

Quantifying Agroforestry in Europe with a Focus on the UK

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Preliminary stratification and quantification of agroforestry in Europe

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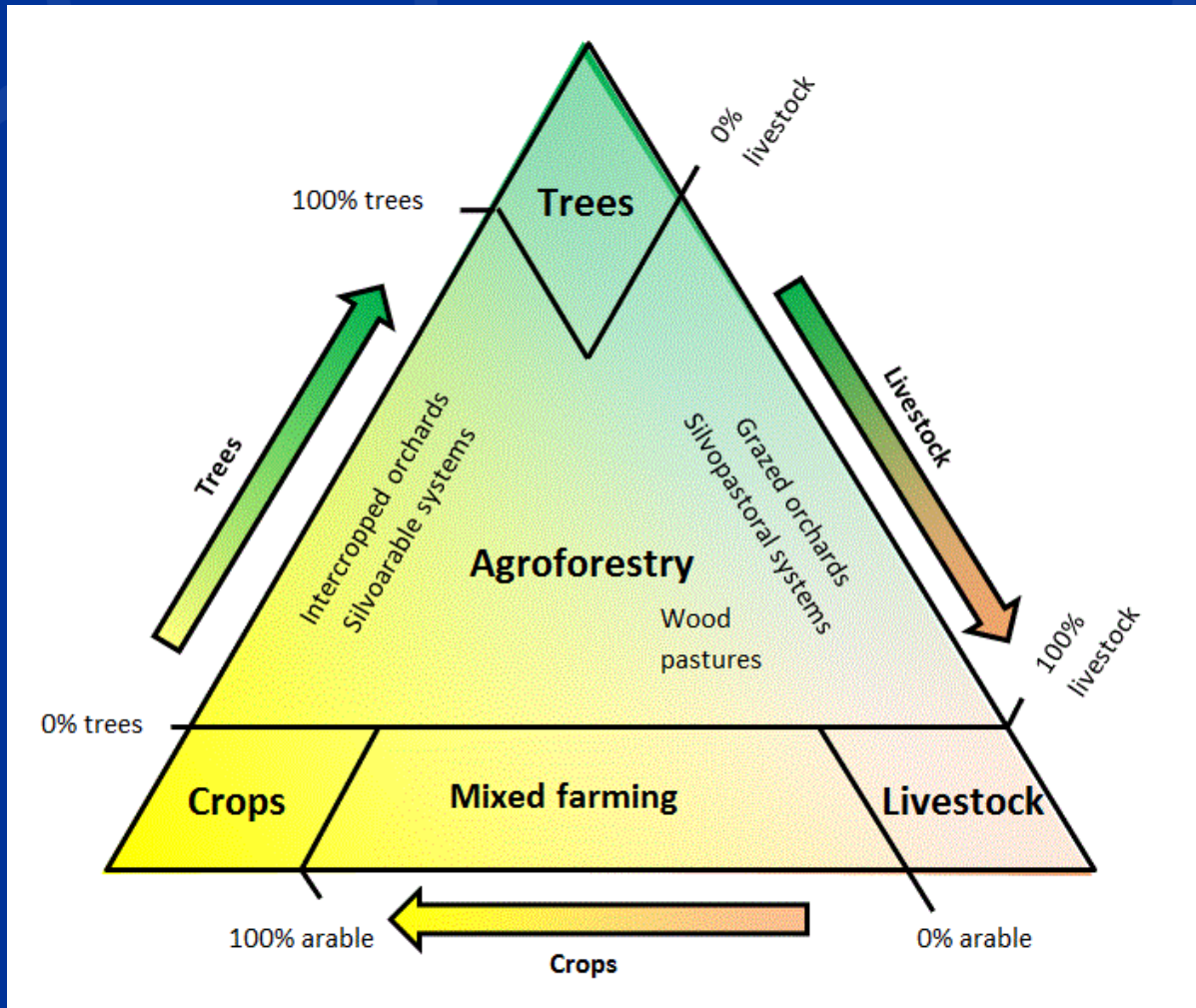
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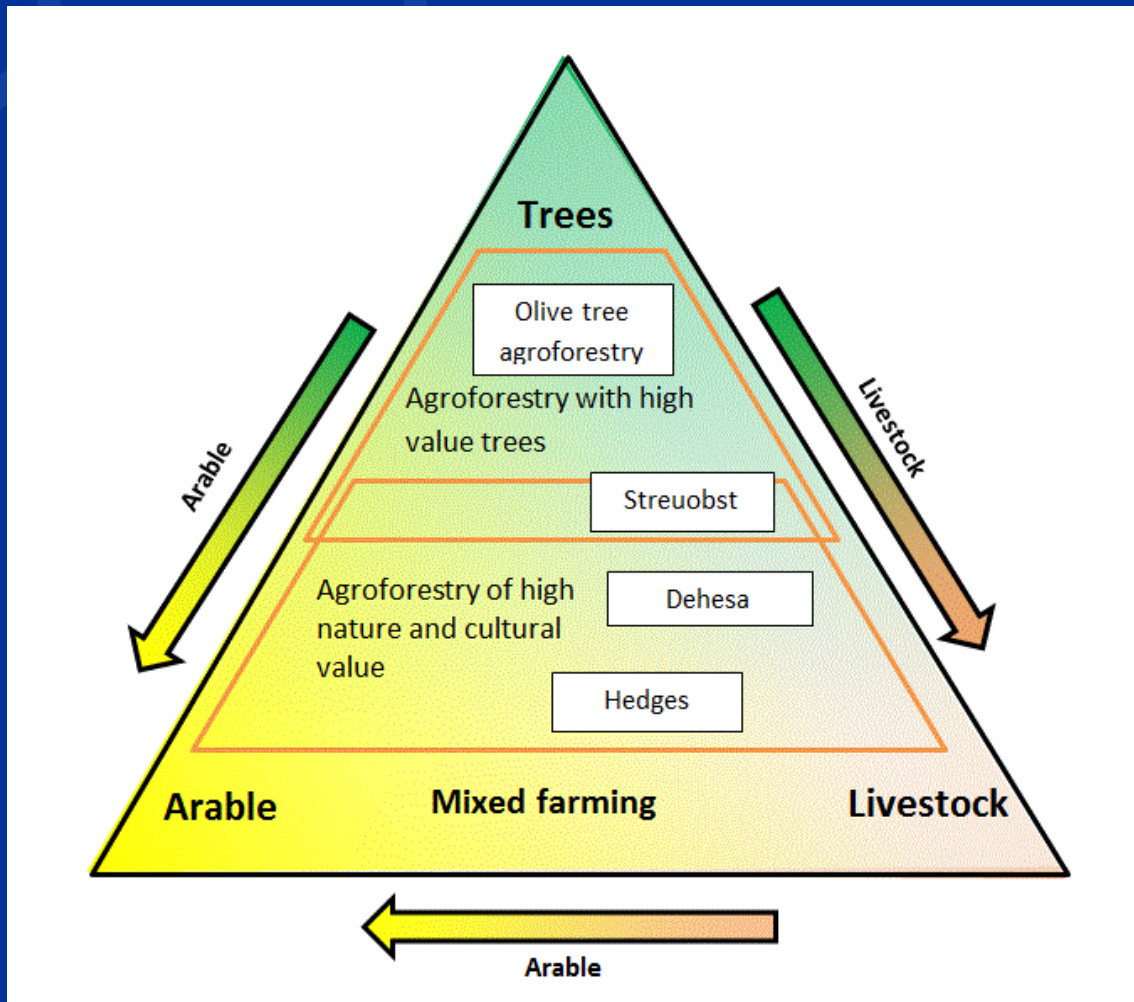
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Agroforestry comprises the “integration of trees and shrubs with crops and/or livestock”



We use existing literature to quantify the area of:

- high value trees with livestock and crops, and
- agroforestry of “high nature and cultural value”



Extent of agroforestry with high value trees



Practice	Country	Extent (ha)	Source
Streuobst	Germany, Switzerland, Austria, Croatia, Romania, Poland, Czech Rep	904,214	Eichhorn et al. 2006; Herzog 1998
Pré-vergers	France	151,000	Ducros et al. 2005
Other orchard systems	Denmark, Italy, Spain, Greece, Portugal	146,303	Statistics Denmark 2013; Cullotta et al. 1999; Papanastasis et al. 2009; INE 2002; Anuario Vegetal 2006
Agroforestry with olives, vines, chestnut, carob or pine	Spain, Portugal, Greece, France, Italy, Hungary, Romania, Slovakia, Slovenia, Switzerland	1,553,625	INE 2002, Anuario Vegetal 2006, Papanastasis et al. 2009, Eichhorn et al. 2009, Conedera et al. 2004, Pardini 2009, Inventario Florestal Nacional (2013)
Traditional orchards	UK	25,350	Robertson et al. 2010
Sub-total		2,780,492	



Sweet cherry and vegetables in Switzerland by Felix Herzog



Olive trees intercropped in Lesvos, Greece, by Vasileios Papanastasis

Extent of “high nature and cultural value” agroforestry according to literature



Practice	Country	Extent (ha)	Source
Dehesa	Spain	3,606,151	Ministerio de Agricultura, Alimentación y Medio Ambiente 2008
Oak montado	Portugal	1,059,000	Inventário Florestal Nacional 2013a
Other Mediterranean	Greece, Italy, Portugal, Spain	2,296,846	Castro 2009; Papanastasis et al. 2009, Pardini 2009
Other wood pasture in continental Europe	Germany, Austria, Switzerland, Italy, Hungary, Sweden, Finland	387,639	Glaser and Hauke 2004; Luick, 2009; Greif 1992; Herzog 1998; Bölöni et al. 2008, Pardini 2009, Statistics Sweden 2013, Vainio et al. 2001
Wood pasture and parklands	UK	15,000	Maddock 2008 (10,000-20,000)
Sub-total		7,364,636	



Montado and goat grazing in Portugal, photo by João HN Palma.



Ancient oak-dominated wood-pasture from southern Transylvania, photo by Tibor Hartel

Extent of “high nature and cultural value” agroforestry according to literature



Practice	Country	Extent (ha)	Source
Reindeer husbandry	Finland, Sweden, Norway	41,400,000	Jernsletten and Klokov 2002



Reindeer round-up before movement to winter grazing area in an area close to Åkroken, county of Jämtland, Sweden by Daana Fjällberg.

Extent of “high nature and cultural value” agroforestry according to literature



Practice	Country	Extent (ha)	Source
Hedgerows & scattered trees	France	342,500	Bélouard and Coulon 2002
Hedgerows	England, Scotland and Wales	117,174	Forest Commission 2001a, 2001b, 2001c
Hedgerows	Wallonia, Belgium	12,400	Etat de l'Environnement en Wallonie, 2010
Sub-total		472,074	



Extent of recent agroforestry as recorded in the literature



Practice	Country	Extent (ha)	Source
Shelterbelts	Hungary	16,415	Takács and Frank 2008
Alley cropping with poplar	France	6,300	Segouin and Valadon (1997) quoted by Eichhorn et al 2006; Liagre 2002.
Trees in rows with livestock	Netherlands	3,000	Oosterbaan & Kuiters 2008
Sub-total		25,715	



Very few details of the extent of recently-planted agroforestry in the literature

Alley cropping system of poplar (*Populus* spp.), black locust (*Robinia pseudoacacia*) and winter wheat, northeastern Germany. Photo by Dirk Freese.

Extent of agroforestry reported in literature relative to the utilised agricultural area



Country	Estimated area covered by agroforestry (ha)	Utilised agricultural area (ha)	Estimated agroforestry area as a proportion of UAA (%)
Austria	48,564	2,863,583	1.7%
Belgium	12,400	1,358,020	0.9%
Croatia	64,456	1,300,000	5.0%
Czech Republic	9,277	3,525,889	0.3%
Denmark	3,242	2,664,000	0.1%
Finland ¹	7,320	2,285,200	0.3%
France	510,130	29,000,829	1.8%
Germany	480,500	16,667,300	2.9%
Greece	2,096,688	4,150,990	50.5%
Hungary	22,815	5,338,015	0.4%
Italy	967,038	13,133,855	7.4%
Netherlands	3,000	1,841,600	0.2%
Poland	200,000	14,529,400	1.4%
Portugal	1,842,320	3,597,979	51.2%
Romania	180,105	13,733,143	1.3%
Slovakia	92	1,927,000	0.0%
Slovenia	185	480,000	0.0%
Spain	3,839,949	23,463,115	16.4%
Sweden	100,000	3,031,500	3.3%
Switzerland	97,312	1,051,630	9.3%
UK	157,524	17,172,000	0.9%
Total	10,642,917	164,473,028	6.5%

At least 6.5% of the utilised agricultural area of Europe has been reported as agroforestry

The value for the UK is about 0.9%

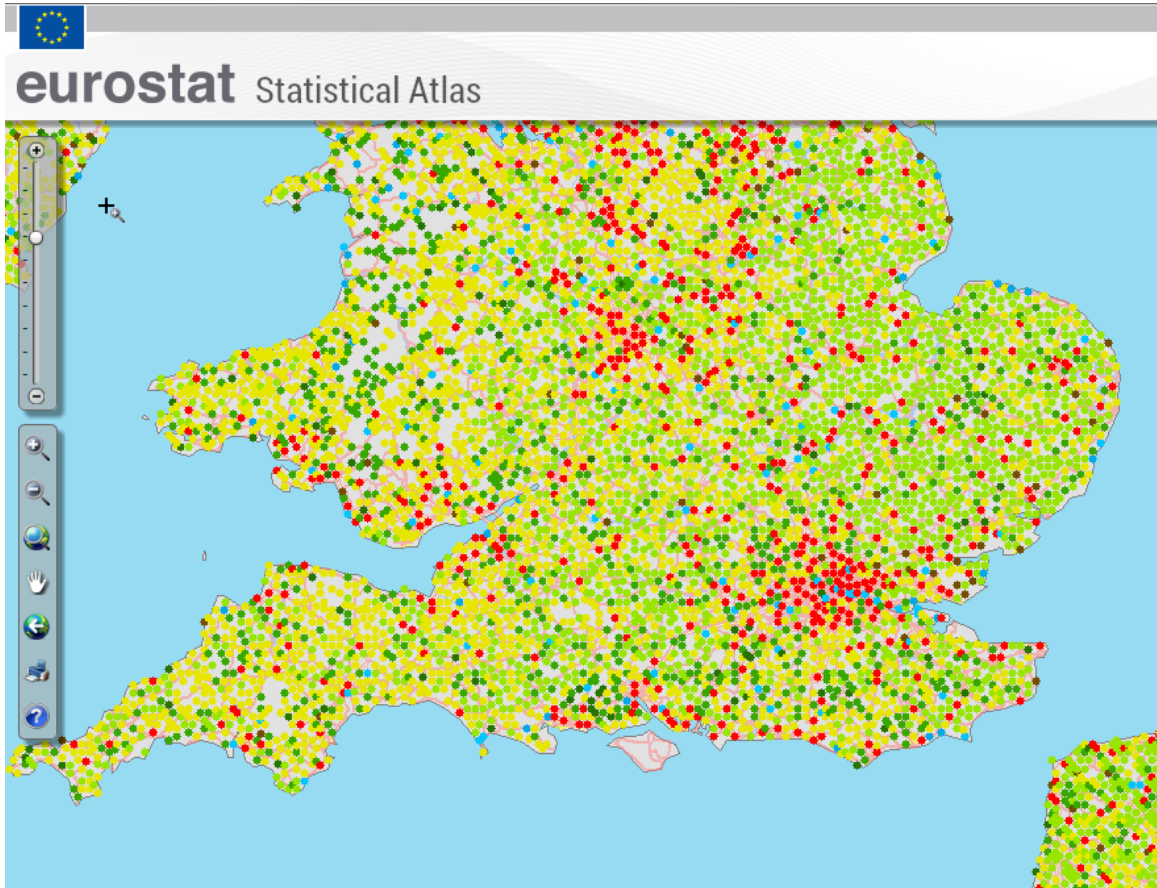
Is grazed heathland agroforestry?



Dwarf shrub heathland covers about 1,487,000 ha in Great Britain (Howard et al. 2003).

Much of the area is grazed. If agroforestry is “the integration of trees and shrubs with crops and/or livestock” is this agroforestry?

Next steps



To use the LUCAS (2012) land cover and land use maps to determine the area of “agroforestry” across Europe and to compare with the literature values

<http://ec.europa.eu/eurostat/statistical-atlas/gis/viewer/?myConfig=LUCAS-2012.xml>

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