The AGFORWARD project and stakeholder groups across North-West Europe

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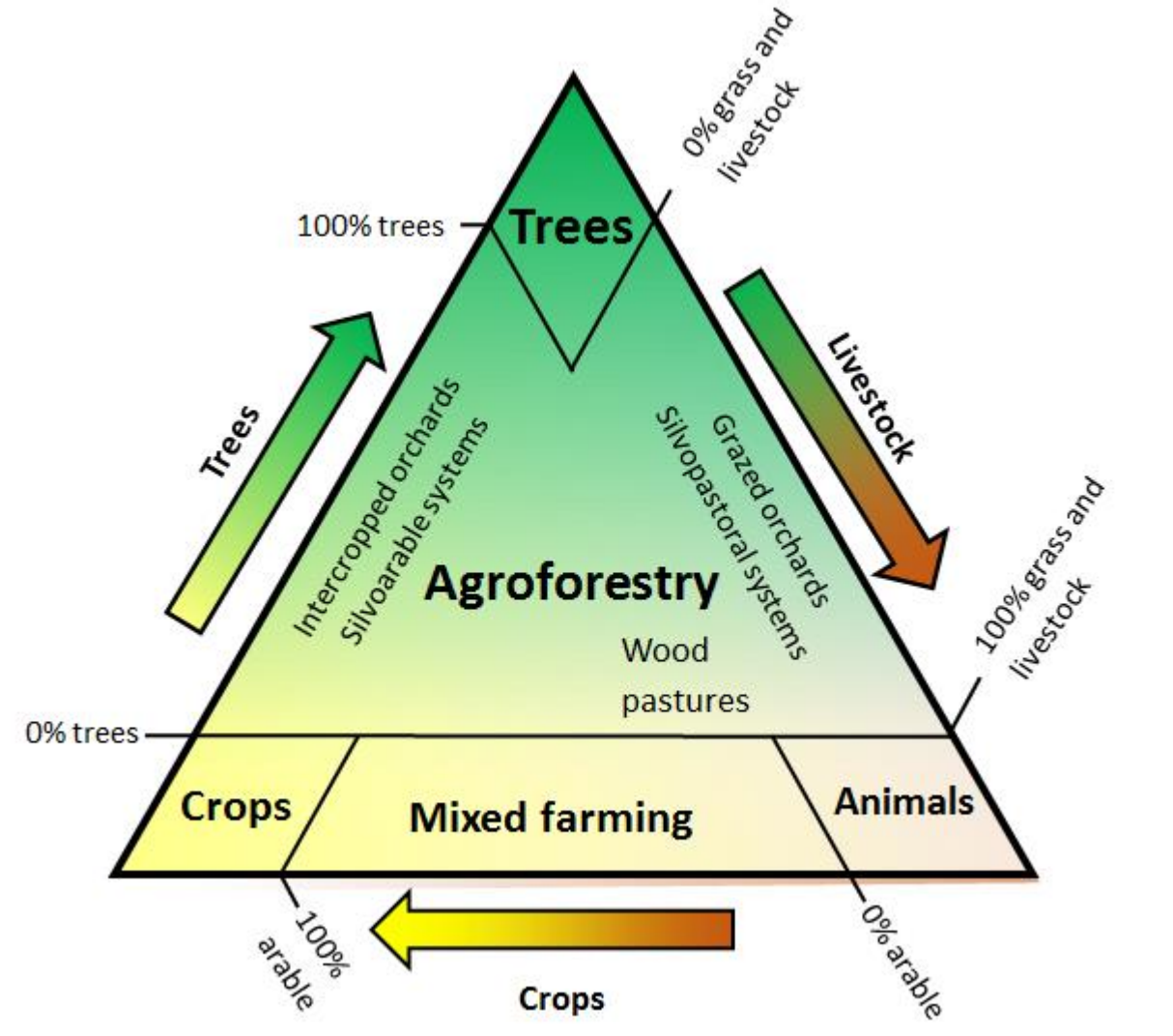
Agroforestry: the practice of deliberately integrating woody vegetation with crops and/or animals



Aim of AGFORWARD (2014-2017)

To promote agroforestry practices in Europe

Objectives

1. To understand the **context** and extent of agroforestry in Europe
2. To identify, **develop and field-test** agroforestry innovations
3. To **evaluate** innovative agroforestry practices at field-, farm- and landscape scales
4. To **promote** appropriate agroforestry through **policy development and dissemination**

Aim: to promote appropriate agroforestry

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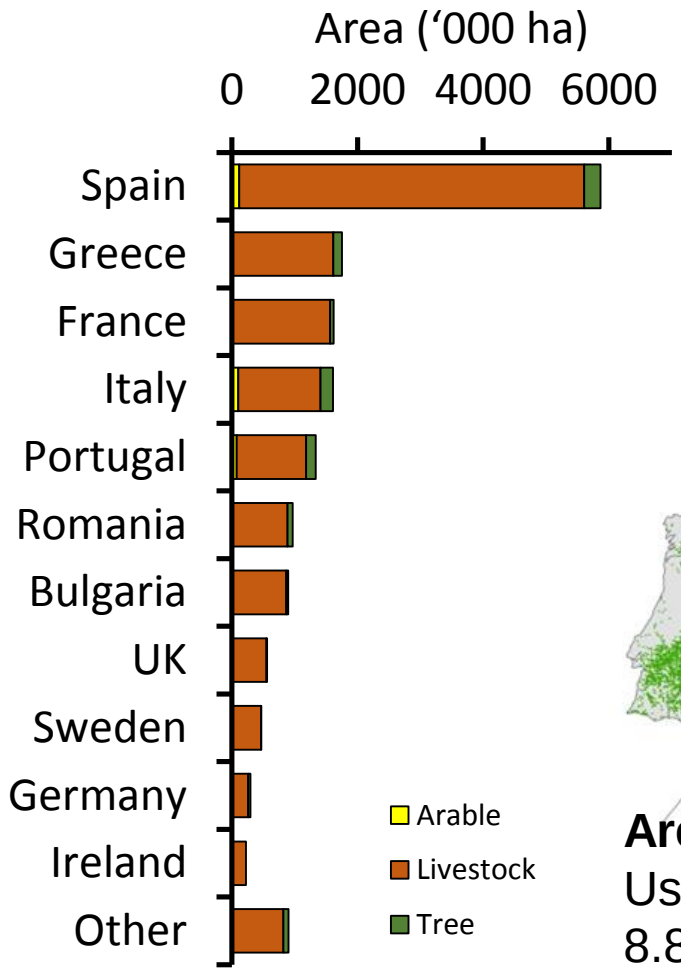
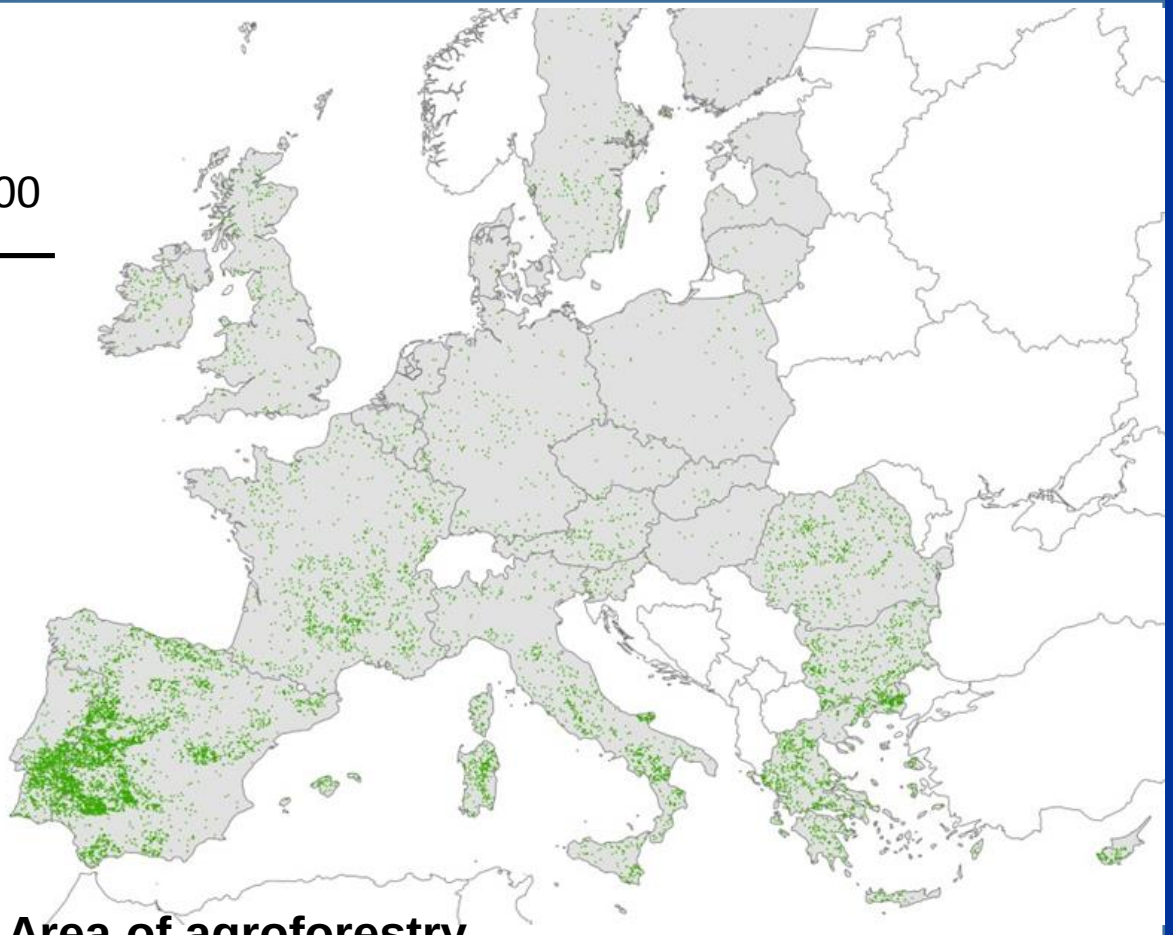
Objective 1: To understand the context and extent of agroforestry in Europe



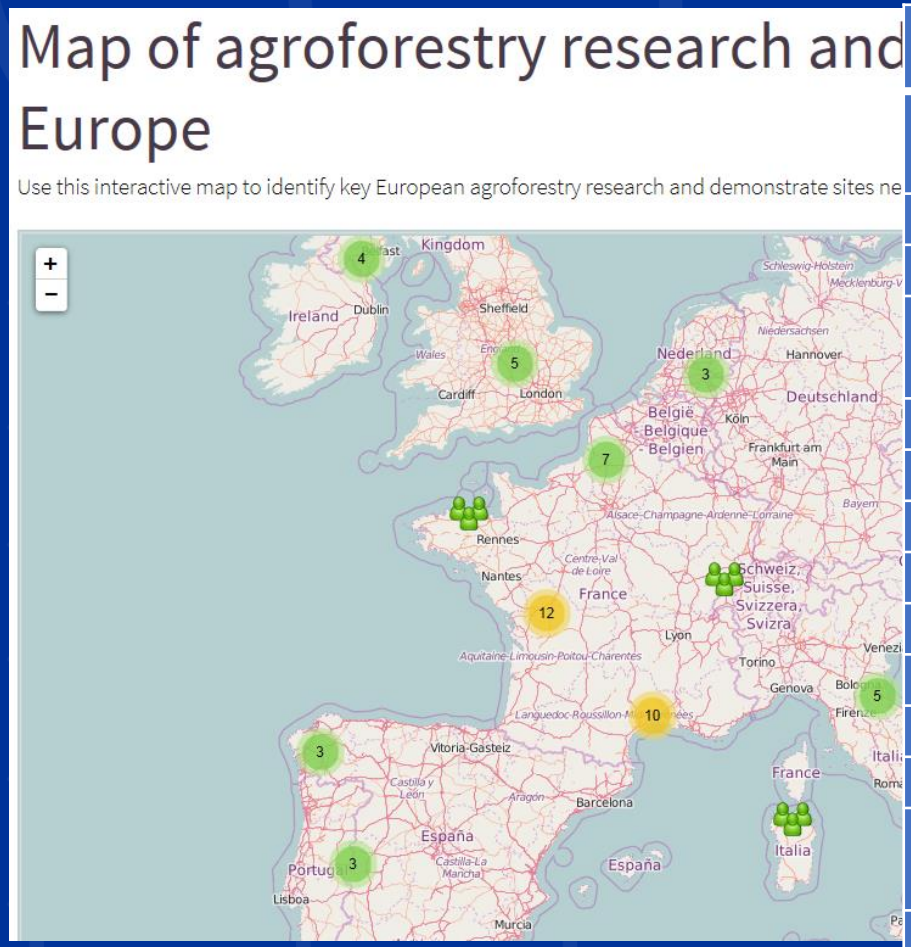


Area of agroforestry

Using LUCAS data:15.4 Mha (3.6% of total area and 8.8% of agricultural area) (den Herder et al. 2016).

Objective 2: to develop and field-test innovations

Established 40 stakeholder groups across Europe

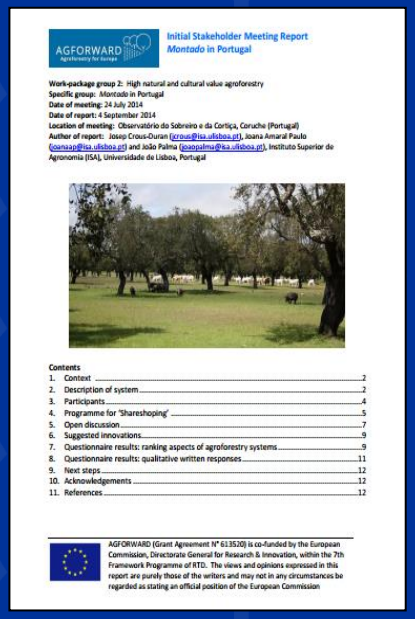


Country	Project partner
European	European Agroforestry Federation, European Forest Institute
International	World Agroforestry Centre
Belgium	Wevel
Denmark	Universities of Copenhagen and Aarhus
France	INRA, ACTA, Agroof, AFAF, APCA
Germany	BTU Cottbus - Seftenberg
Greece	TEI Stereas Elladas
Hungary	NymE KKK Nonprofit kft
Italy	CRA OLI, CNR, Veneto Agricoltura
Netherlands	Louis Bolk Institute
Portugal	Instituto Superior de Agronomia
Romania	Babes Bolyai University
Spain	Universities of Santiago de Compostela and Extremadura
Sweden	SLU
Switzerland	Agroscope
UK	Cranfield University, Organic Research Centre, AFBI

Objective 2: to develop and field-test innovations

Each group has its own webpage containing:

- A stakeholder report
- A research protocol
- A report describing the system and initial results



AGFORWARD Agroforestry for Europe

Initial Stakeholder Meeting Report
Montado in Portugal

Work-package group 2: High natural and cultural value agroforestry
Specific group: *Montado* in Portugal
Date of meeting: 24 July 2014
Date of report: 4 September 2014
Location of meeting: Observatório do Sobreiro e da Cortiça, Coruche (Portugal)
Author of report: Josep Crous-Duran (jcrous@isa.ulisboa.pt), Joana Amaral Paulo (joanaap@isa.ulisboa.pt) and João Palma (joaopalma@isa.ulisboa.pt), Instituto Superior de Agronomia (ISA), Universidade de Lisboa, Portugal

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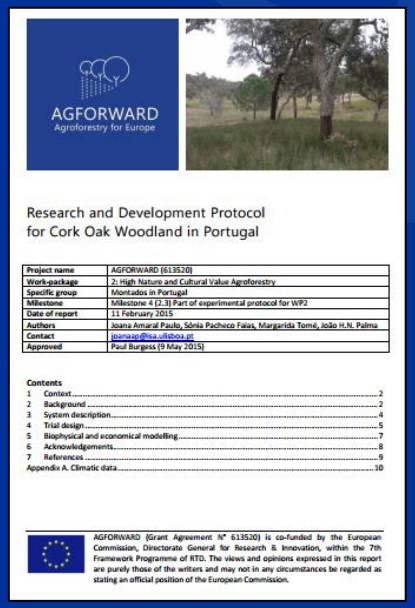

AGFORWARD Agroforestry for Europe

Research and Development Protocol
for Cork Oak Woodland in Portugal

Project name	AGFORWARD (613520)
Work-package	2: High Nature and Cultural Value Agroforestry
Specific group	Montados in Portugal
Milestone	Milestone 4 (2.3) Part of experimental protocol for WP2
Date of report	11 February 2015
Authors	Joana Amaral Paulo, Sónia Pacheco Faias, Margarida Tomé, João H.N. Palma
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Approved	Paul Burgess (9 May 2015)

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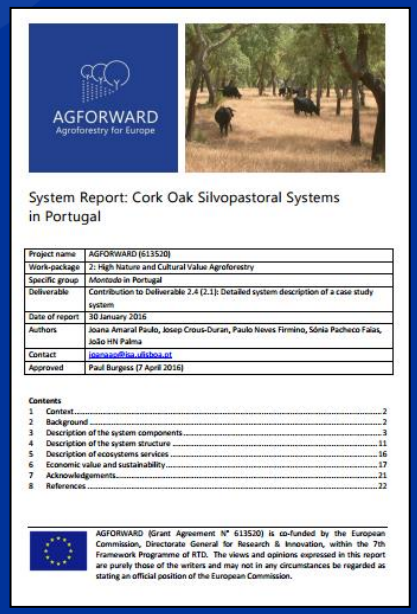

AGFORWARD Agroforestry for Europe

System Report: Cork Oak Silvopastoral Systems
in Portugal

Project name	AGFORWARD (613520)
Work-package	2: High Nature and Cultural Value Agroforestry
Specific group	*Montado* in Portugal
Deliverable	Contribution to Deliverable 2.4 (2.1): Detailed system description of a case study system
Date of report	30 January 2016
Authors	Joana Amaral Paulo, Josep Crous-Duran, Paulo Neves Firmino, Sónia Pacheco Faias, João HN Palma
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Approved	Paul Burgess (7 April 2016)

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Wood pasture

Wood pasture in the UK

A study at Epping Forest near London to look at the effect of wood pasture restoration on the distribution of tree species and to test a wood pasture sustainability model by Kirby (2003).

Lopez Bernal et al. (2016) reported that canopy closure had increased proportion of holly and beech seedlings in understorey. Restoration removed young holly bushes; increased presence of bracken could be controlled by limited grazing. It is clear that a wood pasture ecosystem is rarely at equilibrium”

Hedgerow systems

Bocage in Brittany, France

Looking a new "one or two line" hedgerows and potential high stem timber trees. Aviron et al. (2016) report that nitrate flux decreased when the hedge tree density increased (Benhamou et al. 2013).

Le Feon (2010) found that the diversity of pollinators such as solitary bees increased with hedgerow density in farming landscapes, due to the high quality of nectar and nesting sites.

Grazed orchards

Grazed orchards in Northern Ireland

Experiment to quantify the effect of sheep (mixed breeds) to graze cider and dessert apple orchards in comparison to normal management, mechanical mowing and similar sized grazing plots without trees

For dwarf apple trees, McAdam and Ward (2015) reported first year apple yield losses of 26% and 50% for the Coet-de-linge and Jonagold respectively when grazed compared to yields when mowed

Grazed orchards

Grazed cider orchards in England and northern France

Two unreplicated trials with and without Shropshire sheep in cider orchards managed organically or with minimal pesticide use.

In Herefordshire: the apple trees had already been pruned to a height of 1.3 m (Burgess et al., 2016) and one focus is the contract between the owner and sheep farmer. In Normandie, there are 550 trees per hectare in the grazed system (Corroyer, 2016)

Agroforestry for arable farmers

Effect of silvoarable systems on weed populations

Technical and economic analysis of alley cropping v monoculture in Picardie in Northern France (Wartelle et al., 2016)

The Picardie case study comprises about 70 ha under agroforestry in seven fields. About 6 to 12 species of trees were planted in each field between 2007 and 2014. Each field has at least two rows of trees, with a space of 25 m to 75 m between them.

Agroforestry for arable farmers

Cereal selection with a short rotation willow and hazel coppice system in Suffolk, UK

Smith (2016) reports on the 2014 cereal trials of a spring oat, a spring barley, and a spring triticale variety , two spring milling wheat varieties, an equal mixture of the two milling wheat varieties and a spring wheat Composite Cross Population (CCP) between willow and hazel coppice.

Reduction in soil moisture below the coppice areas

Agroforestry for arable farmers

Organic vegetable agroforestry system in in Berkshire, UK (Smith and Venot, 2015)

On an organic vegetable farm: apples (18 varieties), field maple, whitebeam, Italian alder, oak, black birch, hornbeam, and cherry plum have been planted. Wood chip was applied at base of trees grown in 20 m alleys.

Range of tree understoreys: legume and herb mixes; natural regeneration; grass, vetch and red clover. Range of crops: fertility building ley, brassicas, crop residues, potatoes, potatoes, and maize.

Woodland egg production

Poultry agroforestry in the UK
(Smith et al., 2016)

Comparison of coniferous vs deciduous trees in silvopoultry systems, and the effect of different understorey seed mixtures vs control (natural regeneration) following tree thinning.

Agroforestry for livestock farmers

Use of willow and common alder hedges in a dairy system (Smith and Gerrard, 2015)

Willow, common alder, and mixed willow and common alder in pasture planted at a 24 m spacing in 2011.

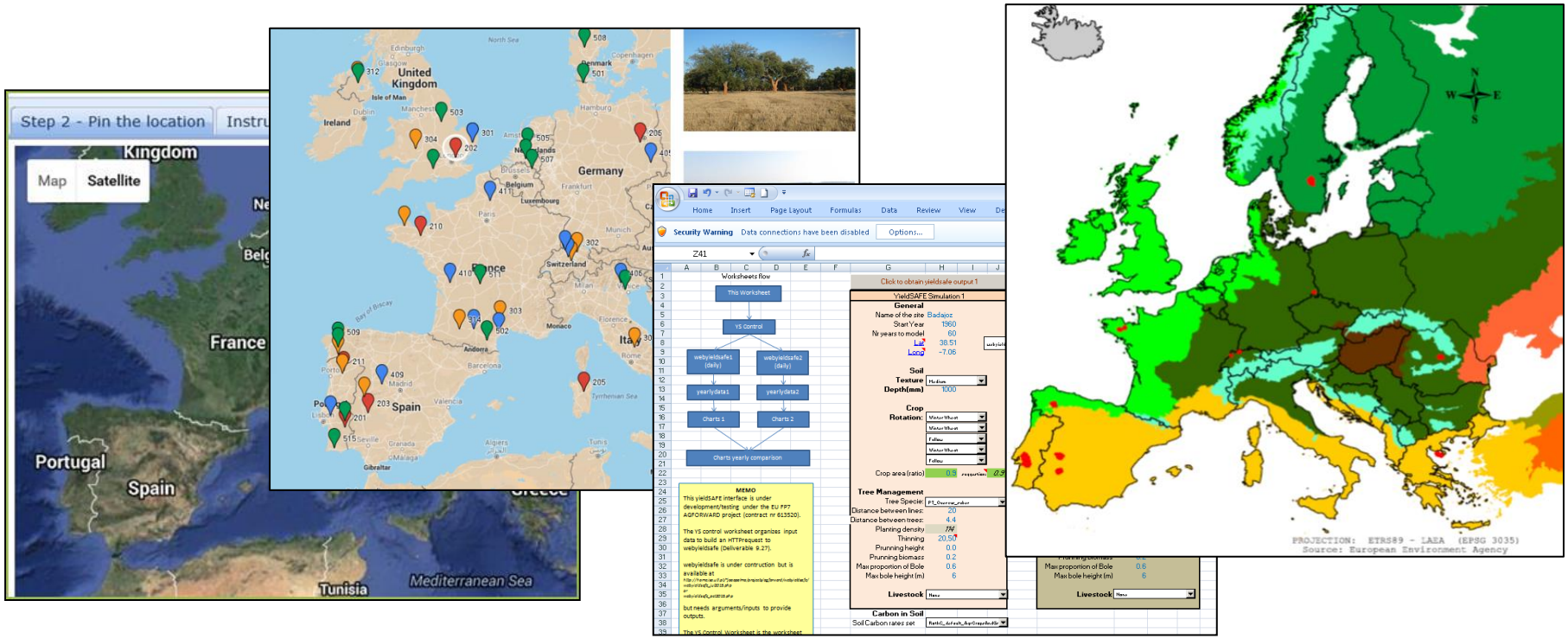
Wild deer grazed the willow

Use of single and double strands of electric fence to control browsing; cattle allowed access in summer of 2015.

Objective 3: To **evaluate** innovative agroforestry designs and practices

CliPick: Climate database

Agroforestry model improvements



Database of agroforestry systems

Landscape analysis using 12 socio-cultural landscapes

Objective 4: To promote appropriate agroforestry through policy development

European: EURAF is working with Civil Dialogue Groups of the European Commission.

National: there are now 12 national agroforestry associations.

Summary

- Agroforestry is a significant land use that can provide profits for farmers and benefits for society
- We are working together locally and regionally with 40 stakeholder groups in 13 countries
- We are working nationally and internationally to promote appropriate agroforestry
- Visit: www.agforward.eu
- Visit: www.facebook.com/AgforwardProject

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