Report on final agroforestry conference

Project name	AGFORWARD (613520)
Work-package	9: Dissemination
Deliverable	Deliverable 9.31: Report on final agroforestry conference
Date of report	8 December 2017
Authors	Paul Burgess, Fabien Balaguer, María Rosa Mosquera-Losada, Jeroen Watté, Patrick Worms and Fabien Liagre
Contact	p.burgess@cranfield.ac.uk

Contents

1 Context 2
2 Description of the meeting 2
3 Release of the AGFORWARD innovation and best practice folder 4
4 Copies of the presentations 4
5 Acknowledgements 5
6 References 5
Appendix A: Presentation by Paul Burgess 6
Appendix B: Presentation by Fabien Balaguer 25
Appendix C: Presentation by Rosa Mosquera-Losada 35

AGFORWARD (Grant Agreement N° 613520) is co-funded by the European Commission, Directorate General for Research and Innovation, within the 7th Framework Programme of RTD. The views and opinions expressed in this report are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission.

1 Context

The AGFORWARD research project (January 2014-December 2017), funded by the European Commission, is promoting agroforestry practices in Europe that will advance sustainable rural development. The project has four objectives:

1. to understand the context and extent of agroforestry in Europe,
2. to identify, develop and field-test innovations (through participatory research) to improve the benefits and viability of agroforestry systems in Europe,
3. to evaluate innovative agroforestry designs and practices at a field-, farm- and landscape scale, and
4. to promote the wider adoption of appropriate agroforestry systems in Europe through policy development and dissemination.

The fourth objective of the project is co-ordinated through policy and dissemination work-packages. This report, which is related to the fourth objectives, describes a final project conference that took place in the European Parliament on 29 November 2017

2 Description of the meeting

Over 80 people from across Europe met in the European Parliament to discuss how to mainstream agroforestry in practice and through policy initiatives. The meeting entitled "1 + 1 = 3" was hosted by Paul Brannen MEP and examined how agroforestry can boost the revenues and resilience of Europe's farmers.

Paul Burgess, Co-ordinator of the AGFORWARD project, explained that agroforestry is an important European land use occupying almost 9% of the agricultural area. Agroforestry is dominated by silvopastoral systems (combining trees and/or shrubs with livestock) such as the dehesa and montado and wood pastures, but there were also distinct benefits from using more trees on arable farms. Paul explained that field research and farmer perceptions demonstrated that integrating woody perennials with farming provides synergistic benefits including increased land use efficiency and income diversification, improved animal welfare, and increased biodiversity, soil conservation and carbon sequestration. He argued that these societal benefits warrant policies to encourage agroforestry, a reduction in the current administrative burdens, and there would be a net benefit if society compensated farmers for some of the additional on-farm labour and management costs.

Fabien Balaguer described how agroforestry was being implemented in practice across a range of farm types in Southern France, with a particular focus on improving water and carbon management at catchment and landscape scales.

María Rosa Mosquera-Losada described a set of 15 recommendations (Deliverable 8.3) suggesting how changes within current European policy could encourage the wider uptake of agroforestry. Recommendations were based on Deliverable 8.2 where the extent and current policies were explained (Mosquera-Losada et al. 2016). These include recognition of the wide range of agroforestry practices (silvopasture; silvoarable; hedgerows, windbreaks and riparian buffer strips; forest farming and homegardens) associated to different land cover such as agriculture (silvopasture, silvoarable, hedgerows, windbreaks and riparian buffer strips), forestry (silvopasture and forest farming) and urban (homegardens) areas. She recommended that well-managed agroforestry practices on agricultural land should be fully eligible for Pillar I payments in the Common Agriculture Policy and

that the wide and diverse range of agroforestry-related measures in Pillar II should be brought together. She also highlighted the need of considering agroforestry at farm and landscape level as well and the need of a proper education system including extension services to promote agroforestry innovations. She indicated that EIP-Agri could play an essential role in the dissemination of agroforestry innovation. Finally it was proposed that there should be an EU agroforestry strategy considering research, innovation, policy and education.

After the presentations, an invited panel examined ways to mainstream agroforestry in Europe. The panel comprised Olivier De Schutter (Co-chair of the International Panel of Experts on Sustainable Food Systems), Valentin Opfermann (Policy Advisor on Agricultural and Environmental Research and Environmental Issues at COPA-COGECA), Patrick Worms (Senior Science Policy Adviser at the World Agroforestry Centre) and Frédéric Morand (Farmer and founder of Vert d'Iris International). There was a wide-ranging discussion and the responses to questions covered how current taxation systems (that often places high taxes on labour use) can penalise farm practices, such as agroforestry, where labour costs are often high. The panel also highlighted the very important role that agroforestry in Europe can and should play in terms of conserving soil and sequestering carbon. They recommended that agroforestry could and should play a role in enabling the Common Agricultural Policy meet its environmental and economic objectives.

Figure 1. The panel and speakers at the agroforestry meeting in the European Parliament were Frédéric Morand, Valentin Opfermann, Olivier De Schutter, María Rosa Mosquera-Losada, Paul Burgess, Fabien Balaguer, Patrick Worms, and the host was Paul Brannen MEP.

3 Release of the AGFORWARD innovation and best practice folder

In addition, the meeting saw the release of the AGFORWARD folder of innovation and best practice leaflets. The folder comprises 46 “Agroforestry innovation” leaflets, developed by 40 stakeholder groups across 13 countries, and 10 “Agroforestry best practice” leaflets. On-line copies of the leaflets will be made available on the AGFORWARD website during December 2017. The meeting concluded with a reception, where all present continued to discuss the best ways to mainstream agroforestry across Europe.

Figure 2. Copies of the AGFORWARD innovation and best practice leaflets were available

4 Copies of the presentations

Burgess, P.J. et al. (2017). How agroforestry is boosting the revenue and resilience of Europe’s farmers: what is, where is and why agroforestry? Presentation at the European Parliament, Brussels. 29 November 2017.

Balaguer, F. (2017). Agroforestry: debating the future (and present!) of our farming. Presentation at the European Parliament, Brussels. 29 November 2017.

Mosquera-Losada, M.R. et al. (2017a). How can policy support the uptake of agroforestry in Europe? Presentation at the European Parliament, Brussels. 29 November 2017.

A full copy of the “How can policy support the uptake of agroforestry in Europe?” report can be found on the following webpage: http://www.agforward.eu/index.php/en/how-can-policy-support-the-uptake-of-agroforestry-in-europe.html

5 Acknowledgements

The AGFORWARD project (Grant Agreement N° 613520) is co-funded by the European Commission, Directorate General for Research & Innovation, within the 7th Framework Programme of RTD, Theme 2 - Biotechnologies, Agriculture & Food. The views and opinions expressed in this report are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission.

6 References

Balaguer F (2017). Agroforestry: debating the future (and present!) of our farming. Presentation at the European Parliament, Brussels. 29 November 2017.

Burgess PJ et al. (2017). How agroforestry is boosting the revenue and resilience of Europe's farmers: what is, where is and why agroforestry? Presentation at the European Parliament, Brussels. 29 November 2017.

Mosquera-Losada MR et al. (2017a). How can policy support the uptake of agroforestry in Europe? Presentation at the European Parliament, Brussels. 29 November 2017.

Mosquera-Losada MR, Santiago Freijanes JJ, Pisanelli A, Rois M, Smith J, den Herder M, Moreno G, Lamersdorf N, Ferreiro Domínguez N, Balaguer F, Pantera A, Papanastasis V, Rigueiro-Rodríguez A, Aldrey JA, Gonzalez-Hernández P, Fernández-Lorenzo JL, Romero-Franco R, Lampkin N, Burgess PJ (2017b). Deliverable 8.24: How can policy support the appropriate development and uptake of agroforestry in Europe? 7 September 2017. 21 pp. http://www.agforward.eu/index.php/en/how-can-policy-support-the-uptake-of-agroforestry-in-europe.html

Mosquera-Losada MR, Santiago Freijanes JJ, Pisanelli A, Rois M, Smith J, den Herder M, Moreno G, Malignier N, Mirazo JR, Lamersdorf N, Ferreiro Domínguez N, Balaguer F, Pantera A, Rigueiro-Rodríguez A, Gonzalez-Hernández P, Fernández-Lorenzo JL, Romero-Franco R, Chalmin A, Garcia de Jalon S, Garnett K, Graves, A, Burgess PJ (2016). Extent and success of current policy measures to promote agroforestry across Europe. Deliverable 8.23 for EU FP7 Research Project: AGFORWARD 613520. (8 December 2016). 95 pp. https://www.agforward.eu/index.php/es/extent-and-success-of-current-policy-measures-to-promote-agroforestry-across-europe.html

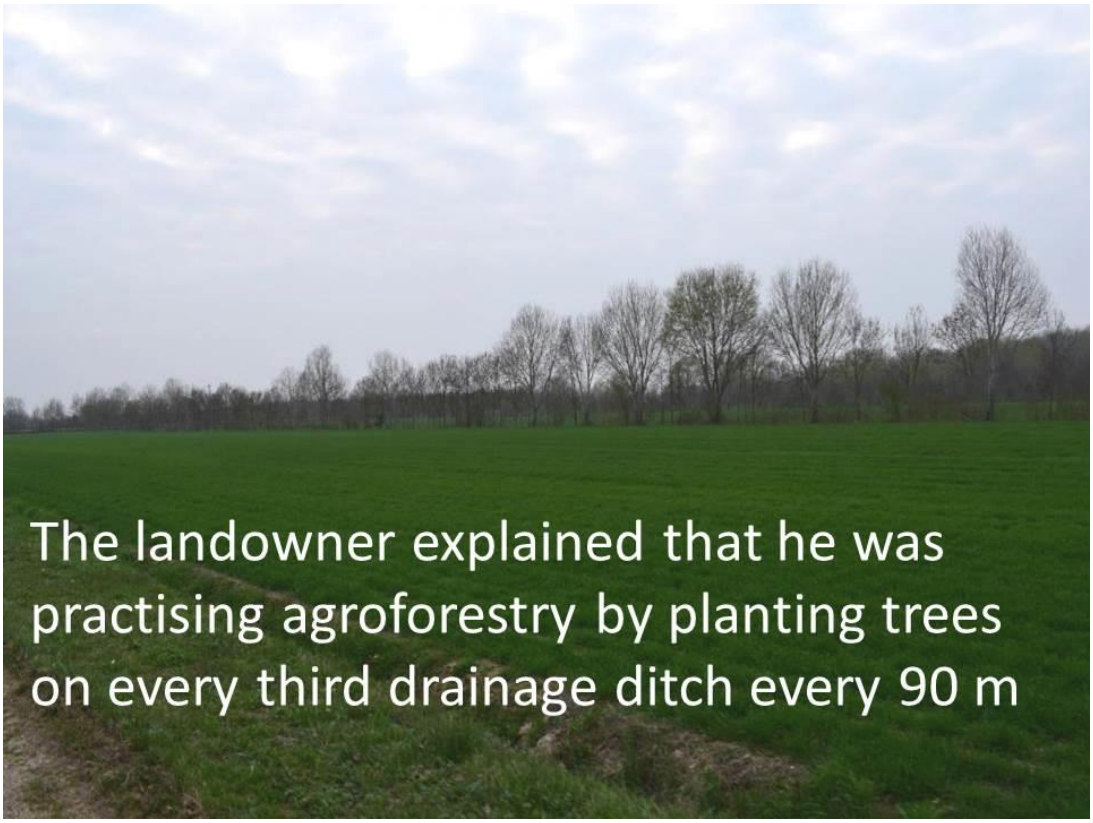
Appendix A: Presentation by Paul Burgess

Three presentations

1. What is, where is and why agroforestry?
   Paul Burgess, Cranfield University
   Co-ordinator of AGFORWARD project
   (P.Burgess@cranfield.ac.uk)

2. Practice of agroforestry
   Fabien Balaguer
3. Policy recommendations for Europe
   Rosa Mosquera Losada


What is agroforestry?
Reclaimed arable land in
the Veneto region of Italy is
flat, open, and exposed with few trees


The landowner explained that he was
practising agroforestry by planting trees
on every third drainage ditch every 90 m


Apple trees on 27 m alleys
on an organic arable farm in England


In many areas trees are
an integral part of the landscape

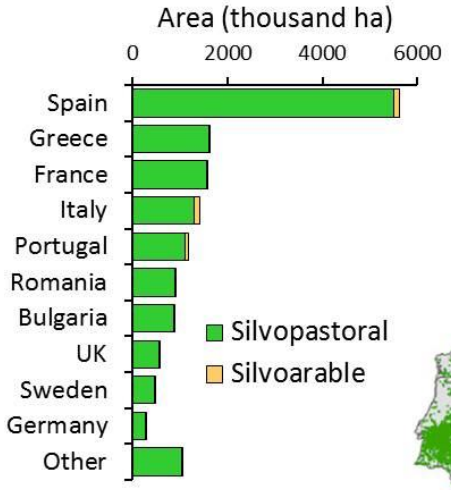

Sheep and wild cherry trees in Galicia

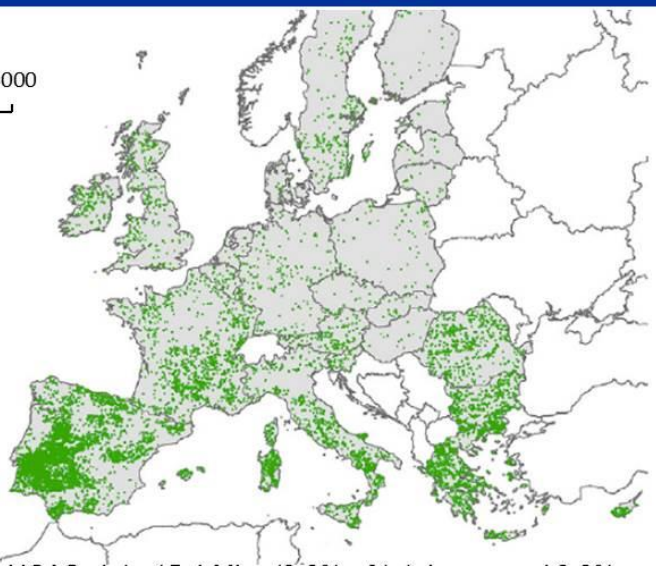

Montado and cattle in Portugal

Silvopasture and silvoarable are the main forms of agroforestry in Europe

Silvopastoral	Silvoarable			
				
Trees and shrubs with forage and animal production	Trees and shrubs intercropped with annual or perennial crops			

Agroforestry, dominated by silvopastoral systems, covers 3.6% of Europe





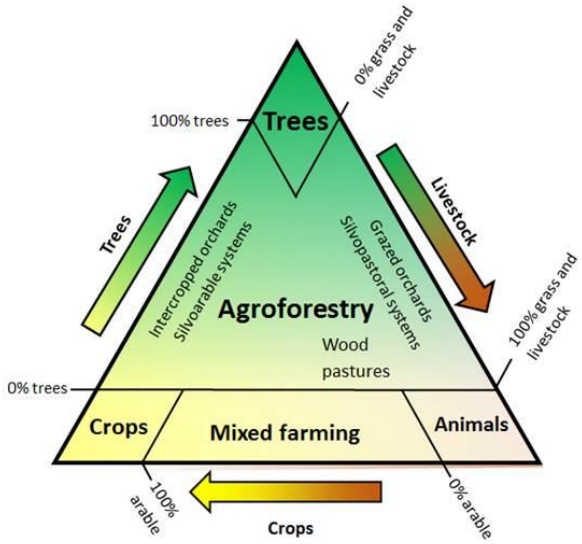
Area of agroforestry: Using LUCAS data:15.4 Mha (3.6% of total area and 8.8% of agricultural area) (den Herder et al. 2017) (excludes 1.8 Mha of homegardens).

Other forms of agroforestry

Silvopastoral	Silvoarable	Hedgerows, windbreaks and riparian buffer strips	Forest farming	Home-gardens
				
Trees and shrubs with forage and animal production	Trees and shrubs intercropped with annual or perennial crops	**Trees and shrubs bordering farm land to protect livestock, crops, and/or soil and water quality**	**Forested areas used for harvest of speciality crops**	**Trees/ shrubs with veg. in urban areas (1.8 Mha)**

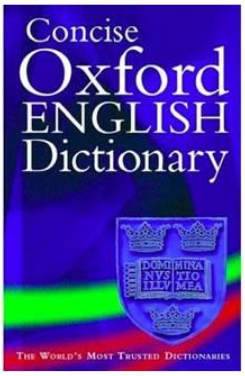
Agroforestry: seeking the synergy between agriculture and trees

Agroforestry: the deliberate integration of woody vegetation with pasture (consumed by animals) or an agricultural crop

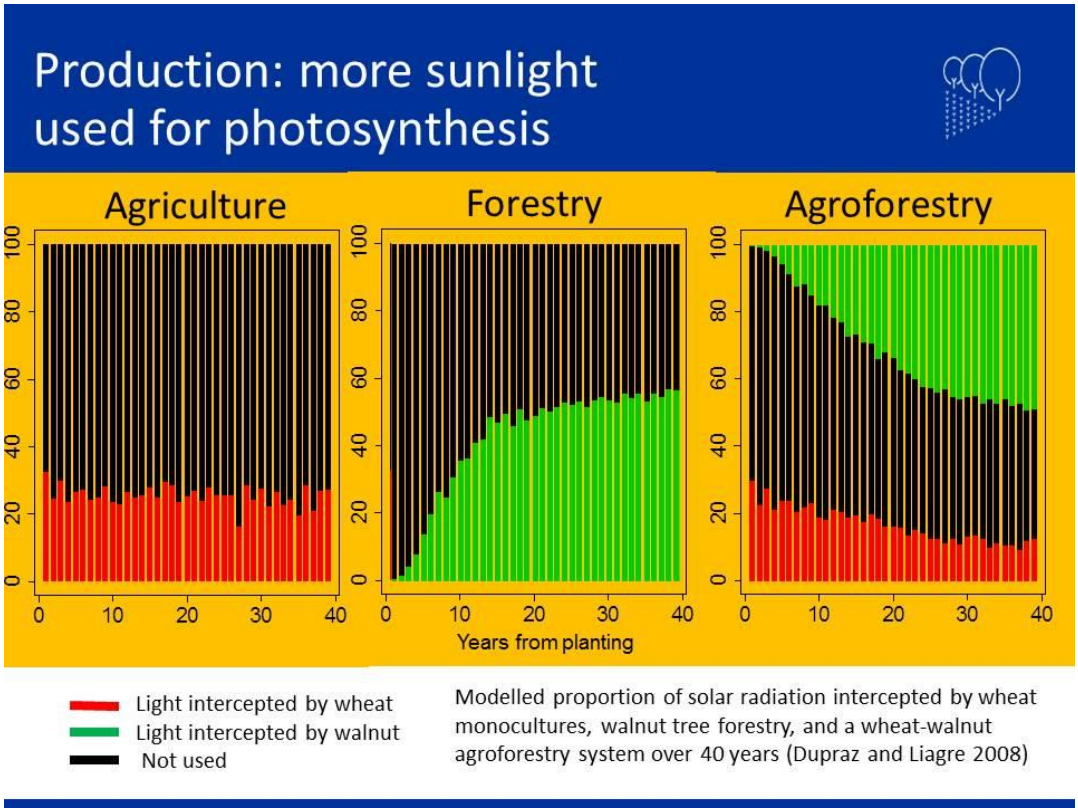


Synergy

- **n**: interaction of two or more agents to produce a **combined effect greater than the sum of their separate effec**ts.



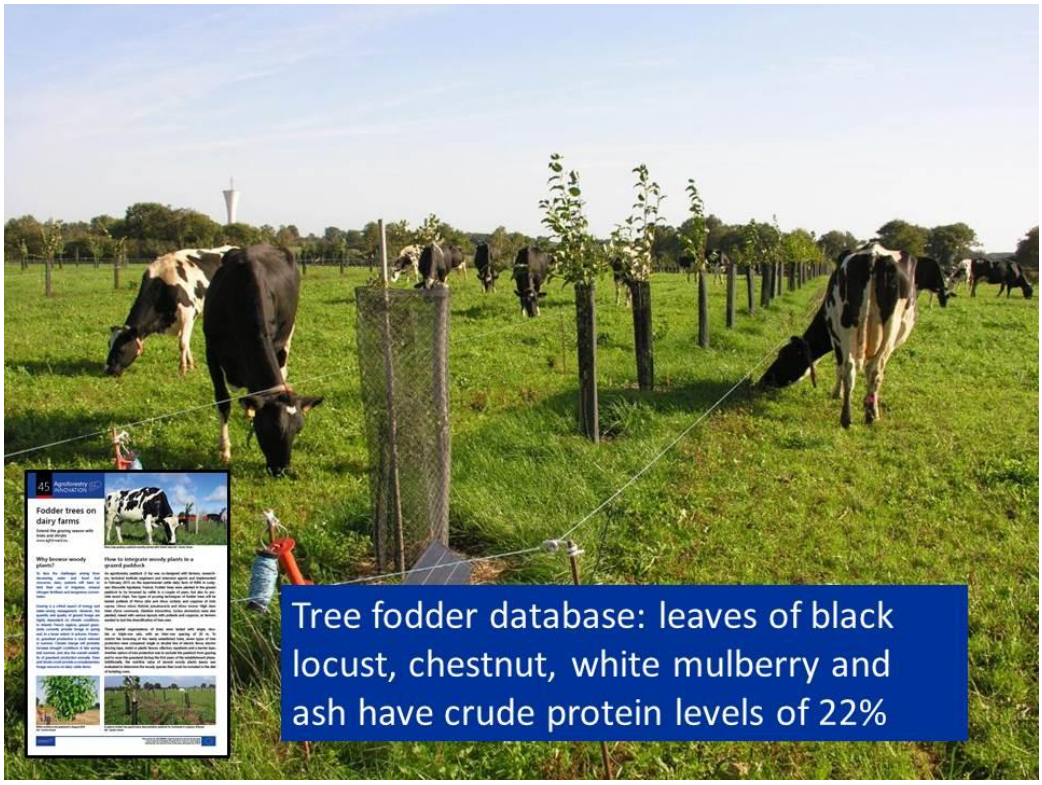
Production: proportion of sunlight used for photosynthesis

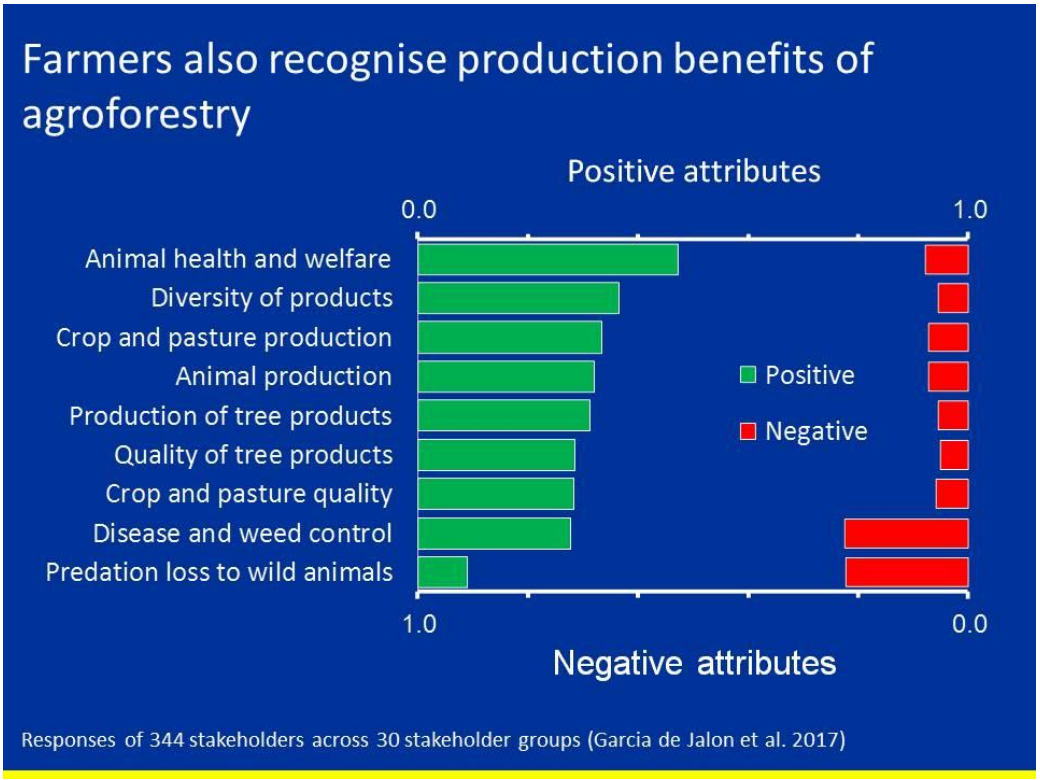


Modelled proportion of solar radiation intercepted by wheat monocultures, walnut tree forestry, and a wheat-walnut agroforestry system over 40 years (Dupraz and Liagre 2008)


Yield and climate change adaptation using alley cropping
Shelter benefits for arable production in Germany

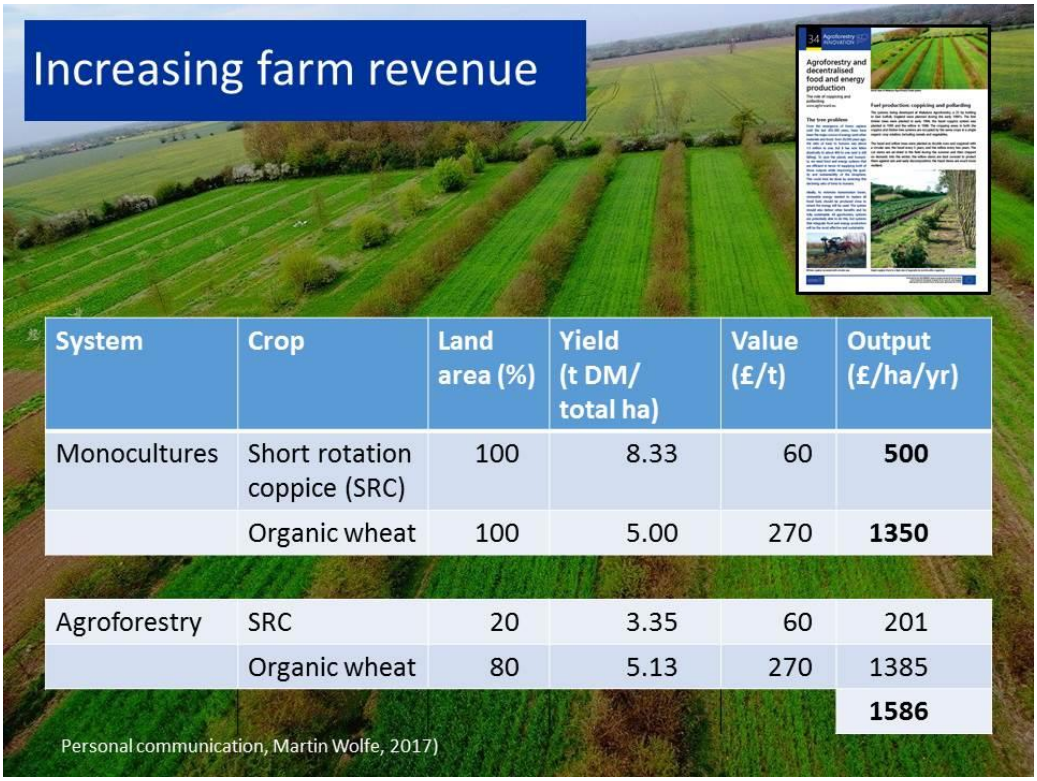

Animal welfare benefits
Woodland eggs
• Hens use more of their range
• Less feather pecking damage
• Fewer wild fowl visits
Commercial apple orchards in poultry free-range areas


Fodder trees on dairy farms
Tree fodder database: leaves of black locust, chestnut, white mulberry and ash have crude protein levels of 22%

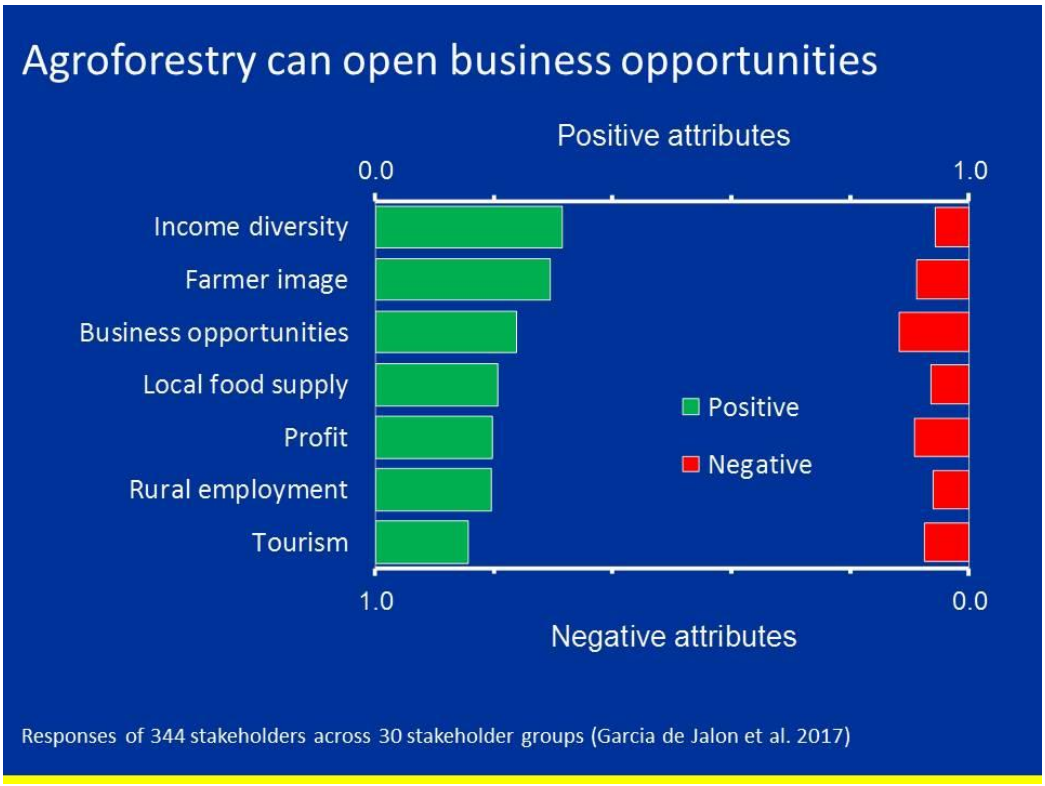

Farmers also recognise production benefits of agroforestry
Positive attributes
0.0
1.0
Animal health and welfare
Diversity of products
Crop and pasture production
Animal production
Production of tree products
Quality of tree products
Crop and pasture quality
Disease and weed control
Predation loss to wild animals
Positive
Negative
1.0
0.0
Negative attributes
Responses of 344 stakeholders across 30 stakeholder groups (Garcia de Jalon et al. 2017)

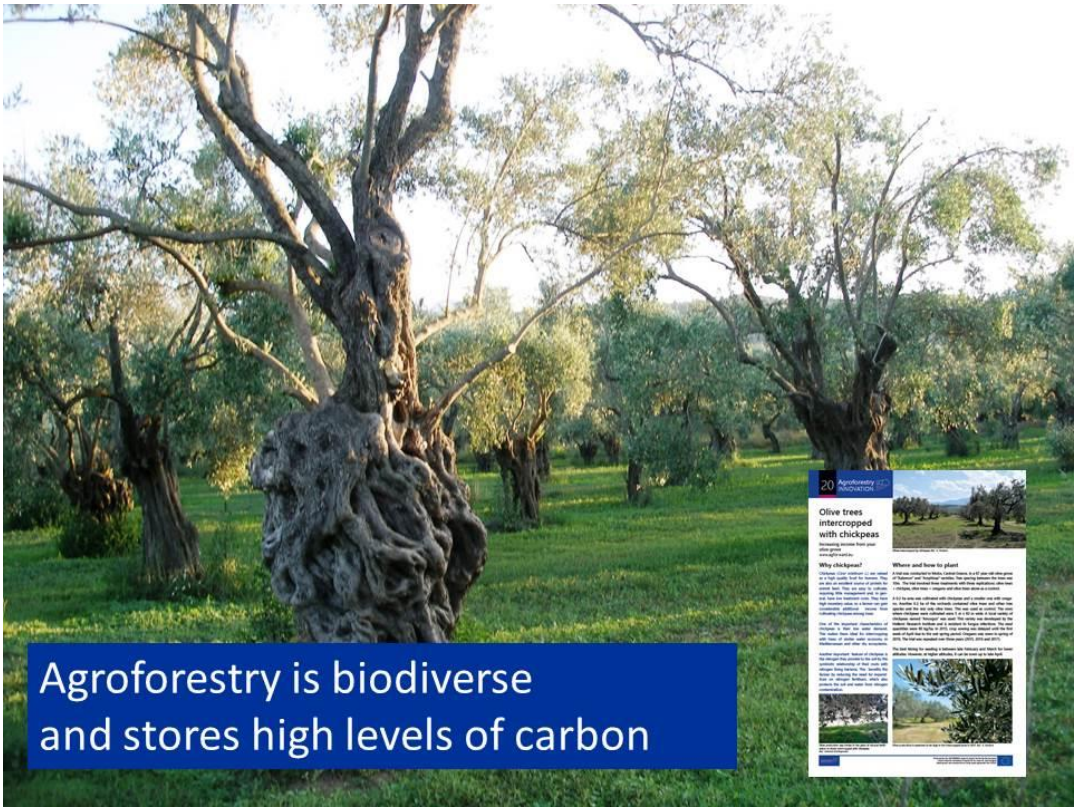

Economic benefits of grazed apple orchards in England
Sheep in high-stem cider apple orchards in the UK and France reduce mowing costs


Grazing sheep under walnut trees
Intercropping or grazing with sheep increased tree diameter growth of walnuts



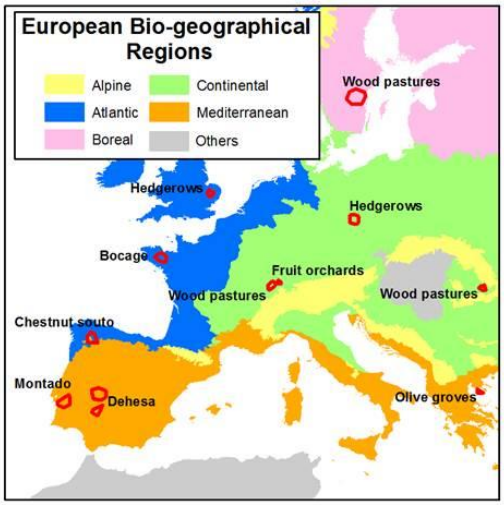
System	Crop	Land area (%)	Yield (t DM/ total ha)	Value (£/t)	Output (£/ha/yr)
Monocultures	Short rotation coppice (SRC)	100	8.33	60	**500**
	Organic wheat	100	5.00	270	**1350**
Agroforestry	SRC	20	3.35	60	201
	Organic wheat	80	5.13	270	1385
					1586




Agroforestry is biodiverse
and stores high levels of carbon
20 Agroforestry INNOVATION
Olive trees intercropped with chickpeas
Why chickpea?
Where and how to plant


Benefits of legumes, wild flowers and
mulches in tree rows
35 Agroforestry INNOVATION
Trees and crops: making the most of the space
Why manage the understorey?
Understorey crop options: what works?

Modelling ecosystem services for landscapes with and without agroforestry

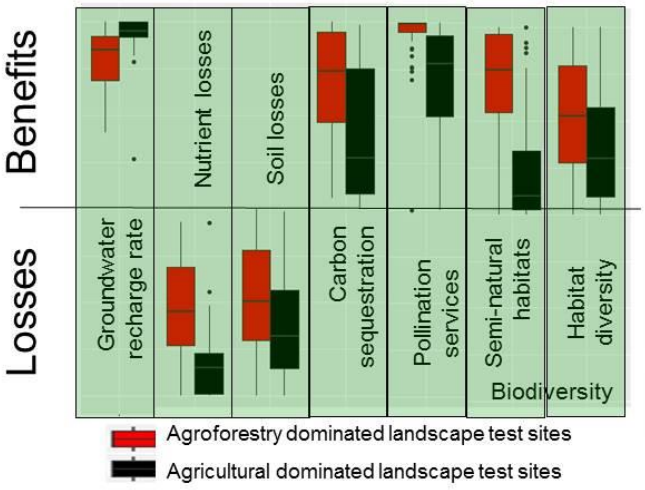


Ecosystem services modelled:

- Crop biomass yield
- Groundwater recharge rate
- Nutrient retention
- Soil conservation
- Carbon sequestration
- Biodiversity
  - Functional biodiversity (Pollination)
  - Habitat diversity

Kay et al. (2017) Agroforestry Systems

Comparison of agroforestry and agricultural landscapes across 12 sites



Agroforestry landscapes

Higher:

- Nutrient retention
- C sequestration
- Soil conservation
- Pollination services
- Proportions of semi-natural habitats

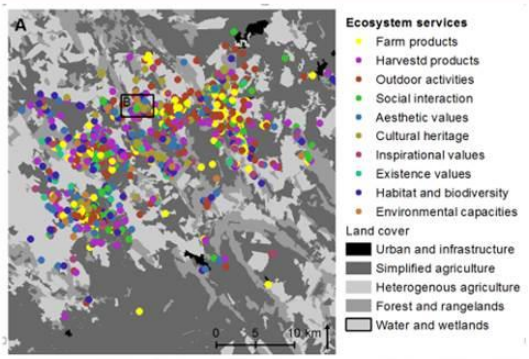
Lower:

- Groundwater recharge

Kay et al. (2017) Agroforestry Systems and supported by Torralba et al. (2016)

Public preference for mosaic landscapes

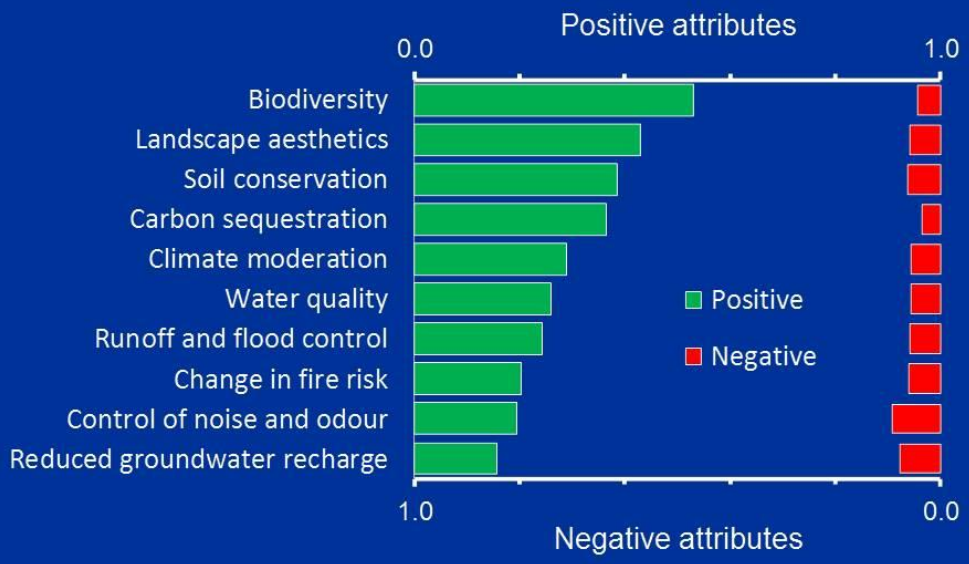
13 study sites in 10 countries
2300 respondents
28,878 locations of ecosystem services



Public Participation GIS showed that mosaic landscapes
(Sum and diversity of services increase with landscape richness)

Plieninger et al (Submitted)

Agroforestry increases environmental resilience



Responses of 344 stakeholders across 30 stakeholder groups (Garcia de Jalon et al. 2017)

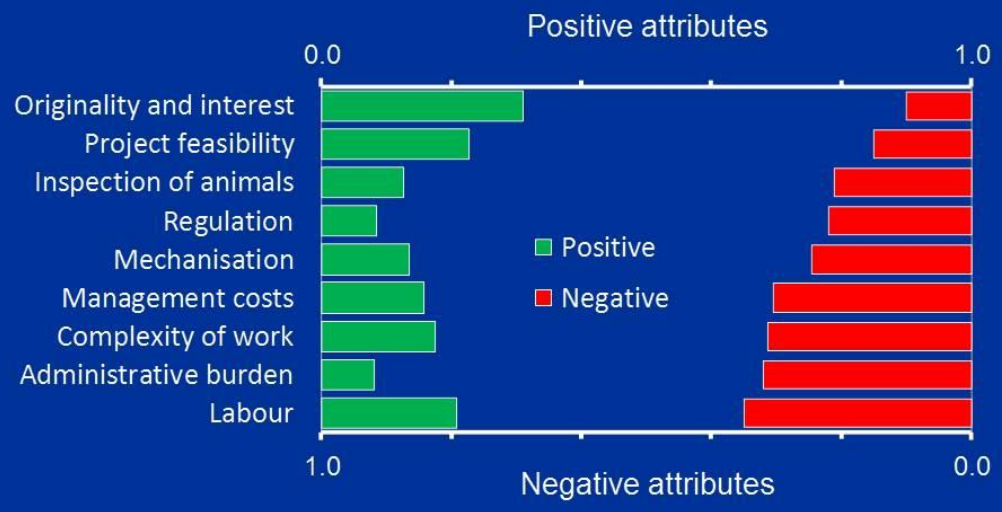
1 + 1 = 3

Agroforestry delivers:

1. Production and animal welfare benefits
2. Business opportunities
3. Environmental benefits

But…..

Farmers indicate that agroforestry has labour and administrative costs



Responses of 344 stakeholders across 30 stakeholder groups (Garcia de Jalon et al. 2017)

Farmers with vision

Agroforestry in Europe:

1. More important than you think
2. Production and societal benefits such as improved animal welfare, diversified income, greater resource efficiency, increased carbon storage and biodiversity and enhanced soil conservation
3. Is undertaken by farmers with vision

References

AGFORWARD (2017). AGFORWARD website. www.agforward.eu

den Herder, M., Moreno, G., Mosquera-Losada, R.M., Palma, J.H.N., Sidiropoulou, A., Santiago Freijanes, J.J., Crous-Duran, J., Paulo, J.A., Tomé, M., Pantera, A., Papanastasis, V.P., Mantzanas, K., Pachana, P., Papadopoulos, A., Plieninger, T., Burgess, P.J. (2017) . Current extent and stratification of agroforestry in the European Union. Agriculture, Ecosystems and Environment 241: 121–132.

Dupraz C, Liagre F (2008) Agroforesterie : Des arbres et des cultures Broché. France Agricole

Emile JC, Delagarde R, Barre P, Niderkorn V, Novak S (2017). Evaluation of the feeding value of leaves of woody plants for feeding ruminants in summer. 19th EGF Symposium on "Grassland resources for extensive farming systems in marginal regions: major drivers and future scenarios", Alghero, Sardinia (Italy) Grassland Science in Europe, vol 22, 548-550.

Fagerholm N, Torralba M, Burgess PJ, Plieninger T (2016). A systematic map of ecosystem services assessments around European agroforestry. Ecological Indicators 62: 47–65.

Fagerholm, N, Oteros-Rozas E, Raymond CM, Torralba M, Moreno G, Plieninger T (2016). Assessing Linkages between Ecosystem Services, Land-Use and Well-Being in an Agroforestry Landscape Using Public Participation GIS." *Applied Geography* 74 (August). Elsevier Ltd: 30–46. doi:10.1016/j.apgeog.2016.06.007.

Fagerholm, N, Torralba M, Moreno G, Girardello M, Herzog F, Aviron S, Burgess, P.J. et al. (2017). European Cross-Site Analysis of Place-Based Ecosystem Services in Multifunctional Rural Landscapes. Submitted.

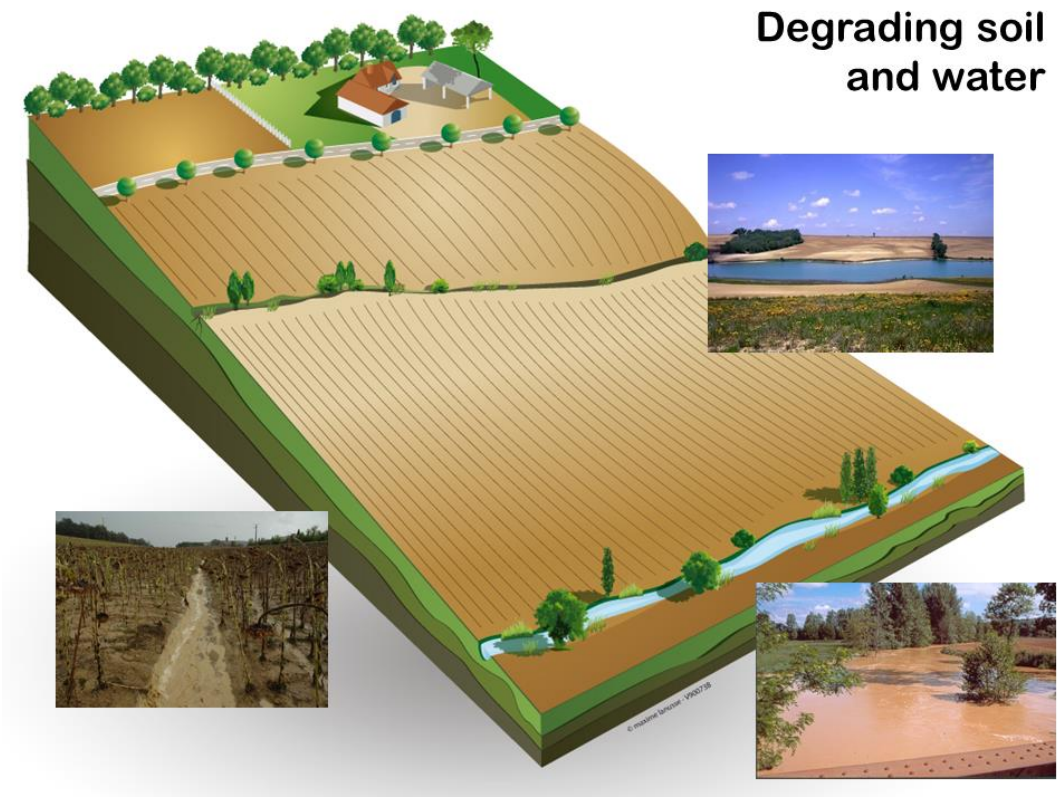
García de Jalón, S., Burgess, P.J., Graves, A., Moreno, G., McAdam, J., Pottier, E., Novak, S., Bondesan, V., Mosquera-Losada, M.R., Crous-Durán, J., Palma, J.H.N., Paulo, J.A., Oliveira, T.S., Cirou, E., Hannachi, Y., Pantera, A., Wartelle, R., Kay, S., Malignier, N., Van Lerberghe, P., Tsonkova, P., Mirck, J., Rois, M., Kongsted, A.G., Thenail, C., Luske, B., Berg, S., Gosme, M., Vityi, A. (2017). How is agroforestry perceived in Europe? An assessment of positive and negative aspects among stakeholders. Agroforestry Systems. DOI 10.1007/s10457-017-0116-3

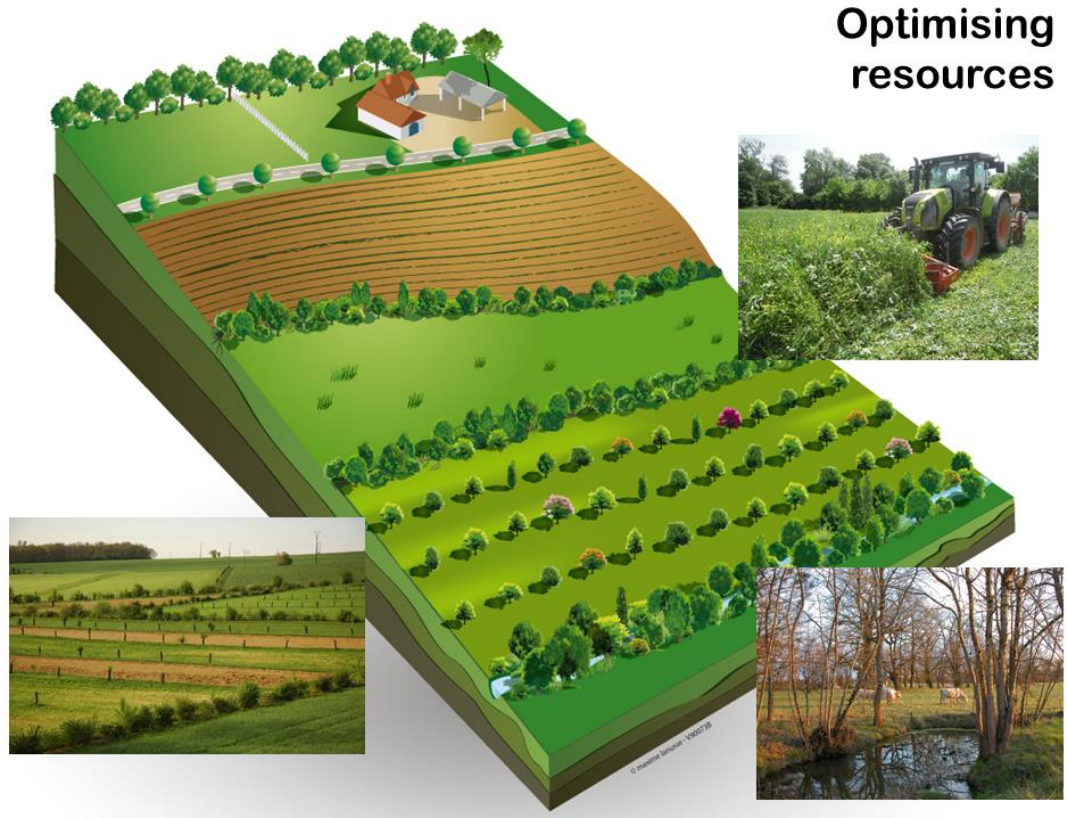
Kay S, Crous-Duran J, Garcia de Jalon S, Graves A, Palma JHN, Roces-Diaz JV, Szerencsits E, Weibel R, Herzog F (2017). Landscape-Scale Modelling of Agroforestry Ecosystems Services: A Methodological Approach. Submitted.

Kay S, Crous-Duran J, García de Jalón S, Graves A, Ferreiro-Domínguez N, Moreno G, Mosquera-Losada MR et al. (2017). "Spatial Similarities between European Agroforestry Systems and Ecosystem Services at the Landscape Scale." Agroforestry Systems. doi:10.1007/s10457-017-0132-3.

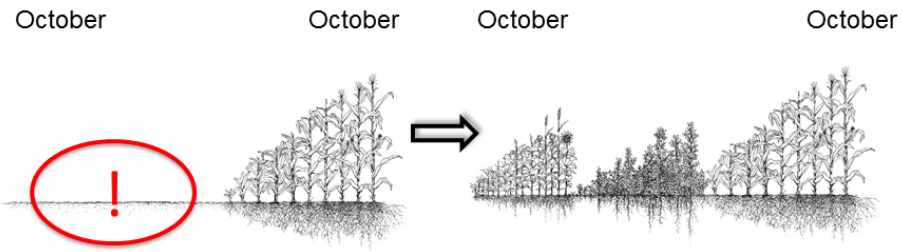
Torralba, M., Fagerholm, N., Burgess, P.J., Moreno, G., Plieninger, T. (2016). Do European agroforestry systems enhance biodiversity and ecosystem services? A meta-analysis. Agriculture, Ecosystems and Environment 230: 150-161.

Appendix B: Presentation by Fabien Balaguer


Degrading soil
and water


Optimising
resources

Crop succession (1 year)



BEFORE:
- 1 crop a year
- Soil left bare part of the year
- Low biomass production

Vicious circle

AFTER:
- Up to 3 crops a year
- Soil permanently covered with plants
- High biomass production

Virtuous circle

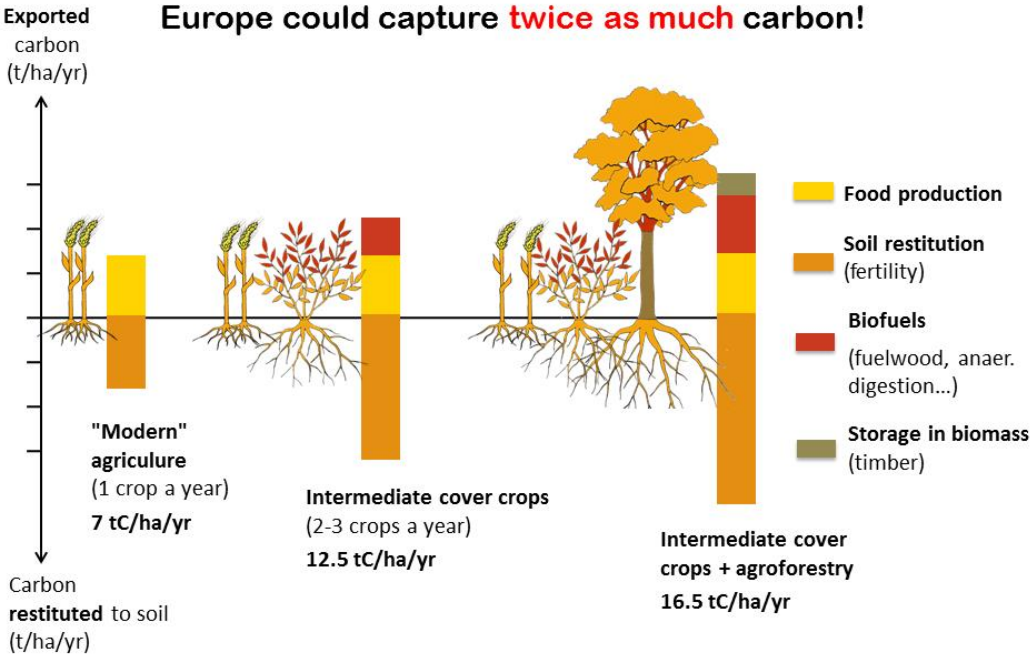
©D. Dellas – A&P32

AGROforestry as a means to reach sustainable farming

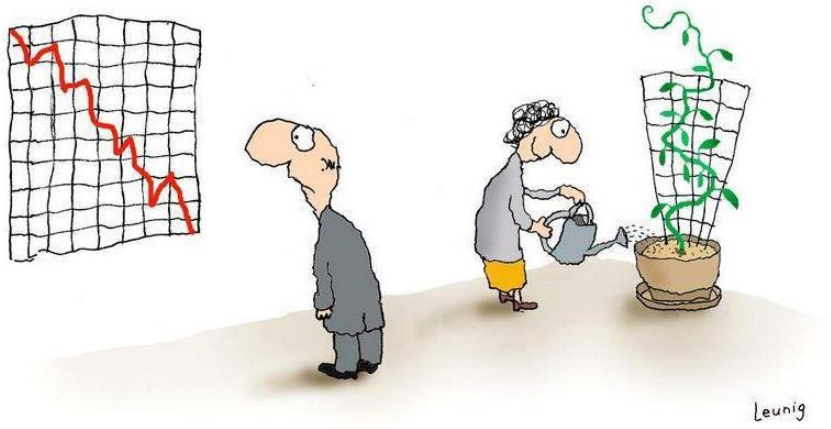

Developing agroforestry: a collaborative work
Ag. extension workers
River conservationists
Farmers
Researchers
Foresters
Road maintenance officers
Bee-keepers
Hunting associations


Learning by doing… and by sharing…
… the well-known "conversation agriculture"
©Association Française d'Agroforesterie

Carbon, fertility... and climate



Maize on ploughed soil | Direct-drilled maize


Leunig


To plant … or not to plant
(Assisted Natural Regeneration)
©D. Dellas – A&P32
The thorn (*Rubus* spp.) is the mother of the oak
©Association Française d'Agroforesterie

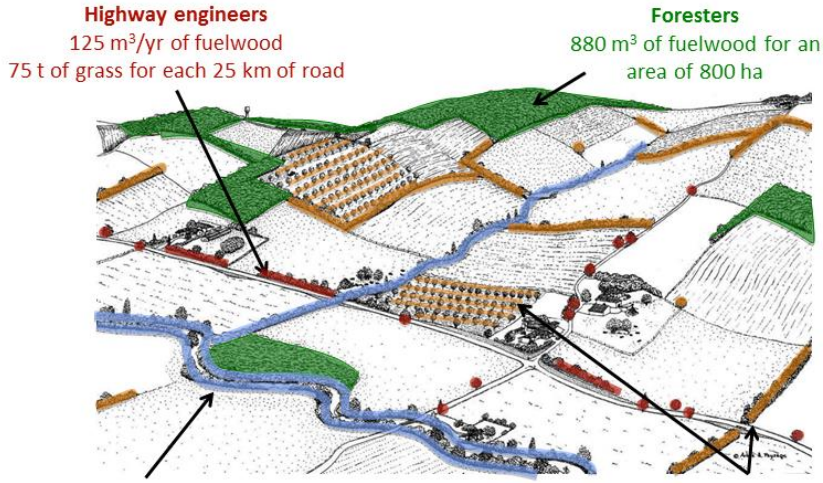

Tree growth without planting cost
©Association Française d'Agroforesterie


©Arbre et Paysage 32


©Association Française d'Agroforesterie


©Association Française d'Agroforesterie

A diversified and productive landscape



©D. Dellas – A&P32

AGFORWARD
Agroforestry for Europe

www.agforward.eu

EURAF

AGROFORESTERIE
association française

fabien.balaguer@agroforesterie.fr

Appendix C: Presentation by Rosa Mosquera-Losada

How can policy support the uptake of agroforestry in Europe?

Rosa Mosquera-Losada[1], Jose Javier Santiago Freijanes[1], Andrea Pisanelli[2], Mercedes Rois[3], Jo Smith[4], Michael den Herder[3], Gerardo Moreno[5], Norbert Lamersdorf[6], Nuria Ferreiro Domínguez[1,7], Fabien Balaguer[8], Anastasia Pantera[9], Vasilios Papanastasis[9], Antonio Rigueiro-Rodríguez[1], Jose Antonio Aldrey[1], Pilar Gonzalez-Hernández[1], Juan Luis Fernández-Lorenzo[1], Rosa Romero-Franco[1], Paul Burgess[10]

[1]: University of Santiago de Compostela, Spain; [2]: Consiglio Nazionale delle Ricerche, Italy; [3]: European Forest Institute, Finland and Spain; [4]: Organic Research Centre, UK, [5]: Universidad de Extremadura, Spain; [6]: University of Göttingen, Germany; [7] ISA, Lisbon; [8]: Association Française d'AgroForesterie, France; [9]: TEI Stereas Ellada, Greece [10]: Cranfield University, UK;

Presentation at the European Parliament on 29 November 2017

AGFORWARD is sponsored by the European Union's Seventh Framework Program for research, technological development and demonstration under grant agreement no 613520

How can policy support the uptake of agroforestry in Europe?

Premise

Agroforestry should be strongly supported by the CAP because it is a **sustainable land management** option that delivers market and non-market goods and services that address **UN Global societal goals**.

Governments need to develop strategies, policies and actions that foster agroforestry within an EU policy framework.

The content of this presentation is also described by Mosquera-Losada et al. (2017)

How can policy support the uptake of agroforestry in Europe?

How can Agroforestry be fostered by the current EU Policies?

- Cross-compliance, Pillar I and Pillar II
- Pillar I

  Basic payments
  - Arable
  - Permanent Grassland
  - Permanent Crops

  Greening
- Pillar II
  - Simplification
  - Connecting with Pillar I

Where Agroforestry can be implemented?

How can policy support the uptake of agroforestry in Europe?

Surveys

- AGFORWARD 2016 (200 farmers interviewed)
- AFINET 2017 (500 farmers interviewed)
- Results
  - ► **Lack of a clear definition of agroforestry within policy framework**
  - ► Policy does not adequately promote agroforestry
  - ► Lack of technical knowledge adapted to local conditions

Defining agroforestry

Measure 8.2 (as a deployment of the Regulation 1305/2013) *"land-use systems and practices where **woody perennials** are **deliberately integrated with crops and/or animals** on the same parcel of land management unit **without the intention to establish a remaining forest stand**. The trees may be **arranged** as single stems, in rows or in groups, while grazing may also take place inside parcels (silvoarable agroforestry, silvopastoralism, grazed or intercropped orchards) or on the limits between parcels (hedges, tree lines)".*

A definition of agroforestry is "the **deliberate integration of woody vegetation** (trees and/or shrubs) as an **upper storey on land, with pasture (consumed by animals) or an agricultural crop in the lower storey**. The woody species can be **evenly or unevenly** distributed or occur on the border of plots. The woody species can deliver forestry or agricultural products or other ecosystem services (i.e. provisioning, regulating or cultural)". **Agroforestry can take place at a range of scales (e.g. plot, farm and landscape).** At farm and landscape scale it can be implemented in systems that are able to diversify production (e.g. food, forage, timber and fuelwood), provide ecosystem services (e.g. soil restoration, water preservation, climate regulation, and biodiversity enhancement), thus increasing both resilience and profitability.

Defining agroforestry

Measure 8.2 (as a deployment of the Regulation 1305/2013) *"land-use systems and practices where **woody perennials** **in a upper storey on land** are **deliberately integrated with crops** **in the lower storey** **and/or animals** on the same parcel of land management unit ~~**without the intention to establish a remaining forest stand**~~. The trees may be **arranged** as single stems, in rows or in groups, while grazing may also take place inside parcels (silvoarable agroforestry, silvopastoralism, grazed or intercropped orchards) or on the limits between parcels (hedges, tree lines)".*

A definition of agroforestry is "the **deliberate integration of woody vegetation** (trees and/or shrubs) as an **upper storey on land, with pasture (consumed by animals) or an agricultural crop in the lower storey**. The woody species can be **evenly or unevenly** distributed or occur on the border of plots. The woody species can deliver forestry or agricultural products or other ecosystem services (i.e. provisioning, regulating or cultural)". **Agroforestry can take place at a range of scales (e.g. plot, farm and landscape).** At farm and landscape scale it can be implemented in systems that are able to diversify production (e.g. food, forage, timber and fuelwood), provide ecosystem services (e.g. soil restoration, water preservation, climate regulation, and biodiversity enhancement), thus increasing both resilience and profitability.

Agroforestry practices: plot scale

Recommendation 2a: The CAP should identify, recognize and foster the use of the following **five agroforestry practices** across Europe: silvopasture; silvoarable; hedgerows, windbreaks and riparian buffer strips; forest farming and homegardens.

Silvopastoral	Silvoarable	Hedgerows, windbreaks and riparian buffer strips	Forest farming	Homegardens
				
Combining woody perennials with forage and animal production	Widely spaced trees and shrubs intercropped with annual or perennial crops	Lines of natural or planted trees/shrubs bordering croplands/pastures to protect livestock, crops, and/or soil and water quality	Forested areas used for production or harvest of natural standing speciality crops	Combining trees/shrubs with vegetable production in urban areas

Agroforestry and land designation

Recommendation 2b: In the EU **CAP context**, it is useful to distinguish between "agroforestry practices on agricultural land" and "agroforestry practices on forest land"; this is also useful for considering **the circular and bioeconomy framework**, carbon accounting and EU directives.

Agroforestry on agricultural land			Agroforestry on forest land		Urban areas
Silvopasture	Hedgerows, windbreaks and riparian buffer strips	Silvoarable	Silvopasture	Forest farming	Homegardens
					
Wood pasture Meadow orchards Grazed orchards		Alley cropping	Forest grazing	Harvest of berries, mushrooms, medicinal plants	Allotments, Gardens

How can policy support the uptake of agroforestry in Europe?

How can Agroforestry be fostered by the current EU Policies?

- **Cross-compliance, Pillar I and Pillar II**
- Pillar I

  Basic payments
  - Arable
  - Permanent Grassland
  - Permanent Crops

  Greening
- Pillar II
  - Simplification
  - Connecting with Pillar I

Where Agroforestry can be implemented?

Agroforestry and Cross-compliance

Woody vegetation preservation and promotion:
a) GAEC7 (Isolated Trees, Hedgerows..)
b) Pillar I (Greening)
c) Pillar II (27 measures!)

as far as double funding is avoided

Recommendation 3: Agroforestry and landscape features
Woody vegetation promotion and preservation linked to landscape features policies associated with Pillar I and Pillar II payments should be **simplified** and objectives should be clearly stated, and the **administrative burden reduced.**

TOO COMPLEX, EVALUATION OF POLICY IMPACT!

How can policy support the uptake of agroforestry in Europe?

How can Agroforestry be fostered by the current EU Policies?

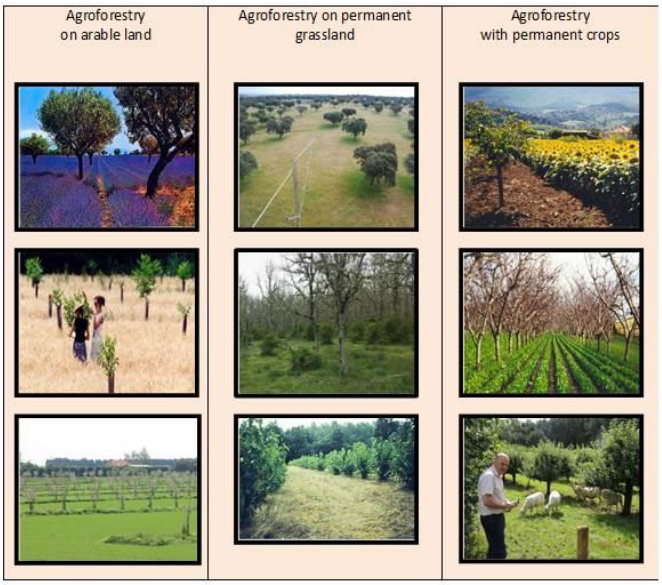
- Cross-compliance, Pillar I and Pillar II
- **Pillar I**

  Basic payments
  - **Arable**
  - **Permanent Grassland**
  - **Permanent Crops**

  Greening
- Pillar II
  - Simplification
  - Connecting with Pillar I

Where Agroforestry can be implemented?

Agroforestry and Pillar I



Agroforestry and Pillar I

Recommendation 4: Agroforestry Direct Payments and Management plans

Agroforestry practices on arable and permanent grassland should be **fully eligible** if developed with

i) A "**management plan**" to show evidence of agroforestry
* Minimum tree density (specified by member states)
* Maximum tree density
- Arable (100 mature trees ha^{-1}, allowing high density in young stands)
- Permanent Grasslands (idem unless Local Established Practices)

ii) through Measure 222 and 8.2
Permanent crops has no CAP eligibility problems -> Encourage promotion
Simplify eligibility rules for direct payments **'agroforestry option'**

Agroforestry and Pillar I
Agroforestry on arable land

Recommendation 5: Agroforestry and direct payments on arable land

Agroforestry (e.g. silvoarable agroforestry and hedgerow, windbreak and riparian buffer strips) should be promoted and be **fully eligible** for direct payments on arable land if a **management plan** is developed, where a minimum specification (selected by member states) and a maximum (100 mature trees per hectare) should be included, as it can **increase arable crop and woody vegetation productivity and/or resilience and the delivery of regulating ecosystem services such as increased carbon storage, reduced runoff, and improved water quality.**

Agroforestry and Pillar I
Agroforestry on permanent grassland

Recommendation 6: Agroforestry and direct payments on permanent grassland

Permanent grassland areas where grasses and other herbaceous forage are traditionally not predominant should be **fully eligible** for direct payments if an agroforestry **management plan** is developed to increase the **resilience** of grazing systems (e.g. **reducing external inputs dependence, reducing fire risk**) from a **productive point of view**, while **enhancing ecosystem services** (e.g. promoting biodiversity). The management plan will allow agroforestry on permanent grassland (silvopastoralism) to be fully eligible for direct payments between a minimum specification (selected by member states) and a maximum of 100 mature trees per hectare when the pro-rata system is not selected by the member state.

Agroforestry and Pillar I
Agroforestry with permanent crops

Recommendation 7: Grazing and intercropping of permanent crops
The grazing (silvopasture) and intercropping (silvoarable) of permanent crops are fully eligible under Pillar I and these practices should be **further promoted. Integrating animals in permanent crops improves nutrient recycling and reduce inputs at plot level and some crops and varieties can benefit from the shade provided by woody vegetation whilst also increasing the sustainability of the permanent crop system.**

In cases where farmers are seeking greening payments, they should be able to develop an agroforestry **management plan** indicating the agricultural use of the **understorey compatible** with the permanent crop.

How can policy support the uptake of agroforestry in Europe?

How can Agroforestry be fostered by the current EU Policies?

- Cross-compliance, Pillar I and Pillar II
- Pillar I

  Basic payments
  - Arable
  - Permanent Grassland
  - Permanent Crops

  Greening
- Pillar II
  - Simplification
  - Connecting with Pillar I

Where Agroforestry can be implemented?

Agroforestry and Pillar I Agroforestry and greening

Recommendation 8: Agroforestry and greening

Agroforestry practices should be included because agroforestry is one of the most powerful and effective tools to mitigate and adapt agriculture to climate change.

a) Management plan

b) Measure 222 and 8.2.

This new section will make it **easier to implement policies** and **follow up their impacts**, whilst mitigating and adapting to climate change such us **LULUCF.**

In the case of a percentage target (currently 5%) of EFA remains in the future CAP, agroforestry should also be an option to be counted for fulfilling the greening for the whole farm.

How can policy support the uptake of agroforestry in Europe?

How can Agroforestry be fostered by the current EU Policies?

- Cross-compliance, Pillar I and Pillar II
- Pillar I

  Basic payments
  - Arable
  - Permanent Grassland
  - Permanent Crops

  Greening
- **Pillar II**
  - **Simplification**
  - **Connecting with Pillar I**

Where Agroforestry can be implemented?

Agroforestry and Pillar II

Recommendation 9: A unique agroforestry measure in Pillar II

Unique "agroforestry" measure: encompassing the five agroforestry practices replacing the current 27 measures currently linked to agroforestry.

a) agriculture (silvopasture, silvoarable, hedgerows and riparian buffer strips)
b) forestry (forest farming, silvopasture, silvoarable)
c) peri-urban (homegardens)

Those linked to arable lands should be fully eligible for Pillar I payments if less than 100 mature trees per hectare are intended as final tree density.

Agroforestry and Pillar II
Agroforestry on agricultural land

Recommendation 10: Support for agroforestry establishment or management **on agricultural land**

Farmers should be given the option to undertake

i) **establishment of agroforestry on agricultural land** including maintenance payments similar to that of afforested/woodland creation land

ii) **improvement of management and recovery of already existing agroforestry lands.**

All areas designated as **agroforestry in agricultural lands** (arable, permanent grasslands and permanent crops) **should be eligible** for full greening and basic payments in Pillar I.

Minimum tree densities (to be given by Member states)

Maximum final tree density of 100 mature trees per hectare in arable lands unless LEP are declared on permanent grasslands

Agroforestry and Pillar II

Establishment

Improvement

Agroforestry and Pillar II
Agroforestry on forest land

Recommendation 11: Support for agroforestry establishment or management **on forest land**

There should be agroforestry **promotion**

- To help finance the **establishment and maintenance** (for the same period that afforestation and woodland creation measure in new agroforesty lands) of forest farming and forest grazing (if not included as Established Local Practices).
- To finance the **improvement of management** of forest farming and forest grazing of **existing agroforestry areas**.

Given the **increasing risk of forest fires** in Europe, the next Rural Development Programme should include support for **silvopasture** (forest grazing), **within the agroforestry measure**, and Member States should be encouraged to implement it.

Agroforestry and Pillar II
Agroforestry at farm level

Recommendation 12: Agroforestry at a farm-level

Result-based payments can be delivered if agroforestry is implemented at a **farm-scale** as it has substantial potential to contribute to European targets such as addressing climate change, improving resource use, farming systems resilience (i.e. extreme events) biodiversity, and water quality.

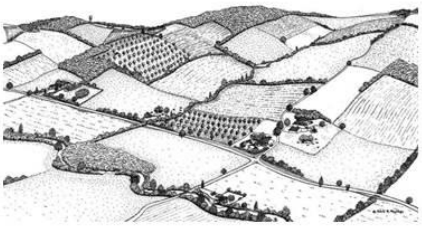
There should be opportunities for farms or groups of farmers to develop GHG and carbon accounting plans such as **LCA and C footprints**.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Grass	Grass	Grass	Grass	Grass	Woody + Grass	Woody + Grass	Woody + Grass	Woody + Grass	Grass	Grass	Grass

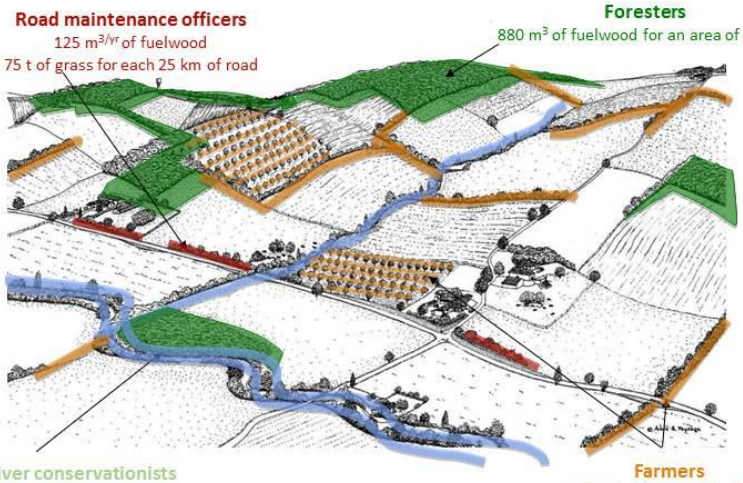
Agroforestry and Pillar II
Agroforestry at landscape level

Recommendation 13: **Co-operation measures for sustainable landscapes**

The European Union should support co-operation measures which allow the benefits of agroforestry to be recognised at landscape-level. This can be achieved by **facilitating co-operation** between farmers within a catchment including **landscape** linking **biodiversity of habitats**.



Agroforestry and Pillar I
Agroforestry at farm level



From Canet and Balaguer, France

Agroforestry and Pillar II
Output recognition

Recommendation 14: Agroforestry and the value-chain
The European Union should support **co-operation measures** which allow the **benefits of agroforestry** to be **recognised** within the **value chain.** This can be achieved by facilitating co-operation between farmers with different partners along the value chain embedded, for example, within the EIP-Agri activities. Policy changes should encourage **joined-up** thinking **between agricultural and forestry sectors** fostering the **circular economy**.

Agroforestry and Pillar II
Agroforestry knowledge

Recommendation 15: Agroforestry and education

Agroforestry is knowledge intensive, and so needs to be supported through excellent well-trained and independent **extension service providers.**

Activities related to **EIP-Agri**, extension services, knowledge co-creation should be promoted under relevant Pillar II measures.

FARMERS

STUDENTS

CONSUMERS

UNIVERSITIES AND COLLEGES

POLICY MAKERS

How can policy support the uptake of agroforestry in Europe?

How can Agroforestry be fostered by the current EU Policies?

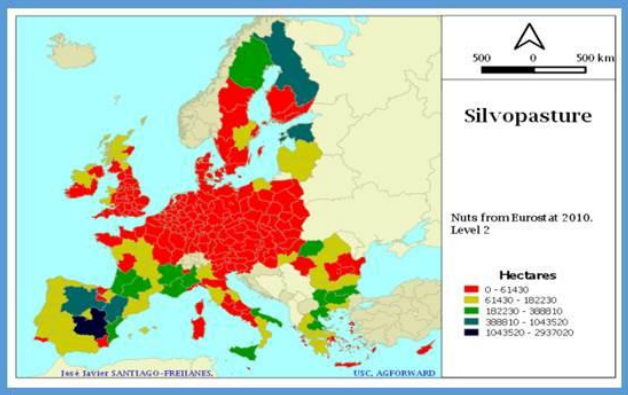
- Cross-compliance, Pillar I and Pillar II
- Pillar I

  Basic payments
  - Arable
  - Permanent Grassland
  - Permanent Crops

  Greening
- Pillar II
  - Simplification
  - Connecting with Pillar I

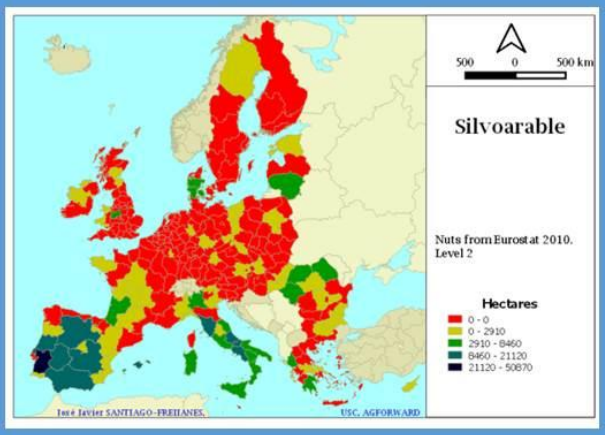
Where Agroforestry can be implemented?

Agroforestry potential

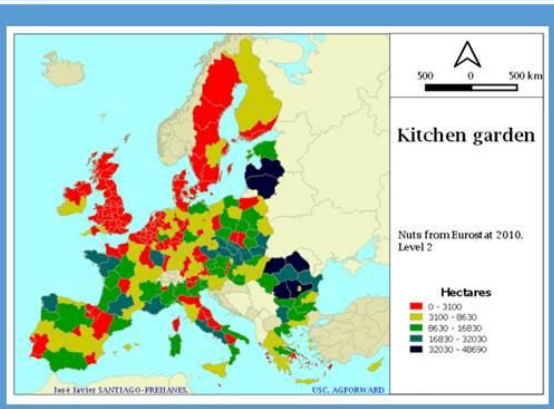
Silvopasture	Woody + forage and animal production
	
19.5 million ha[a] **Only used on 10% of the EU potential area**	Mosquera-Losada et al. (2016)

[a]: value including 2.66 million ha of grazed shrubland (See Mosquera-Losada et al. 2016)

Agroforestry potential

Silvoarable	Woody + annual or perennial crops
 422,250 hectares 0.4 % EU arable land USA: <1%	 Mosquera-Losada et al. (2016)

Agroforestry potential

Kitchen gardens	Trees + vegetable production in urban or periurban areas, also known as part of "trees outside the forest"
 1.8 million ha 60% Agroforestry	 Mosquera-Losada et al. (2016)

LINKING BIOECONOMY/RURAL AND URBAN AREAS/SMART VILLAGES

Recommendations

We have identified a series of recommendations:

a) **fuller recognition of the wide range of existing agroforestry practices in Europe** (silvopasture; silvoarable; riparian buffer strips, windbreaks and hedgerows; forest farming and homegardens),

b) **ensuring** the agroforestry associated with **arable lands**, **permanent grasslands**, and **permanent crops** secure direct payments, through the use of **management plans**.

c) one **unique measure to support agroforestry establishment and improvement** of already existing agroforestry, and

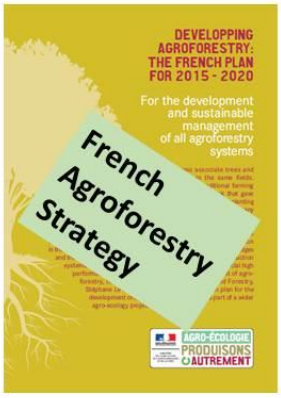
d) **support** for **farm-scale efficiency** including **carbon accounting** and l**andscape-level**, **value chain** and **education** initiatives.

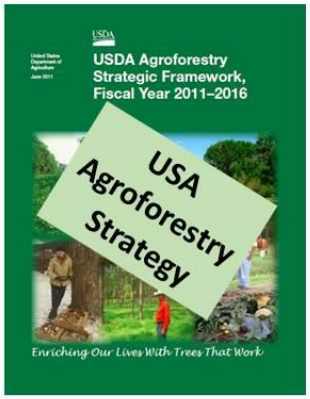
Agroforestry Global Recommendation: Strategy

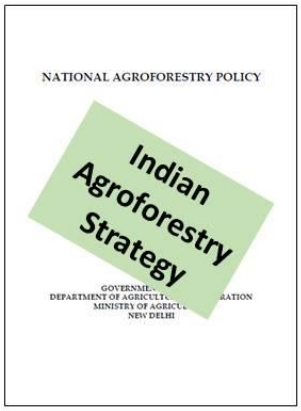
Global Recommendation

A **European Agroforestry Strategy** should be designed to foster agroforestry in Europe. Such a strategy should include aspects related to current promotion, education, innovation and research on agroforestry at a European level, and provide guidance for national agroforestry strategies.

Policy promotion:	CAP
Education:	Integrating agriculture and forestry knowledge
Innovation	EIP-Agri, specific focus groups / operational groups
Research	Think globally but act locally







Estrategia Agroforestal de México

Agroforestry and high-level societal goals

Sustainable development goals	Evidence that agroforestry can support
2. Zero hunger	Increasing food production whilst enhancing the environment
3. Good health and well being	Improving quality of drinking water and healthier food
6. Clean water and sanitation	Improving water quality due to tree uptake of pollutants
7. Affordable and clean energy	Woody vegetation in the farmed landscape used for bioenergy
8. Decent work and economic growth	Opportunities for added value
11. Sustainable cities and communities	Through the promotion of fruit trees in homegardens
12. Responsible consumption and production	Sustainable production systems
13. Climate action	Enhancing carbon storage on farm land
14. Life below water	Improving water quality
15. Life on land	Enhancing biodiversity

United Nations (2015)

References

Howlett, D.S., Moreno, G., Mosquera-Losada, M.R., Nair, P.K.R., Nair, V.D. (2011) Soil carbon storage as influenced by tree cover in the Dehesa cork oak silvopasture of central-western Spain. Journal of Environmental Monitoring 13 (7), 1897-1904.

Mosquera-Losada, M.R., Santiago Freijanes, J.J., Pisanelli, A., Rois, M., Smith, J., den Herder, M., Moreno, G., Malignier, N., Mirazo, J.R., Lamersdorf, N., Ferreiro Domínguez, N., Balaguer, F., Pantera, A., Rigueiro-Rodríguez, A., Gonzalez-Hernández, P., Fernández-Lorenzo J.L., Romero-Franco, R., Chalmin, A., Garcia de Jalon, S., Garnett, K., Graves, A., Burgess, P.J. (2016). Extent and success of current policy measures to promote agroforestry across Europe. Deliverable 8.23 for EU FP7 Research Project: AGFORWARD 613520. (8 December 2016). 95 pp.

Mosquera-Losada, M.R., Santiago Freijanes, J.J., Pisanelli, A., Rois, M., Smith, J., den Herder, M., Moreno, G., Lamersdorf, N., Ferreiro Domínguez, N., Balaguer, F., Pantera, A., Papanastasis, V., Rigueiro-Rodríguez, A., Aldrey, J.A, Gonzalez-Hernández, P., Fernández-Lorenzo, J.L., Romero-Franco, R., Burgess, P.J. (2017). How can policy support the uptake of agroforestry in Europe. Deliverable 8.24 for EU FP7 Research Project: AGFORWARD 613520. http://www.agforward.eu/index.php/en/how-can-policy-support-the-uptake-of-agroforestry-in-europe.html

United Nations (2015). Sustainable Development Goals. http://www.un.org/sustainabledevelopment/sustainable-development-goals/