



CENTRO DE INVESTIGACIONES
CIENTÍFICAS Y TECNOLÓGICAS
DE EXTREMADURA

HORIZON EUROPE FRAMEWORK PROGRAMME RESEARCH AND INNOVATION AND OTHER ACTIONS TO SUPPORT THE IMPLEMENTATION OF A MISSION IN THE AREA OF SOIL HEALTH AND FOOD (HORIZON-MISS-2021-SOIL-02-02)

TYPE OF ACTION

HORIZON-RIA HORIZON RESEARCH AND INNOVATION ACTIONS

MAINLY INTERESTED IN: VALIDATING AND FURTHER DEVELOPING INDICATORS FOR SOIL HEALTH AND FUNCTIONS

TOPIC ID: HORIZON-MISS-2021-SOIL-02-02

ENTITY: CICYTEX

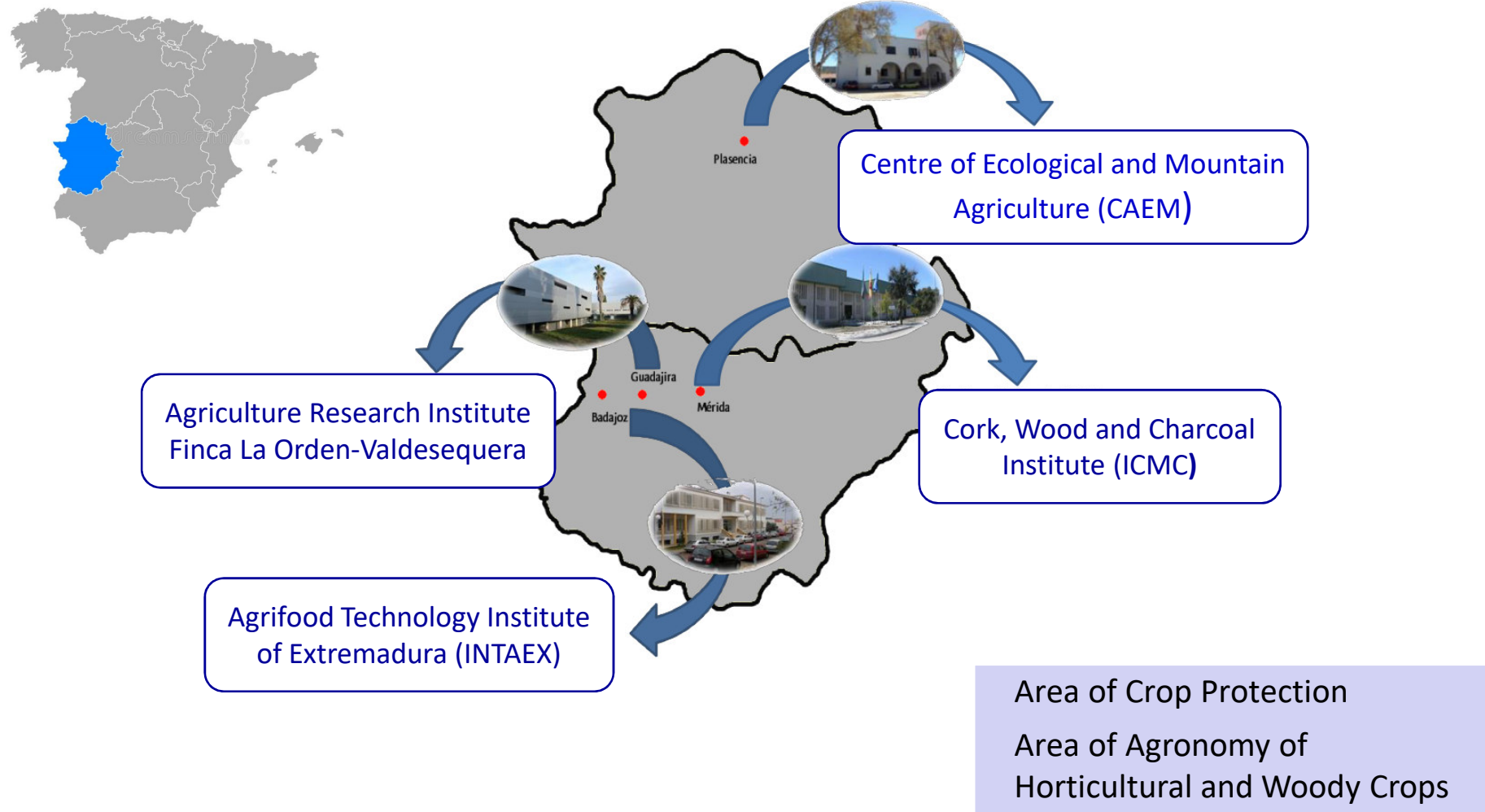
GROUP: CROP PROTECTION

PROMOTIONAL PROFILE

Centre for Scientific and Technological Research of Extremadura (CICYTEX)



CICYTEX is a public institution (Government of Extremadura) that focuses its research and innovation activities on issues related to agriculture, food and forestry sectors



AREA OF CROP PROTECTION

Plant Diseases

- Integrated disease management
- Epidemiology
- Plant-pathogen interaction

Weeds

- Integrated weed management
- Herbicide resistance
- Herbicides: efficacy and selectivity

Soil management +

- Soil-plant interaction
- Soil fertility
- Soil indicators

CICYTEX Crop Protection GROUP

Multidisciplinary team with a large experience in monitoring soil management practices to enhancing soil health by a robust set of indicators.

SOIL QUALITY INDICATORS

- Nutritional content of soils, pH and capacity to enhancing resilience by amendments (mainly organic and calcic).
- Incorporation of straw to the soils to enhancing C and to control weeds by allelopathic compounds.
- Election of the best indexes to study toxicities caused by abiotic stresses.

SOIL HEALTH INDICATORS

- Sustainable control for soil pathogens mainly by anaerobic soil disinfection (ASD), biofumigation techniques and calcium amendments.
- Study of microbiome affected by management of soil.
- Integrated weed management
- Herbicide resistance indicators

OTHER COMPLEMENTARY LINES

Irrigation management and crop nutrition in commercial farms

RESEARCH LABORATORIES



GROWTH CHAMBERS AND GREENHOUSES



LIVING LABS: SOILS AND CROPS DIVERSITY



Skill/Assets of the Plant protection research group in Cicytex

TOPIC	CONTRIBUTION by Crop protection group to the call
<p>1. Measuring status and changes in soil health, in particular in relation to 5 of the 8 indicators proposed by the mission.</p>	<ul style="list-style-type: none"> ✓ Indicator: soil pollutants, excess nutrients and salts; Our group is working in reduction inputs as fertilizers and phytosanitaries for crop production. ✓ Indicator: soil organic carbon stock. Enhancing soil C is a strategy implemented by our group clearly linked to this end. Incorporation of crop residues, evaluating intercropping system or cover crops that can improve soil health (either by their allelopathic or biocidal activity, against weeds and other pests). ✓ Indicator: soil nutrients and acidity (pH). We working with calcic amendments to solved this problems. ✓ Indicator: soil structure including soil bulk density and absence of soil sealing and erosion is restored implementing pastures and holistic livestock management in agrosilvopastoral systems reducing erosive effects. We also test amendments and fertilizers that promote a greater amount of aggregates in the soil.
<p>2. to identify alternative indicators where the ones proposed in the implementation plan of the Soil Mission do not prove to be appropriate</p>	<ul style="list-style-type: none"> ✓ We can contribute also with visual symptoms (physiopaties) in crops that were derived from over-fertilization and other problems that may affect soil and plant health.

Skill/Assets of the Plant protection research group in Cicytex

TOPIC	CONTRIBUTION by Crop protection group to the call
<p>3. Finding a methodology to combine proposed indicators into a coherent soil health index; identify proxies for soil health, which are “easier” to monitor or more reactive to change.</p>	<p>✓ Indicator: soil biodiversity. We perform studies based on assessment of nutrient cycling, using indicators of productivity as enzymatic activities in soils linked to the nutrients cycle (N, P,K, S and C) and the microbiome. Rapid and evaluable indicators for a short project (two years).</p>
<p>4. To demonstrate the link between the proposed soil indicators, soil functions and ecosystems services supported by soils (taking into account the various types of soils and land uses)</p>	<p>✓ Extremadura has land diversity and scenarios (living labs) to performed different strategies to restoring soils.</p>
<p>5. To harmonize indicators for a range of soil types, land uses and climate zones in the EU and Associated Countries and define the acceptable limits or thresholds</p>	<p>✓ We have multiple data-set of indicators measured in our pedoclimatic conditions.</p>

Other General Contribution

CAPACITIES

- ✓ Close contact with farmers and the agricultural sector in general. CICYTEX has a transfer area to facilitate this work. Field days, conferences, publications, etc. are organized.
- ✓ Experiences in mobilizing regional industries to participate in projects
- ✓ Other experiences with the multiactor approach, including farmers, could be extrapolated in other project.
- ✓ Experiences in social aspects of plant and soil protection with special focus on gender approach for farming (www.gendersmart.eu)

International connections

Connections with EU Networks

- ✓ Cicytex actively participates in the Energy & Climate Change in [ERRIN](#) (The European regions research and innovation network)
- ✓ Cicytex coordinates the Communication Working Group in [ERIAFF](#) (European Regions for Innovation in Agriculture. Food and Forestry)
- ✓ Cicytex takes part of the following Agri sub-platforms of Smart Specialization:

[Traceability and Big Data](#)

[High Technology Farming](#)

Partners to cooperate in the Project Framework



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Contact Details:

Ana de Santiago

anarosario.santiago@juntaex.es

Carmen Rodriguez-Molina

carmen.rodriiguez@juntaex.es

International Support Team:

Cristina Gallardo cristina.gallardo@fundeyt-pctex.es

Fondo Europeo de
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