

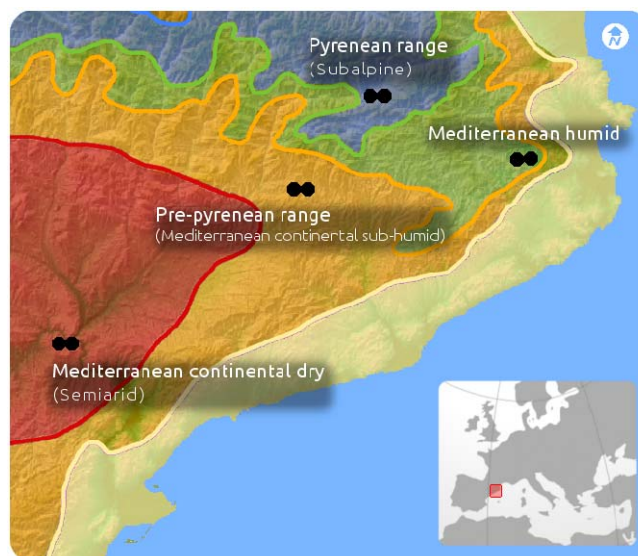
SustAffor field trials accomplished!

By early April 2014 the installation of the eight SustAffor field trials was successfully completed, in four areas of NE Spain with strongly contrasted ecological conditions

The field trials aim at studying the effectiveness of the novel techniques (mulching and soil conditioners), alone and combined, and in comparison with reference (currently available in the market) techniques. The study focuses on the **effect of the techniques on plant survival and fitness, soil variables related with water availability and fertility, biochemical features of soil organic matter and release of specific compounds**, as well as on the **durability and degradability of the techniques**.

The 8 field trials are deployed across a **range of 4 strongly contrasted climatic areas in NE Spain, representative of the main climates of the European and Mediterranean context**.

Each field trial has been planted with the tree species that are most commonly utilized in the area.



Each field trial includes 17 treatments, with 30 trees per treatment organized in a split-plot design: 6 blocks of 5 trees each, per field trial. The treatments are combinations of soil conditioners and weeding techniques, indicated with an X at the following table.



Soil conditioner \ Weeding technique	TerraCottem UniversalPlus 20g/tree	TerraCottem UniversalPlus 40g/tree	TerraCottem UniversalPlus 80g/tree	TerraCottem UniversalStd 40g/tree	Control (no conditioner)
Thermoplastic starch framed mulch (DTC)		X			X
Thermoplastic starch semi-rigid mulch (DTC)		X*			X*
Jute mulch (La Zeloise)		X			X
Rubber mulch (EcoRub)		X			X
Polyethylene mulch	X	X	X	X	X
Current bio-mulch		X			X
Herbicide application		X			X
Control (no weeding)		X			X

Techniques marked in green are novel techniques while those in blue are reference techniques

* Only in Subalpine conditions

Field trials in Semiarid conditions (Mequinenza, Zaragoza, Spain)

These conditions are limited by the low annual precipitation, with a strong dry period in summer. The field trials are installed in a public forest area burnt in 2003 and with a very slow recovery rate. According to Köppen classification, the climate is BS (Steppe climate, cold), while for Martin-Vide the climate is Mediterranean continental dry.

	Field trial 1: Sun-facing semiarid conditions	Field trial 2: North-facing semiarid conditions
Location and physical characteristics		
UTM Coordinates (ED50, N31)	261,245; 4,580,245	260,550, 4,580,602
Altitude	210 m	185 m
Aspect (slope)	South-South-West (40%)	North-East (50%)
Climate features		
Mean annual temperature	15.0°C	15.0°C
Mean temp. warmest month	29.9°C	32.1°C
Mean temp. coldest month	6.6°C	6.6°C
Mean annual precipitation	371 mm	376 mm
Summer precipitation	68.8 mm	69.0 mm
Plantation description		
Plantation aim	Soil protection	
Vegetative material chosen	Aleppo pine (<i>Pinus halepensis</i>) FP300 15/25 cm Provenance region: 3-Cataluña Interior	
Soil preparation	40x40x40 cm pits opened with 150 HP spider excavator	
Plantation scheme	3x3 m	
 <p>Field trial 1 before planting</p>		 <p>Field trial 2 before planting</p>



General aspect of Field Trial 1



General aspect of Field Trial 2





Tree at Field trial 1



Tree at Field trial 2

Field trials in Mediterranean Continental conditions (Solsona, Lleida, Spain)

These conditions are limited by a dry period in summer. The field trials are installed in small private areas formerly devoted to agriculture (cereals). According to Köppen classification, the climate is Csb (temperate with dry summer, mild summer heat), while for Martin-Vide the climate is Mediterranean continental sub-humid.

	Field trial 3: Hybrid walnut in Mediterranean continental conditions	Field trial 4: Black truffle in Mediterranean continental conditions
Location and physical characteristics		
UTM Coordinates (ED50, N31)	378,506; 4,651,456	378,377; 4,651,404
Altitude	672 m	672 m
Aspect (slope)	Flat (0%)	Flat (0%)
Climate features		
Mean annual temperature	12.0°C	11.8°C
Mean temp. warmest month	21.4°C	21.4°C
Mean temp. coldest month	3.7°C	3.7°C
Mean annual precipitation	683 mm	683 mm
Summer precipitation	165 mm	165 mm
Soil features		
Texture	Loamy-clayish (32% clay, 40% silt, 28% sand)	Loamy-clayish (28 % clay, 34% silt, 38% sand)
Plantation description		
Plantation aim	Valuable timber production	Black truffle (<i>Tuber melanosporum</i>) production
Vegetative material chosen	Hybrid walnut (<i>Juglans x intermedia</i>) MJ-209xRa Bare root, 40/60 cm	Holm oak (<i>Quercus ilex</i>) mycorrhized with black truffle; FP300, 20-30 cm
Soil preparation	Crossed sub-soiling (45 cm) Manual 40x40x40 cm pit excavation	
Plantation scheme	3x3 m	6x5 m
		
Field trial 3 before planting		Field trial 4 before planting



General aspect of Field Trial 3



General aspect of Field Trial 4





Tree at Field trial 3



Tree at Field trial 4

Field trials in Mediterranean Humid conditions (Banyoles, Girona, Spain)

These conditions are characterized by a mild climate, with precipitation evenly distributed along the year, with a slight dry period during summer. The field trials are installed in small private areas formerly devoted to agriculture (cereals, alfalfa). According to Köppen classification, the climate is Cfb (maritime temperate), while for Martín-Vide the climate is Mediterranean pre-coastal, north.

	Field trial 5: Hybrid walnut in Mediterranean humid conditions	Field trial 6: Stone pine in Mediterranean humid conditions
Location and physical characteristics		
UTM Coordinates (ED50, N31)	477,893; 4,660,733	477,835; 4,660,881
Altitude	215 m	240 m
Aspect (slope)	Flat (0%)	South-West (10%)
Climate features		
Mean annual temperature	14.0°C	14.0°C
Mean temp. warmest month	22.0°C	22.0°C
Mean temp. coldest month	6.5°C	6.7°C
Mean annual precipitation	872 mm	896 mm
Summer precipitation	213 mm	214 mm
Soil features		
Texture	Loamy-silty (29% clay, 51% silt, 20% sand)	Loamy-clayish (35% clay, 51% silt, 14% sand)
Plantation description		
Plantation aim	Valuable timber production	Pine nut production
Vegetative material chosen	Hybrid walnut (<i>Juglans x intermedia</i>) NG23xRa Bare root, 40/60 cm	Stone pine (<i>Pinus pinea</i>) FP300 20/25 cm; Provenance: 1-Meseta Norte
Soil preparation	Crossed sub-soiling, 50 cm deep with 100 HP tractor Manual 40x40x40 cm pit excavation	
Plantation scheme	3x3 m	3x3 m
		
Field trial 5 before planting		Field trial 6 before planting



General aspect of Field Trial 5



General aspect of Field Trial 6



Tree at Field trial 5



Tree at Field trial 6

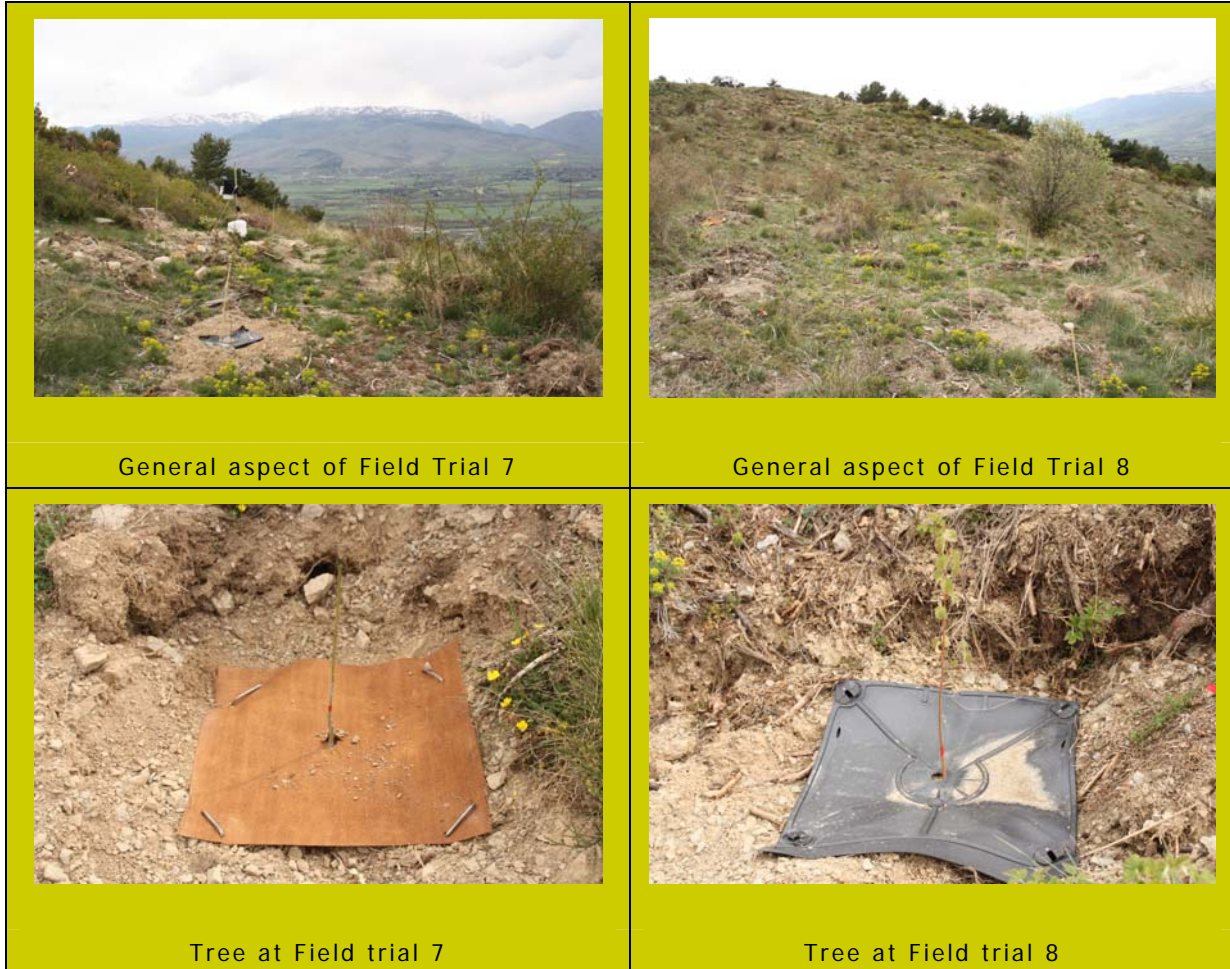
Field trials in Subalpine conditions
(Fontanals de Cerdanya, Girona, Spain)

These conditions are limited by a long and cold winter. The field trials, located in a single area, are installed in a public forest area formerly devoted for cattle grazing, which has been abandoned in the last decade. According to Köppen classification, the climate is Cfc/Dfb (Temperate / continental); while for Martín-Vide the climate is Mediterranean Pyrenean.

Field trials 7 & 8: European ash and Birch in Subalpine conditions	
Location and physical characteristics	
UTM Coordinates (ED50, N31)	412,053; 4,693,256
Altitude	1430 m
Aspect (slope)	North (30%)
Climate features	
Mean annual temperature	7.5°C
Mean temp. warmest month	16.5°C
Mean temp. coldest month	0.2°C
Mean annual precipitation	887 mm
Summer precipitation	236 mm
Soil features	
Texture	Loamy-sandy (22% clay, 21% silt, 57% sand)
pH	4.8
Plantation description	
Plantation aim	Forest restoration and encroachment
Vegetative material chosen	European ash (<i>Fraxinus excelsior</i>) FP300 15/20 cm ; Provenance region: 8-Pirineo Axial Birch (<i>Betula pendula</i>) FP300 25/45 cm ; Provenance region: 8-Pirineo Axial
Soil preparation	40x40x40 cm pits opened with 150 HP spider excavator
Plantation scheme	3x3 m



Field trials 7 & 8 before planting



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Further information is available at the project website: www.sustaffor.eu

