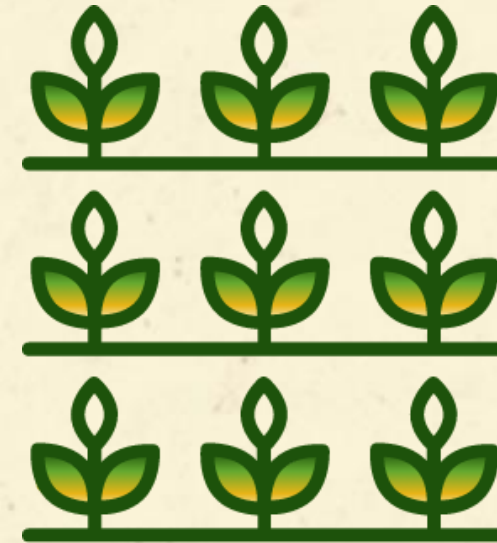
- Active participation in initiatives such as the MIDAS Project.
- International positioning in applied research.

Strategic Alliances

- Collaboration with universities, technology centres and industrial companies.
- Working together with local farmers.



Some of our trials



Agronomic optimization and resource efficiency

1. Tailor agronomic practices for low-inputs and water needs to increase the crop efficiency in marginal land.
2. Application of an innovative subirrigation system in dry Mediterranean areas.
3. Circular use of MIDAS bio-products on crops grown on marginal lands.



Some of our trials



Perennial Crops: Guayule (26.000 plants/ha,); Guayule (P. Argetatum, accession AZ-5, orgin USDA-AZ)

Annual Crops: Safflower (CW 99 OL, MAS SEEDS) and industrial hemp (FIBROR 79)

Total area: 0.5025 ha.

Marginality constraints: dryness (300-400mm), organic matter <2%, sandy > 70%, gypsiferus, loss of biodiversity.

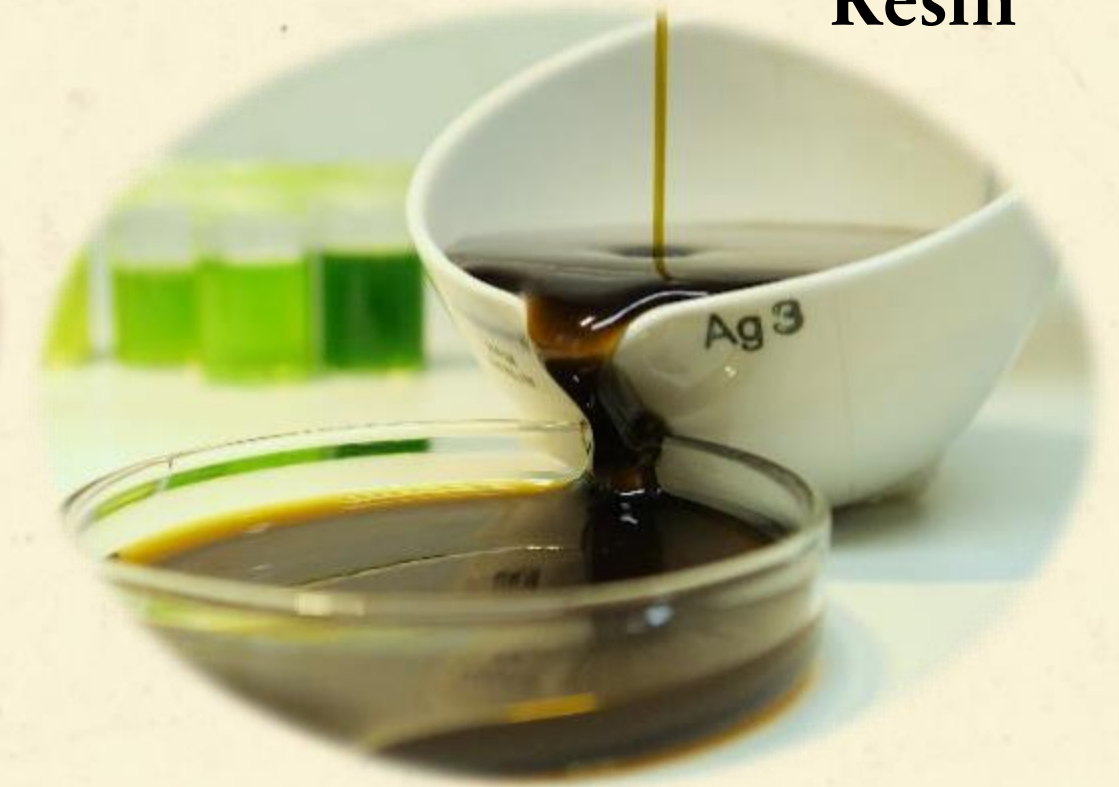
Integral exploitation of guayule



Rubber



Resin



Leaves



Bagasse



Why do we believe guayule is a strategic crop?



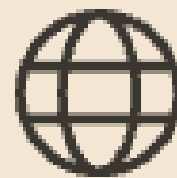
Sustainability

Contribute to more sustainable agricultural practices



Added value

Generates new industrial value chain



Independence

Reduce dependence on imported natural rubber

Why grow Guayule?

10

Years of Life

Perennial crop with no need for replanting for a decade.

↓%

Water

Reduction of water consumption compared to traditional crops.

↓%

Costs

Lower investment in inputs and long-term maintenance.



Future Perspectives

Continuing Research

Development of industrial products derived from guayule with high added value.

Agricultural scaling

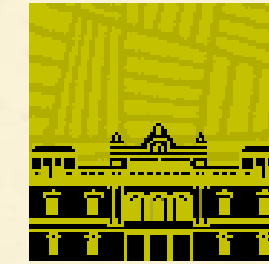
Involvement of local farmers and expansion of crops on marginal lands.

Industrialisation

Positioning Castilla-La Mancha as a European benchmark in the bioeconomy.

Political Impulse

Development of specific support policies and funding for these initiatives..



The MIDAS project

**Thank you very much for
your attention**

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