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
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

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

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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
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

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.
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
Organic vegetable agroforestry system 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.
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

Agroforestry model improvements

CliPick: Climate database

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
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References


