



With the support of



LIFE18 CCA/ES/001099

# LIFE MIDMACC Project

## Adapting mid-mountain areas to climate change

Resilient Mediterranean Forests: improving ecosystem services and sustainable management  
UPV, València, 22 March 2023

COORDINATION



PARTICIPANTS



# LIFE MIDMACC

LIFE MIDMACC promotes **adaptation** through the implementation and testing of different **landscape management measures** to meet climate change related challenges in marginal mid-mountain areas of Spain, while improving their socioeconomic development.

Pasture recovery through scrubland clearing and introduction of extensive livestock farming



Optimization / Introduction of vineyards in mountain areas



Forest management for fire risk prevention and maintenance with extensive livestock farming



# LIFE MIDMACC

5 years duration (2019-2024)

Financed by the European Program LIFE (Climate change adaptation)

With the support



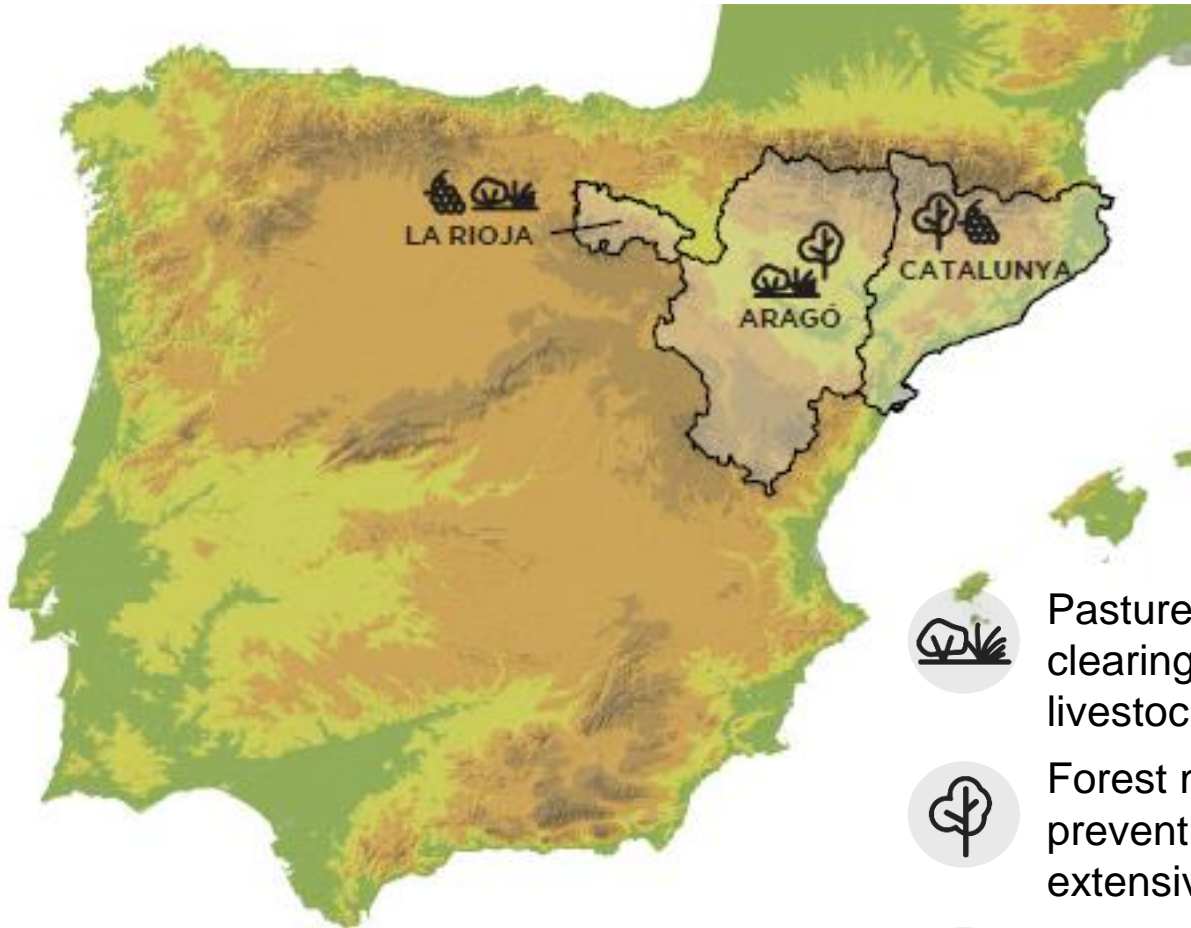
Coordination



Participants



# Where do we work?



Pasture recovery through scrubland clearing and introduction of extensive livestock farming



Forest management for fire risk prevention and maintenance with extensive livestock farming



Optimization / Introduction of vineyards in mountain areas

# What do we do?

Implementation of  
pilot experiences  
and monitoring

Stakeholders  
Committees

Adaptation guide  
to face climate  
change

Upscaling of  
pilot experiences

Replicability and  
dissemination



Pilots



Forest management for fire risk prevention and maintenance with extensive livestock farming

Aragon: Finca experimental **La Garcipollera (Jaca)**

- **Adaptive forest management** in a **Pinus nigra** forest (0.58 ha).



**96%-reduction** of the **scrubland cover and biovolumen** in winter 2019. Spontaneous establishment of **pastures**.

Objectives:

- **Reduce the forest vulnerability to climate change** by reducing the fire risk, the drought stress and by improving the production and the CO2 sink
- **Improve socioeconomic development** of the states and **ensure farm sustainability**

Pilots



Forest management for fire risk prevention and maintenance with extensive livestock farming

Aragon: Finca experimental **La Garcipollera (Jaca)**

- **Adaptive forest management** in a **Pinus nigra** forest (0.58 ha).
- **Adaptive forest management** in a **Populus** forest (0.86 ha).



**84%-reduction** of the **scrubland cover** and **97% of the biovolumen** in February 2021. Spontaneous establishment of **pastures**.

Pilots



## Forest management for fire risk prevention and maintenance with extensive livestock farming

Aragon: Finca experimental **La Garcipollera (Jaca)**

- **Adaptive forest management** in a **Pinus nigra** forest (0.58 ha).
- **Adaptive forest management** in a **Populus** forest (0.86 ha).

Catalonia: Finca Requesens (La Jonquera)

- **Adaptive forest management** in a **Holm oak forest** (1.15 ha)



**60%-reduction of canopy cover (FCC), basal area (BA) and density in Winter 2019.**

Forest with livestock.  
Logging residues removal and  
manual seed sowing



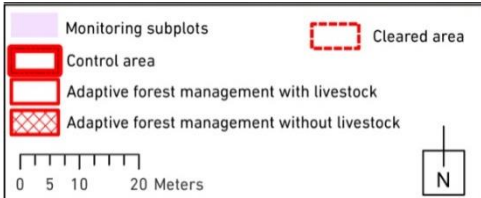
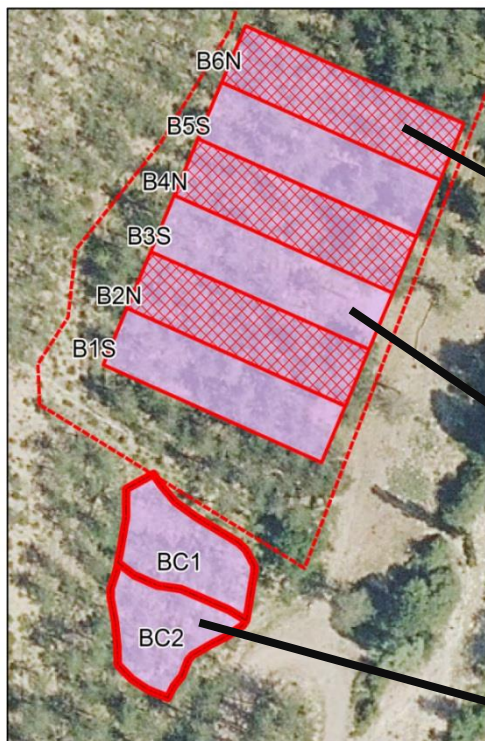
Forest without  
livestock. Leaving  
logging residues.



## Pilots



## Forest management for fire risk prevention and maintenance with extensive livestock farming



## Monitoring design

One livestock pressure scenario with three replications in all sites (400 and 1000 m<sup>2</sup> plots)

BN: SC with no livestock.

BS: SC with livestock. 2-20 cows, twice per year (spring and autumn), 24 hours.

BC: Control

Pilots



# Forest management for fire risk prevention and maintenance with extensive livestock farming

## Monitoring network



Soil



Soil humidity



Forest



Infiltration-Erosion



Pasture  
production



Pasture  
biodiversity



Temperature and  
relative humidity



Climatic  
variables

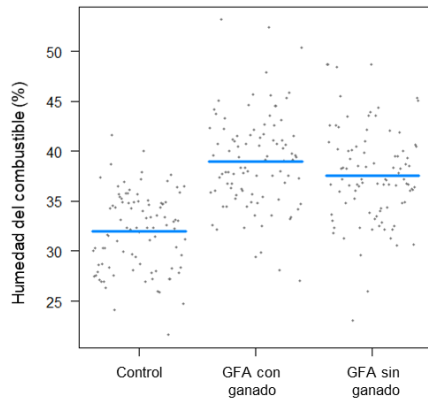


## Pilots

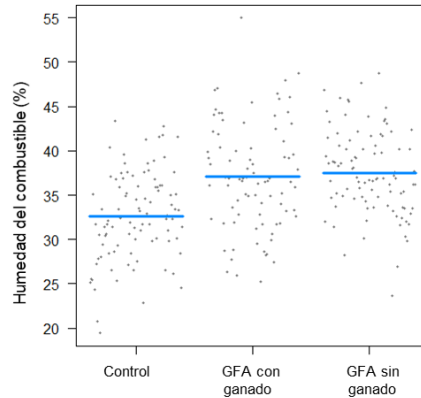


# Forest management for fire risk prevention and maintenance with extensive livestock farming

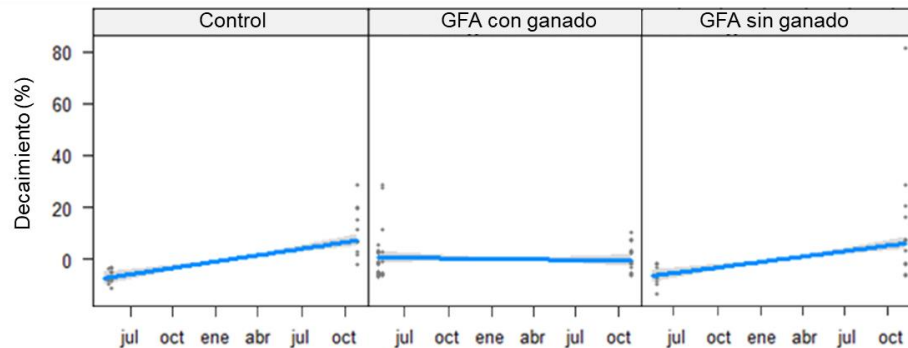
**Quercus ilex**



**Erica arborea**



**More water content in managed plots** than in Control plots. More moisture, less flammability



Forest management can revert **forest decay**

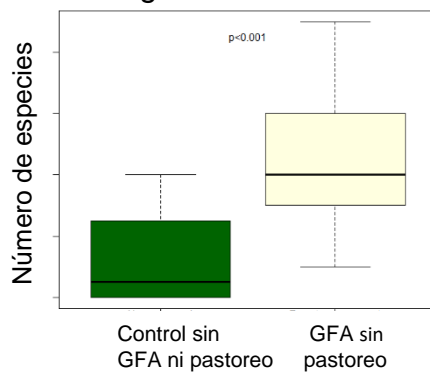


Pilots

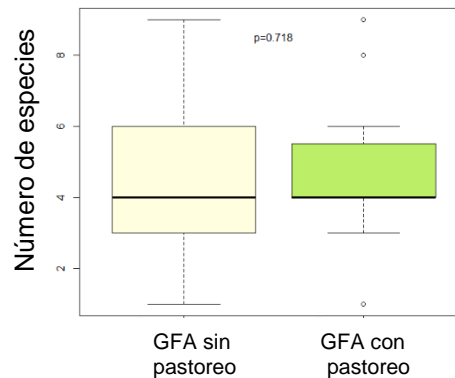


## Forest management for fire risk prevention and maintenance with extensive livestock farming

Biodiversity – Pasture species richness  
Management effect

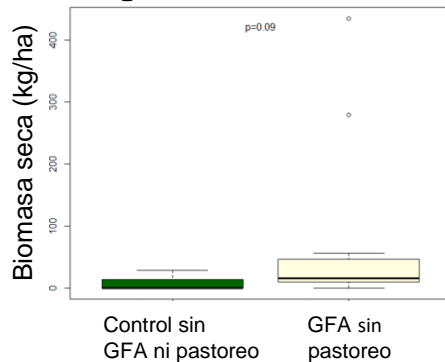


Livestock effect

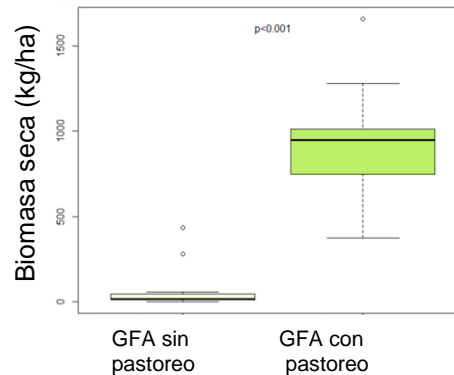


**Positive effect of forest management on herbaceous species richness**

Production – Pasture biomass  
Management effect



Livestock effect



**Positive effect of livestock on pasture production**

2020

2021

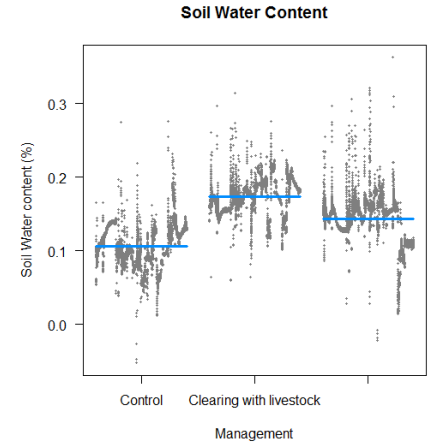
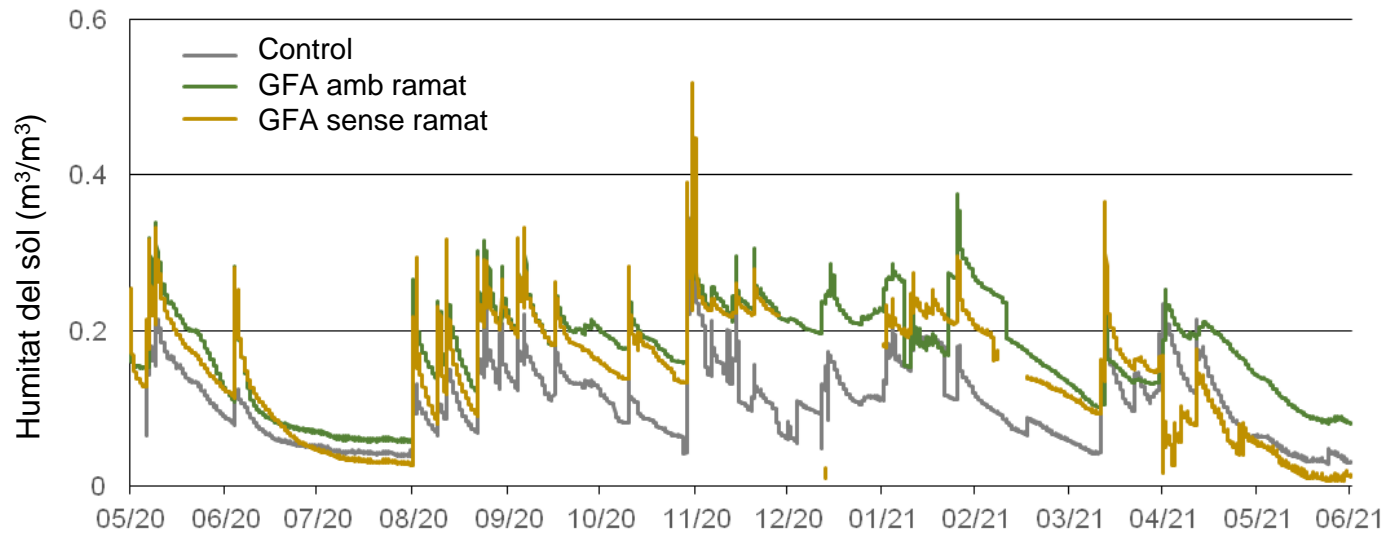


Pilots



## Forest management for fire risk prevention and maintenance with extensive livestock farming

### Forest management effects on soil moisture



There are significant differences among treatments and control.  
More soil water content in clearing with livestock plots



THANK YOU VERY MUCH  
FOR YOUR ATTENTION

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