

Sistemas agroforestales

María Rosa Mosquera Losada

Universidad de Santiago de Compostela

Sociedad Española de Sistemas Agroforestales

European Agroforestry Federation

Focus Sistemas Agroforestales

- 20 expertos: Francia, Italia
- Definición
 - Integración de especies leñosas y producción agraria
- Objeto
 - Optimización del uso de los recursos (luz, agua, nutrientes)
 - Aumento de la resiliencia en cuanto a cambios globales
 - Disminuir dependencia de mercados globales

Objetivo

- **Tasks:**
- **Provide and compare relevant examples** of the integration of woody vegetation with crop and livestock farming systems on the basis of traditional and/or innovative designs of agroforestry system in Europe.
- **Identify and analyse the opportunities** for the integration of woody vegetation into specialised farming systems and **assess the potential economic benefits** linked to additional sources of income (e.g. product diversification, green marketing, public incentives such as payments for biodiversity and landscape scenery,...).
- **Identify and describe limiting factors** generated by the combination of agricultural and forestry practices (e.g. farm size, labour and management, knowledge, legislation, equipment, market outlets, land tenure,...) that can hinder the adoption of agroforestry at farm level.
- **Provide practical indications** for the further development and introduction of agroforestry, **identify innovative approaches** combining scientific and practical knowledge with new business models, modern technologies and practices. **Consider** the role played by advisory systems and the existence of relevant value chains.
- **Provide recommendations** in terms of further research needs and ideas for Operational Groups and other innovative projects.




- **Qué es agroforesteria**
 - Definiciones
 - Clasificaciones y principios
- Por qué debemos emplear la agroforestería Posibles ganancias
- Agroforestería como una práctica en las Explotaciones en Europa
- Retos cambios necesarios para promover la transición
 - Diseño y Gestión
 - Productividad, rentabilidad y desarrollo de cadena sde valor
 - Competencia: conocimiento y capacidades
 - Reglas, política y Sociedad

Que es agroforestería

- “integration of woody plants in specialised crop and livestock systems” in Europe that can “be turned into concrete economic benefits at farm level”

Defining agroforestry

Agroforestry is the deliberately integration of woody species as an **upper storey** on a land with an agricultural crop or pasture in the **lower story**, which may be consumed by domestic animals. The woody species can be evenly or unevenly distributed and even in the borders of the plots. Deliver provision ecosystem services, timber and/or agronomic products (e.g., fruits, forage, bioenergy, biofuel...) or other ecosystem services (regulation and maintenance and cultural)

AF practice	Image	Brief description
Silvopasture		<p>Combining trees with forage and animal production. It comprises forest or woodland grazing and open forest trees where trees can follow a distribution in isolated/scattered trees and/or line belts distribution</p>
Homegardens		<p>Combining trees with vegetable production in urban areas, also known as part of “trees outside the forest”</p>
Riparian buffer strips		<p>Strips of perennial vegetation (tree/shrub) natural or planted between croplands/pastures and water sources such as streams, lakes, wetlands, and ponds to protect water quality</p>
Silvoarable		<p>Widely spaced woody vegetation inter-cropped with annual or perennial crops. Trees/shrubs can be distributed following an alley cropping, isolated/scattered trees hedges and line belts distribution</p>
Forest farming		<p>Forested areas used for production or harvest of natural standing specialty crops for medicinal, ornamental or culinary uses</p>

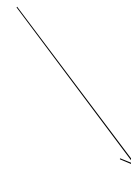
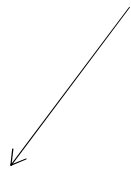
Agroforestry Practice	Principal land cover	Brief description	
AGRICULTURE	Silvopasture	Wood pasture and parkland	Typically areas of widely-spaced trees that are also used for forage and animal production.
		Grazed orchards	This practice includes fruit orchards, olive groves and vineyards which are grazed
	Silvoarable	Hedgerows and windbreak systems	Here the tree components are planted to provide shelter, shade, or parcel demarcation to an crop and/or livestock production system
		Alley-cropping systems	Widely spaced trees inter-cropped with annual or perennial crops. It comprises alley cropping, scattered trees and orchards and line belts within the plots. These practices is sometimes linked only to the first years of the plantation
	Riparian buffer strips	Riparian buffer strips	Area of tree and shrubs allowed to establish croplands/pastures and water sources such as streams, lakes, wetlands, and ponds to protect water quality
FOREST	Silvopasture	Forest grazing	Although the land cover is described as forest, the understory is grazed
	Forest farming	Forest farming	Forested areas used for production or harvest of natural standing specialty crops for medicinal, ornamental or culinary uses
URBAN AND PERIURBAN	Homegardens or kitchen gardens	Homegardens	Combining trees with vegetable production usually associated to peri-urban or urban areas

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AGROFORESTRY

Best tool to

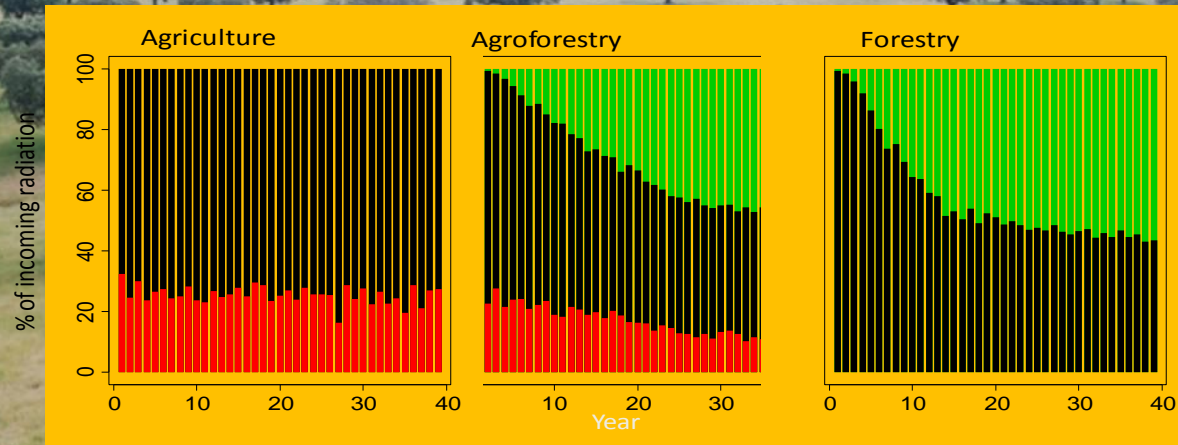
ECOINTENSIFICATE



Aboveground

Belowground

Aboveground level



Walnut
Wheat
Not used

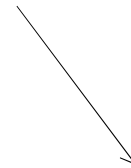
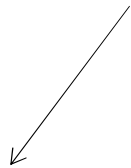
Dupraz and Liagre 2014

40% increase
(20-80%)

AGROFORESTRY

Best tool to

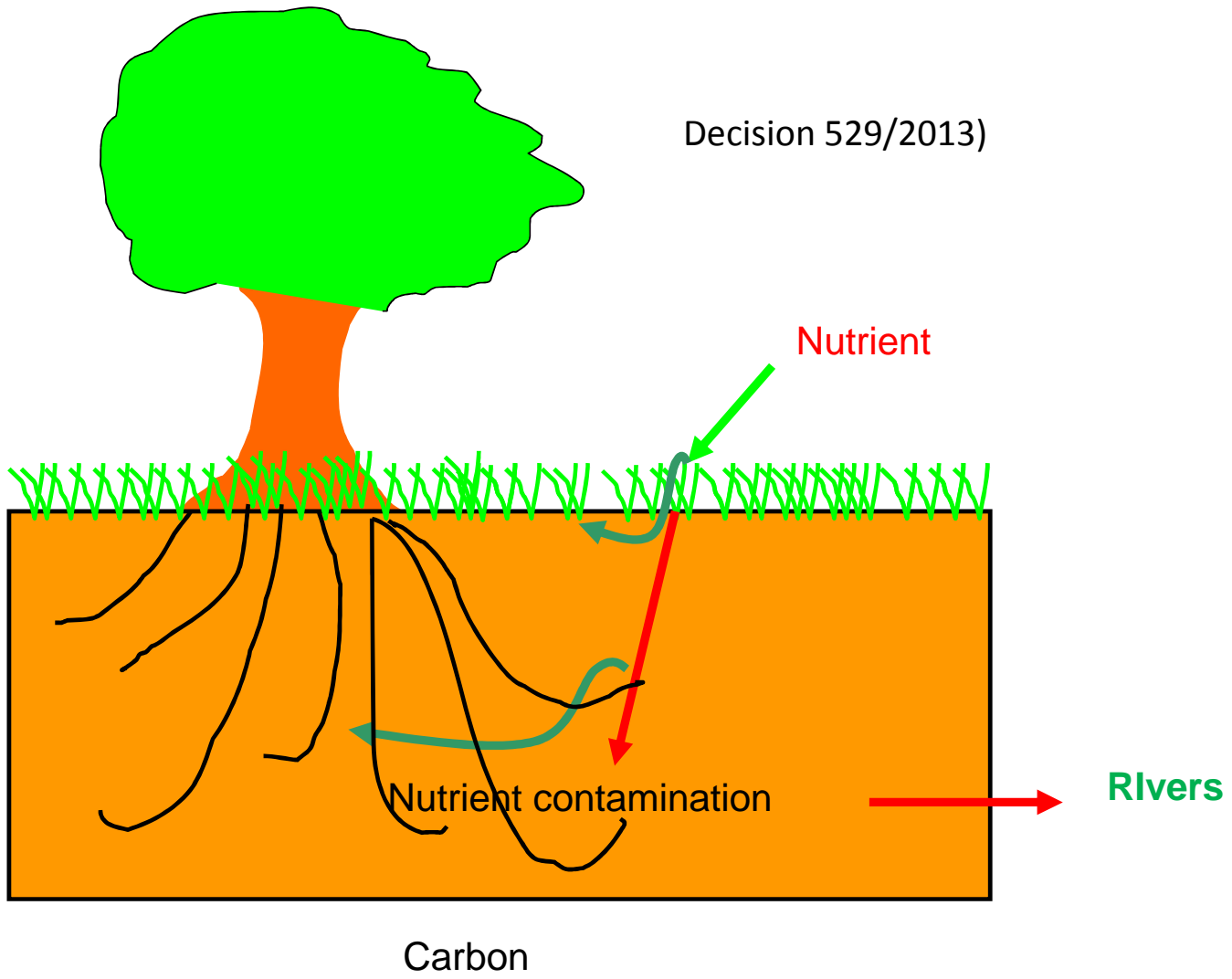
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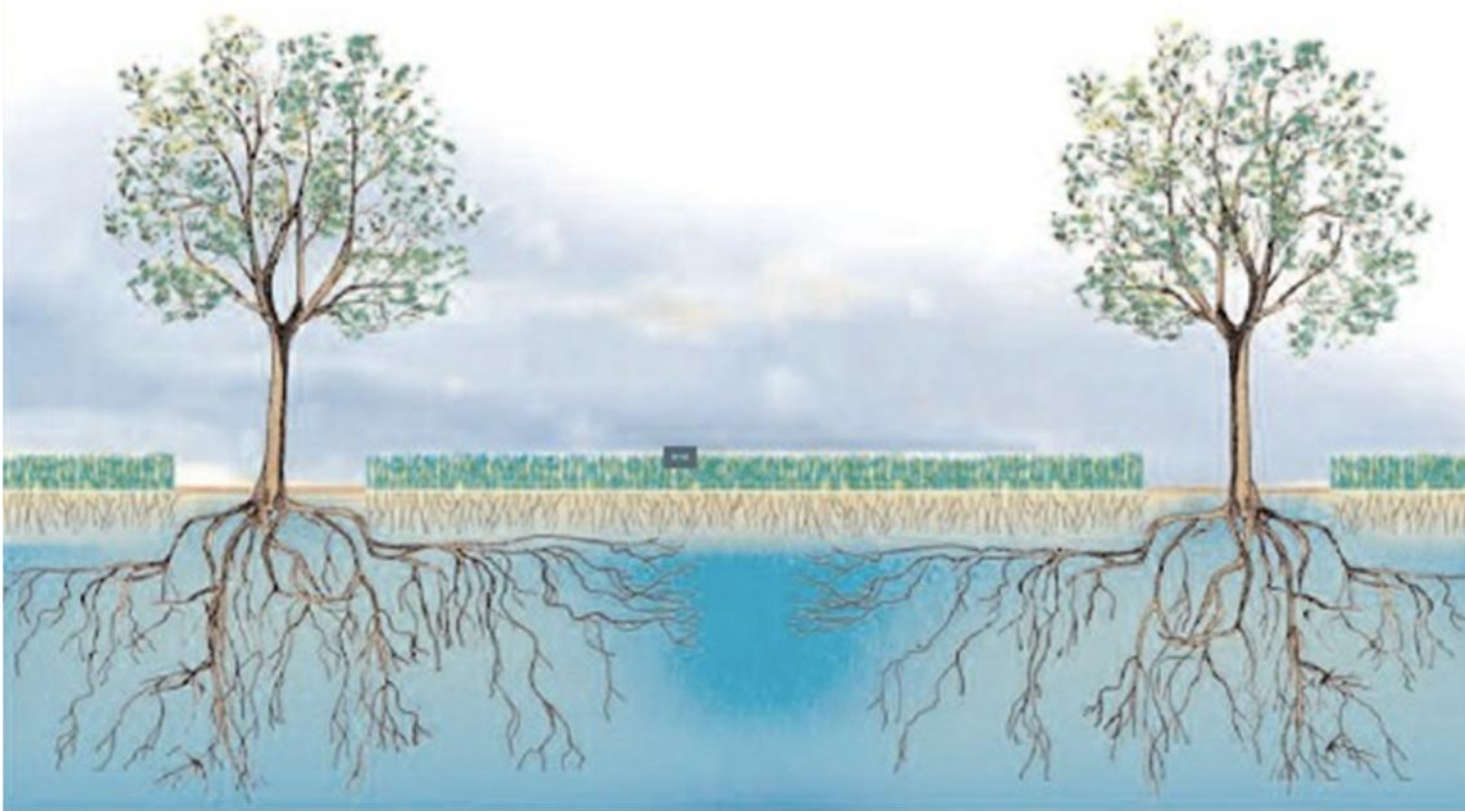


Aboveground

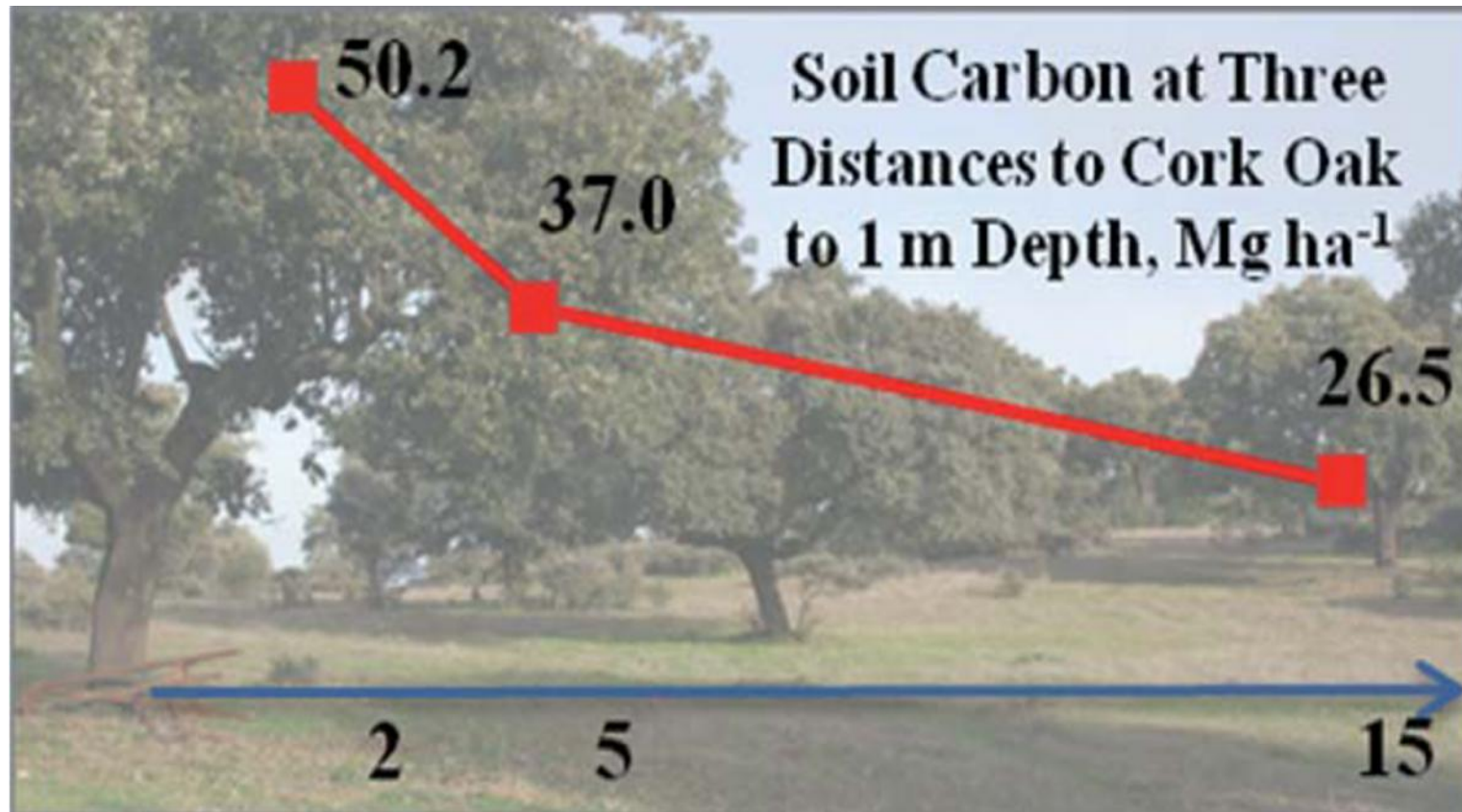
Belowground

Belowground level










Dupraz and Liagre


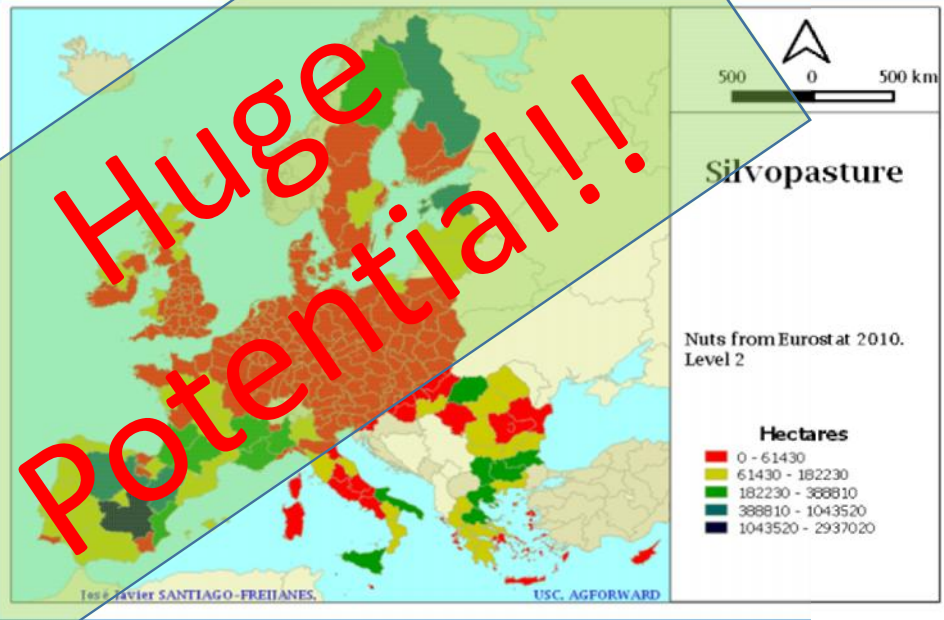


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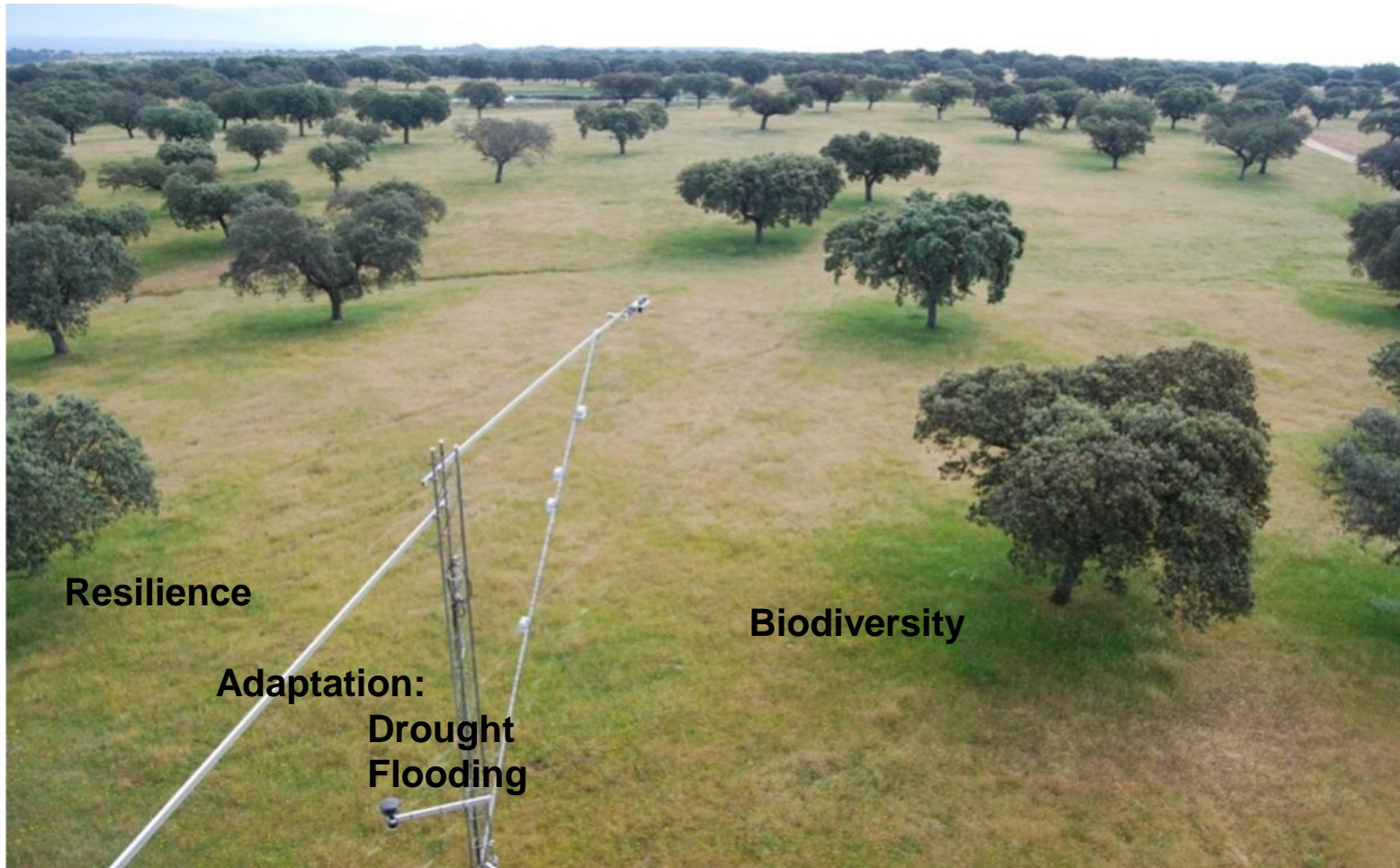
Agroforestry practice	Description	
<p>Silvopasture</p>		<p>Combining woody with forage and animal production. It comprises forest or woodland grazing and pastoral land with hedgerows, isolated/scattered trees or trees in lines or belts</p>
<p>Homegardens or kitchen gardens</p>		<p>Combining trees/shrubs with vegetable production in urban areas, also known as part of “trees outside the forest”</p>
<p>Riparian buffer strips</p>		<p>Strips of perennial vegetation (trees/shrubs) natural or planted between croplands/pastures and water sources such as streams, lakes, wetlands, and ponds to protect water quality. They can be combined with arable lands (silvoarable) or grasslands (silvopasture) but are signified by its role in preserving water streams</p>
<p>Silvoarable</p>		<p>Widely spaced woody vegetation inter-cropped with annual or perennial crops. Also known as alley cropping. Trees/shrubs can be distributed following an alley cropping, isolated/scattered trees, hedges and line belts design</p>
<p>Forest farming</p>		<p>Forested areas used for production or harvest of natural standing speciality crops for medicinal, ornamental or culinary uses, including those integrating forest and agricultural lands</p>

For grasslands.....

Woody vegetation reduce payments

Silvopasture	Brief description
 <p>19.5 Million ha</p> <p>10% EU potential area</p>	<p>Woody + forage and animal production</p>  <p>500 0 500 km</p> <p>Silvopasture</p> <p>Nuts from Eurostat 2010. Level 2</p> <p>Hectares</p> <ul style="list-style-type: none"> 0 - 61430 61430 - 182230 182230 - 388810 388810 - 1043520 1043520 - 2937020 <p>Iñaki SANTIAGO-FREIJANES</p> <p>USC, AGFORWARD</p>

EXTENDING GROWING SEASON



Resilience

Biodiversity

**Adaptation:
Drought
Flooding**

Moreno, UNEX, Spain

INCREASING ANIMAL WELFARE, REDUCING EMISSIONS



Paulo Amaral, ISA, Portugal

Avoiding costs and Carbon losses


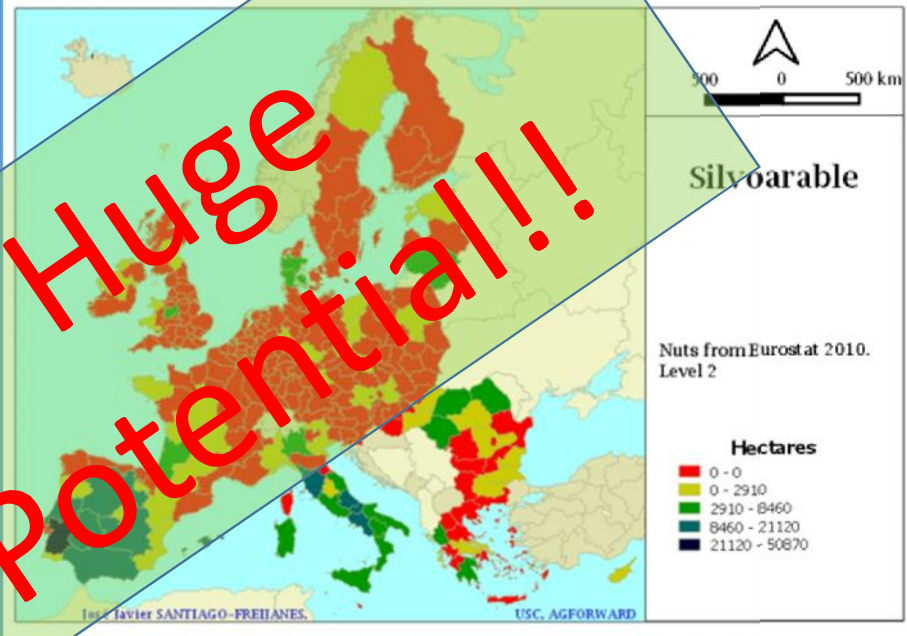


Rigueiro, USC, Spain



For arable lands.....

Tree maximum density of 100 trees per ha

Silvoarable	Brief description
 <p>422,250 hectares</p> <p>0,4 % EU Arable land</p> <p>USA: <1%</p>	<p>Woody + annual or perennial crops</p>  <p>Silvoarable</p> <p>Nuts from Eurostat 2010. Level 2</p> <p>Hectares</p> <ul style="list-style-type: none">0 - 00 - 29102910 - 84608460 - 2112021120 - 50870 <p>Iss: Javier SANTIAGO-FREIJANES.</p> <p>USC, AGFORWARD</p>



Dupraz, INRA, France



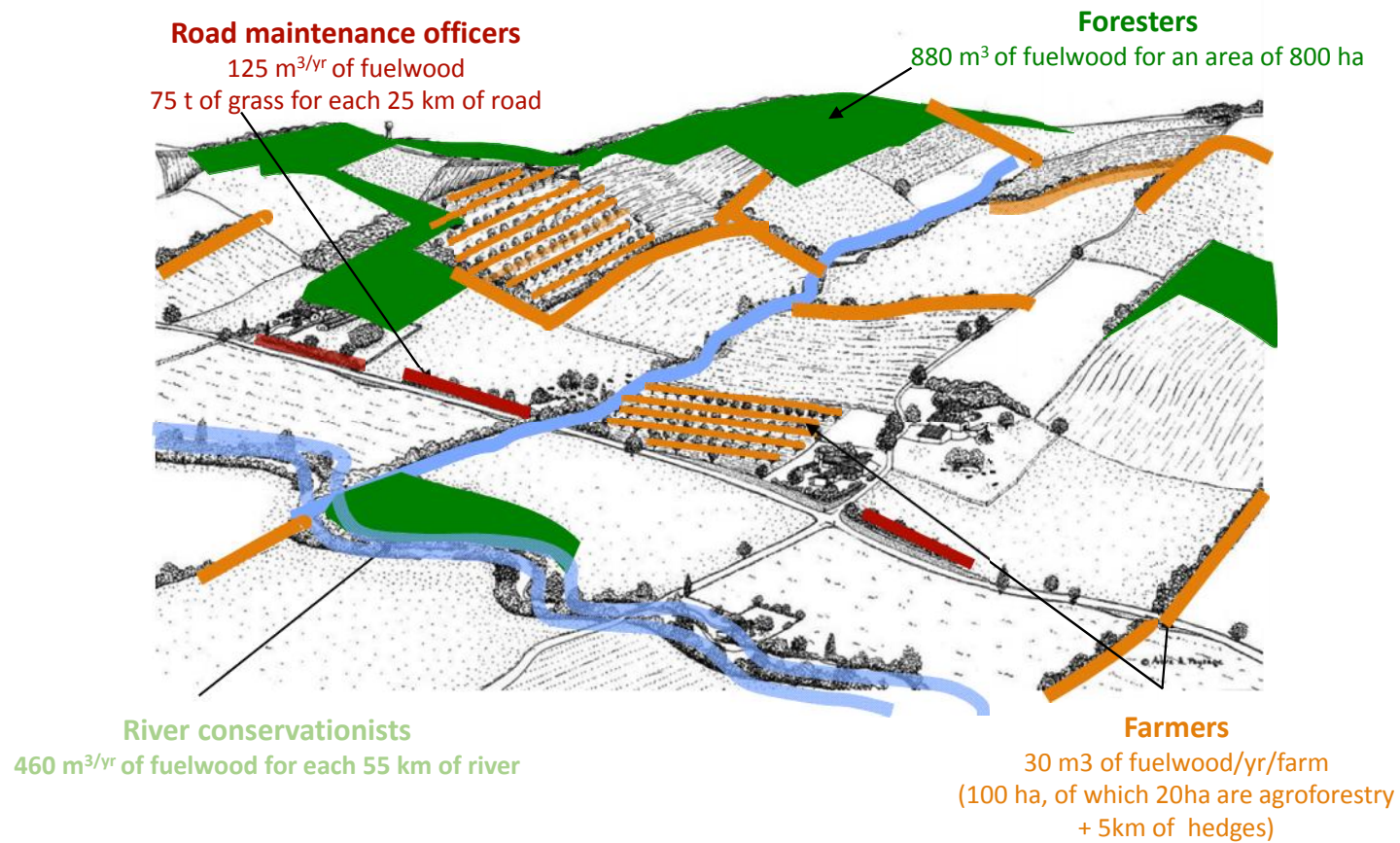
Mediterranean



Liagre, AGROOF, France

Agroforestry practices at landscape level

Ecosystem services delivery at landscape level



Canet and Balaguer, Arbre et Paysage, France



Пътно-защитен пояс от Цяр



Пътно-защитен пояс от Софора



Защитни пояси от различни дървесни видове



Защитни пояси край населени места, индустриални зони и пътища



РЕДОВИ ЗАЛЕСЯВАНИЯ



Редово залесяване от топола



Редово залесяване от черен бор край шосе



Общ вид на редови залесявания



Редово залесяване от топола край нива



Редово залесяване край канал



Редово залесяване от орех край шосе

Kachova, Bulgaria



Pisanelli, CNR, Italy

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