

LIFE BIOEFFORMED 2020 - 2024

Implementing a Mediterranean biorefinery to boost forest management through the production of added value products



PROJECT OBJECTIVE

Evaluate and demonstrate how the biorefinery process can add value to the subproduct of forestry improvement treatments, particularly from decayed or post-disturbance forests.

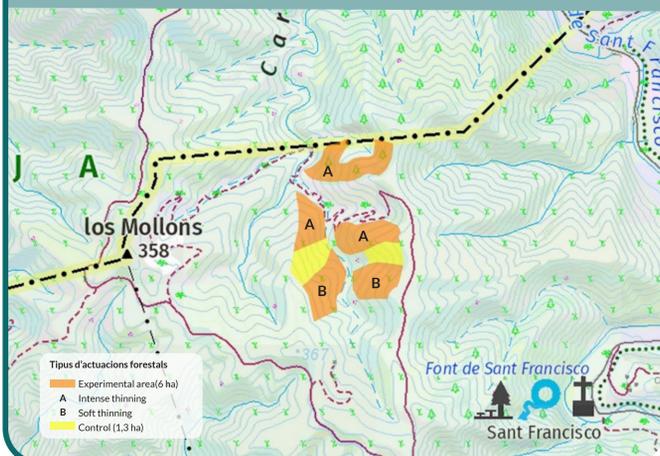
One forest type tackled by the project is the dense regenerated forests of post-fire Aleppo pine. The forest management allows an acceleration of the evolution of the stand towards more mature forest stages, increasing its resilience to new disturbances and thus preserving its associated value chain.

THE NATURAL REGENERATION OF ALEPPO PINE AFTER A FOREST FIRE

In Catalonia, forest dominated by Aleppo pine cover approximately of 315.000 hectares. During these last years, (1986-2020 period), more than 40.000 hectares of Aleppo pine have been affected by forest fires. The natural regeneration of the Aleppo pine after a fire its usually high given it is a very adapted specie to fire, but when fire occurrence is high, the trees regeneration is usually compromised. The new climate context doesn't help to this process. Period from seedling recruitment to an adult forest (regeneration phase) is the period with higher environmental and socioeconomic risk.

The La Fatarella's great wildfire began the 14th of September of 1994 in the Pobla de Massaluca, reaching an affectation of more than 6.500 hectares. Most of the affected surface is now covered for the natural regeneration of Aleppo pine, creating very dense forest masses, with densities going above the 50.000 trees/ha in some cases (5 trees/m²). After 27 years, forest mass is now stagnant in a phase without signs of evolution to a further mature phase: the pines are not growing and not producing seeds, threatening its persistence capacity in front of new perturbances.

FORESTRY TREATMENTS APPLIED



FOREST ACTIONS IN LA FATARELLA

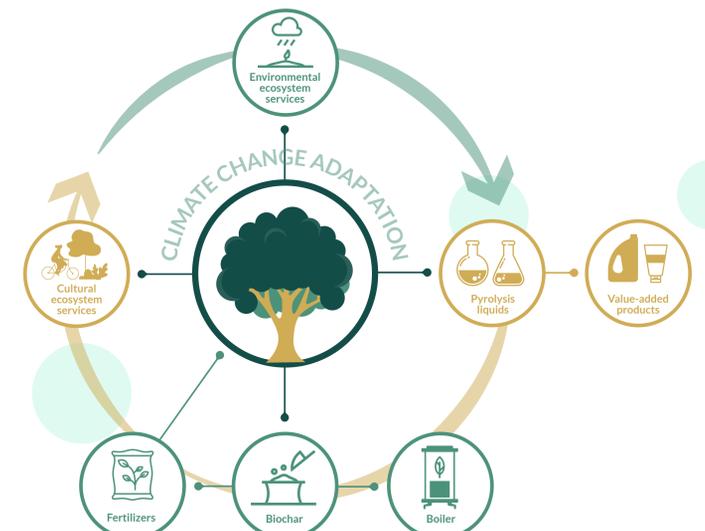
Implementation total surface:	7,8 hectares.
Forest states:	Public land of Mollons, property of the La Fatarella's municipality (CUP Valencians 28, with Forest Management Plan valid until 2025) and diverse private properties.
Forest stands characteristics:	Young regeneration non-managed post-fire forest, with a density above the 30.000 trees/ha.

SPECIFIC OBJECTIVES:

- Competition regulation to increase the vitality of the best trees, acceleration of the fructification and reduction of water supply trade-offs.
- To improve the final forest structure, making it more resistant to forest fires and making it able to recover by itself.
- To test two thinning intensities: soft thinning (2,3 ha) leaving 3.000 trees/ha, and intense thinning (3,7 ha) leaving approximately 1.500 trees/ha.

SILVICULTURE ACTIONS: Tree thinning, partial clearing of shrubs on terraces and shredding or chopping of the remaining cut trees in a strip by both sides of the main path.

PRODUCT DESTINATION: The extracted biomass feeds a biorefinery that, through a thermochemical pyrolysis process, produces antioxidants, acetic acid, sugars and other interesting value-added compounds for the chemical, pharmaceutical and nutraceutical industries, as well as a solid fraction (torrefied biomass or biochar) for use as humic amendments or for bioenergy.



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