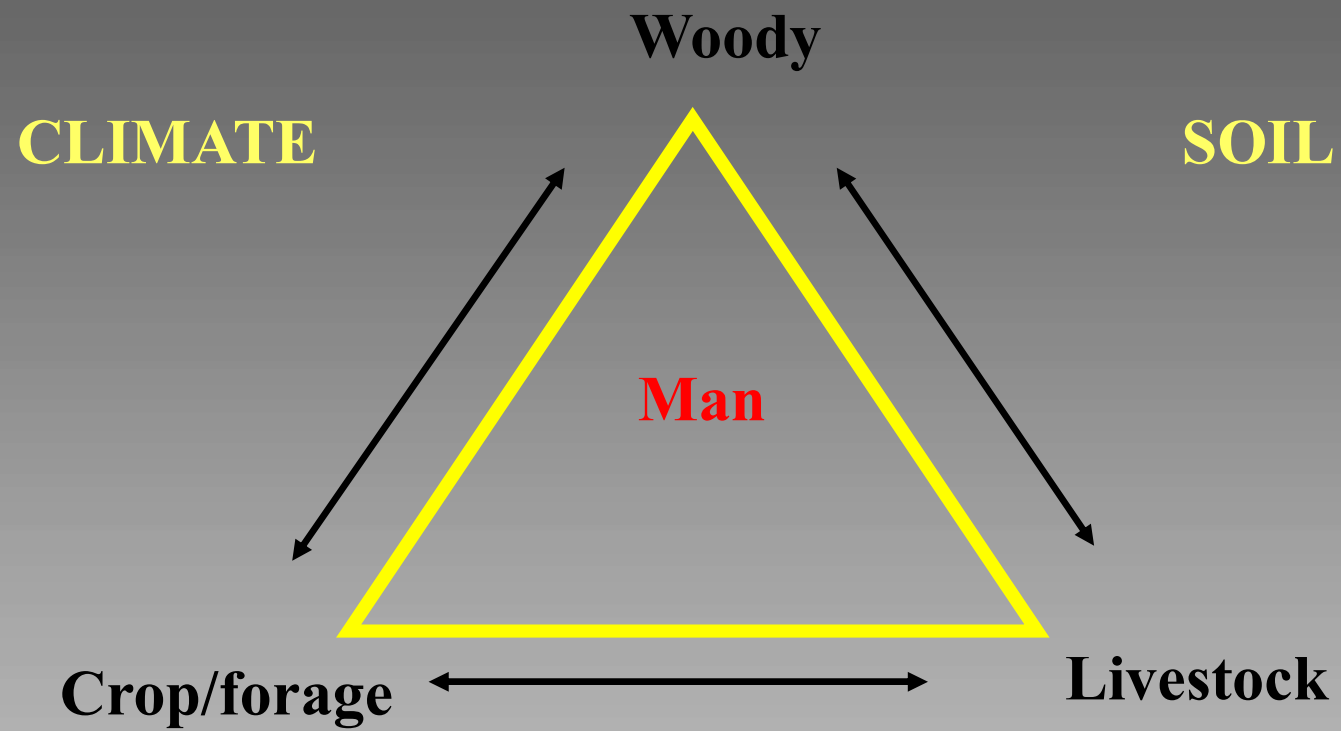


Agroforestry: a tool to increase sustainability in arable lands

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José Javier Santiago Freijanes

European Agroforestry Federation
Crop Production Department
University of Santiago de Compostela





Europe agriculture goal

Increase food production in a sustainable way

FAO

Agriculture firstly included in Climate Change issues (GACSA)

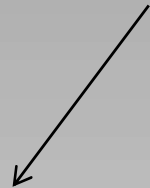
Improvement efficiency in the use of resources

ECOINTENSIFICATION

AGROFORESTRY

Best tool to

ECOINTENSIFICATE



Aboveground

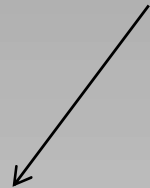


Belowground

AGROFORESTRY

Best tool to

ECOINTENSIFICATE

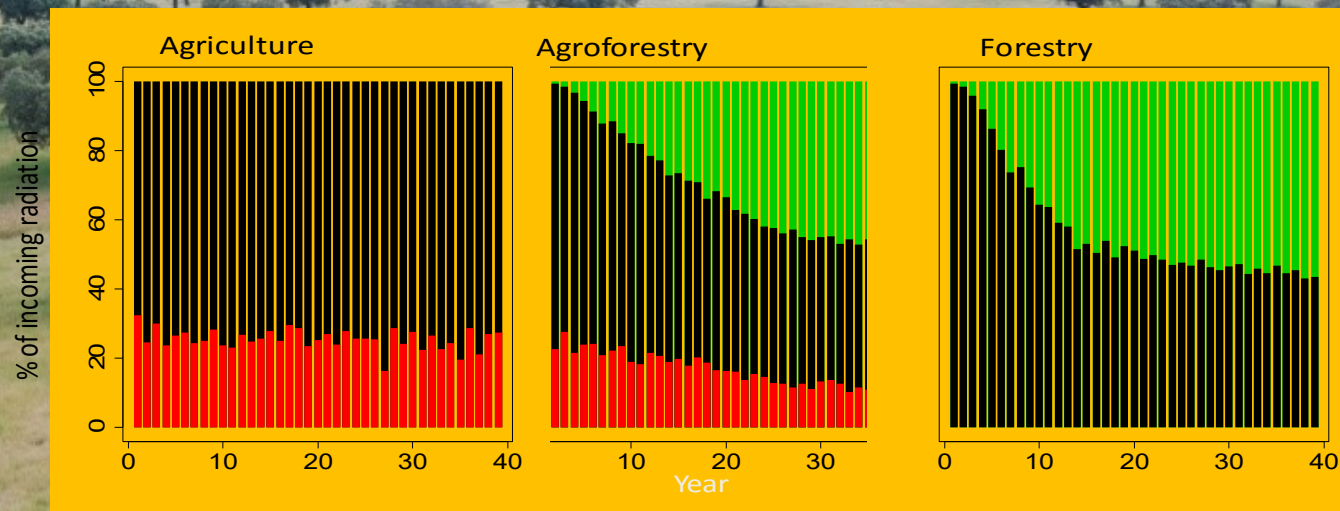


Aboveground



Belowground

Aboveground level

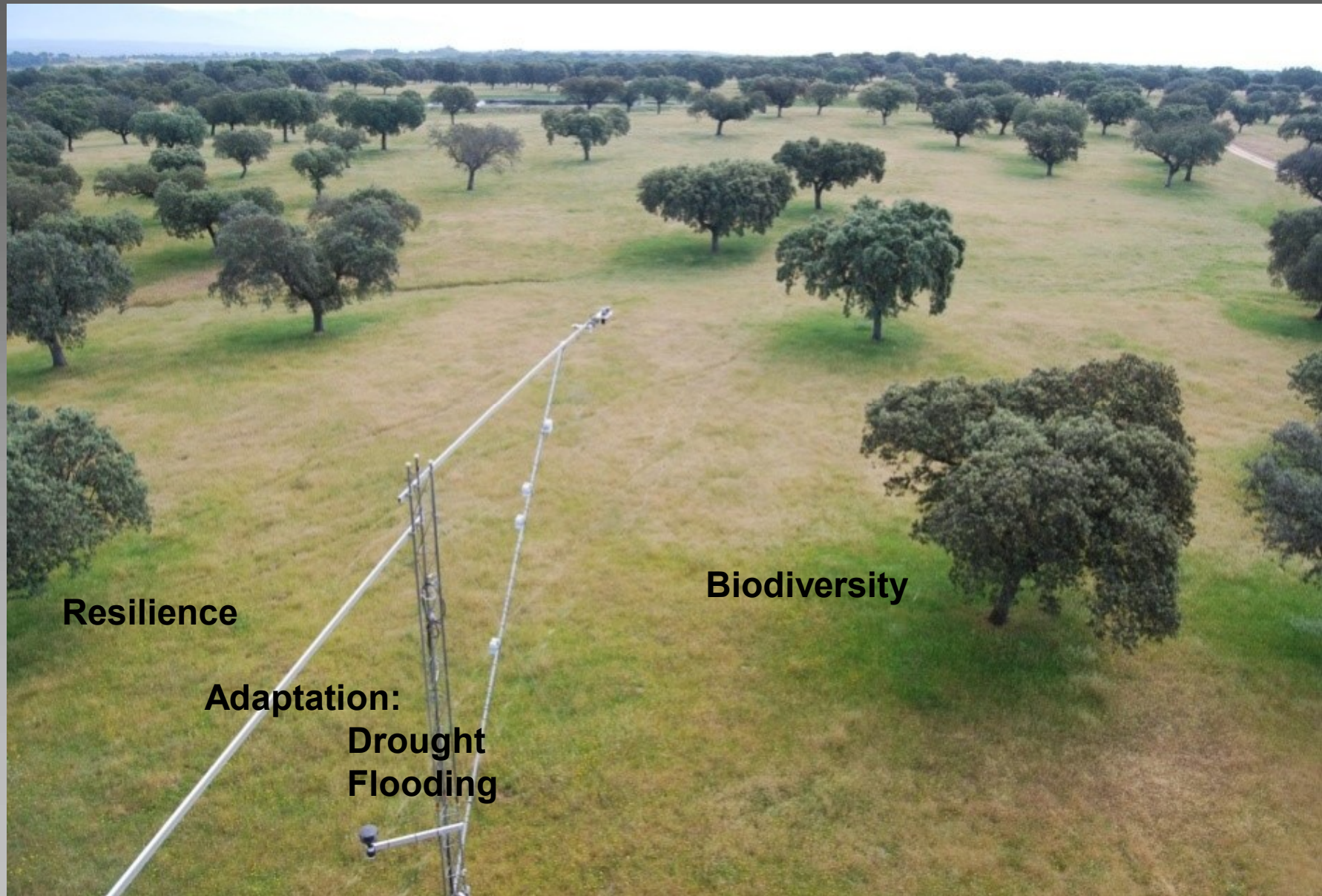


Walnut
Wheat
Not used

Dupraz and Liagre 2014

40% increase
(20-80%)

Aboveground level



Resilience

Biodiversity

**Adaptation:
Drought
Flooding**

Initial costs

Benefits

Compensated

Crop or Livestock Farm

Continuous

Not initially
compensated

Pruning, uncommercial and commercial thinning

Forest farm

Punctual
and Final

Compensated

Agroforestry farm

Continuous
and final

Increase up to 25% over Crop-Livestock farms

Profitability depends on: combination of crops



Tree lines

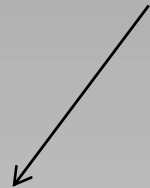


20% increasing crop production

AGROFORESTRY

Best tool to

ECOINTENSIFICATE



Aboveground

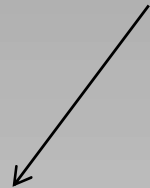


Belowground

AGROFORESTRY

Best tool to

ECOINTENSIFICATE



Aboveground



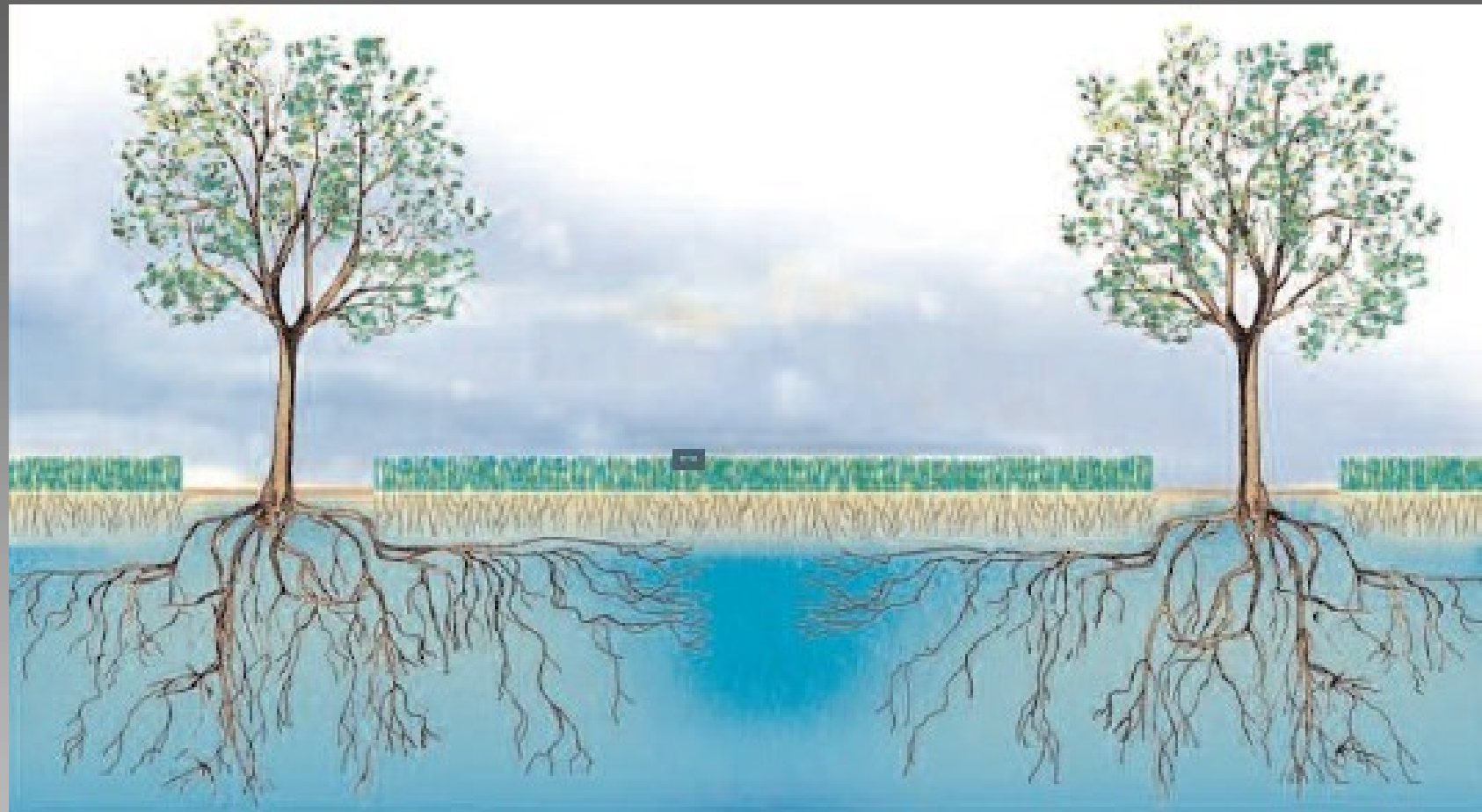
Belowground

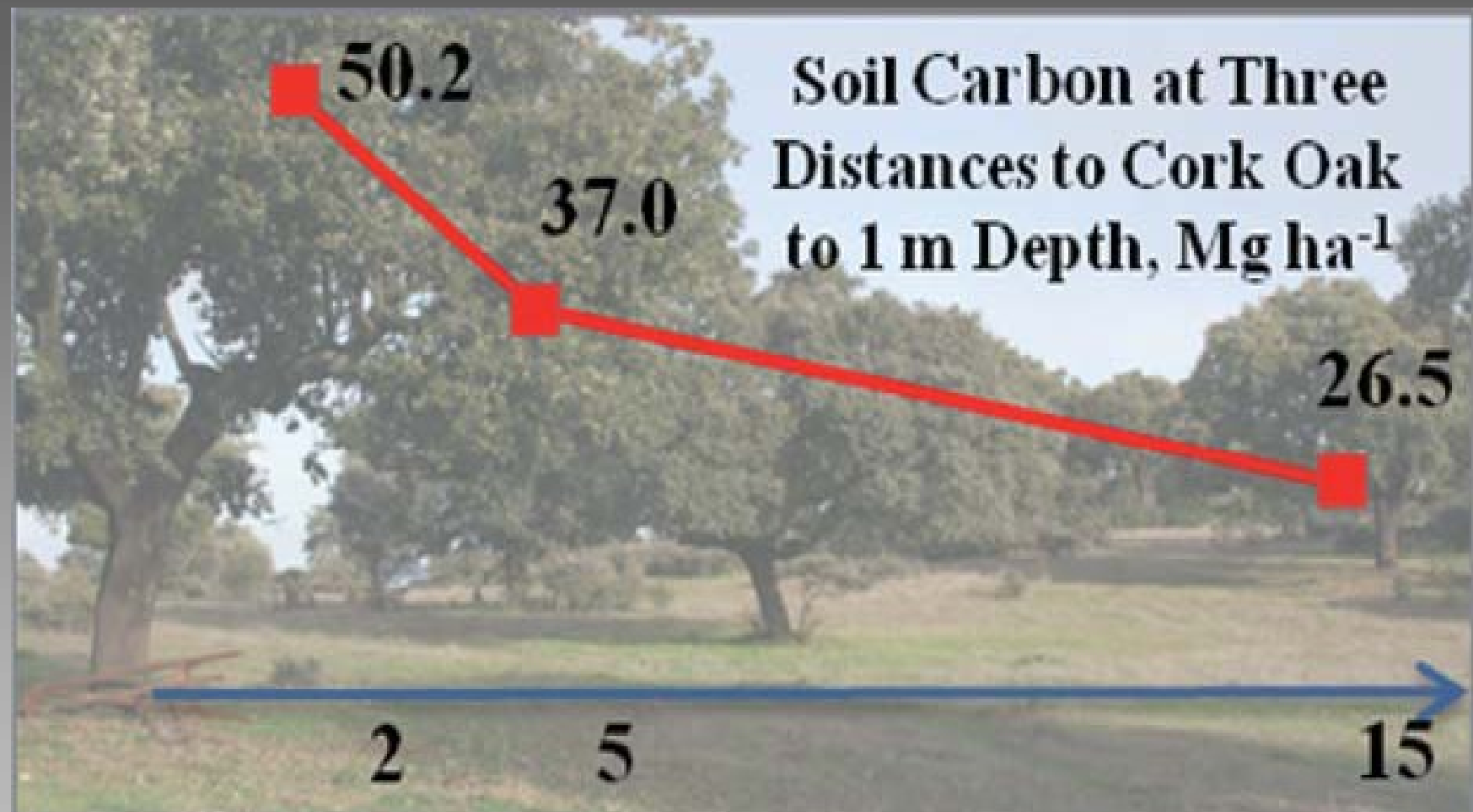
Belowground level



Rivers

Carbon





Agroforestry is an excellent tool to increase the use of resources at below and aboveground levels

Is this a tool extensively used in Europe?

Agroforestry practices

Silvopasture

Silvoarable

Kitchengardens

Forest Farming

Riparian buffer strips

Silvopasture

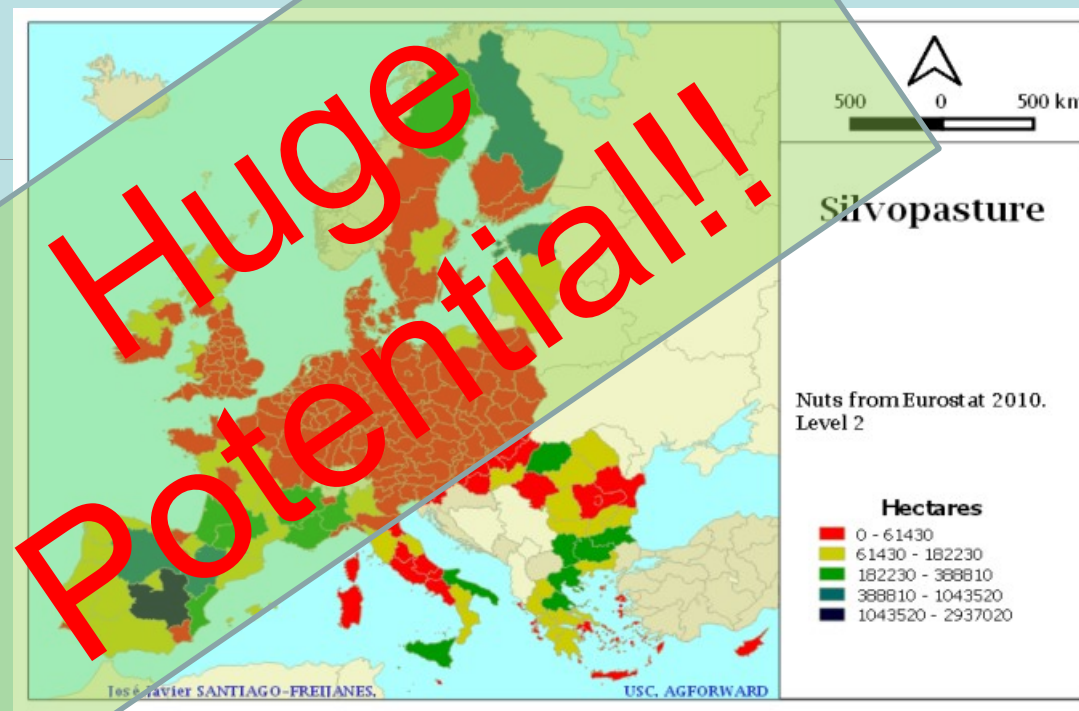
Brief description



Woody + forage and animal production

19.5 Million ha

10% EU potential area



Silvoarable

Brief description

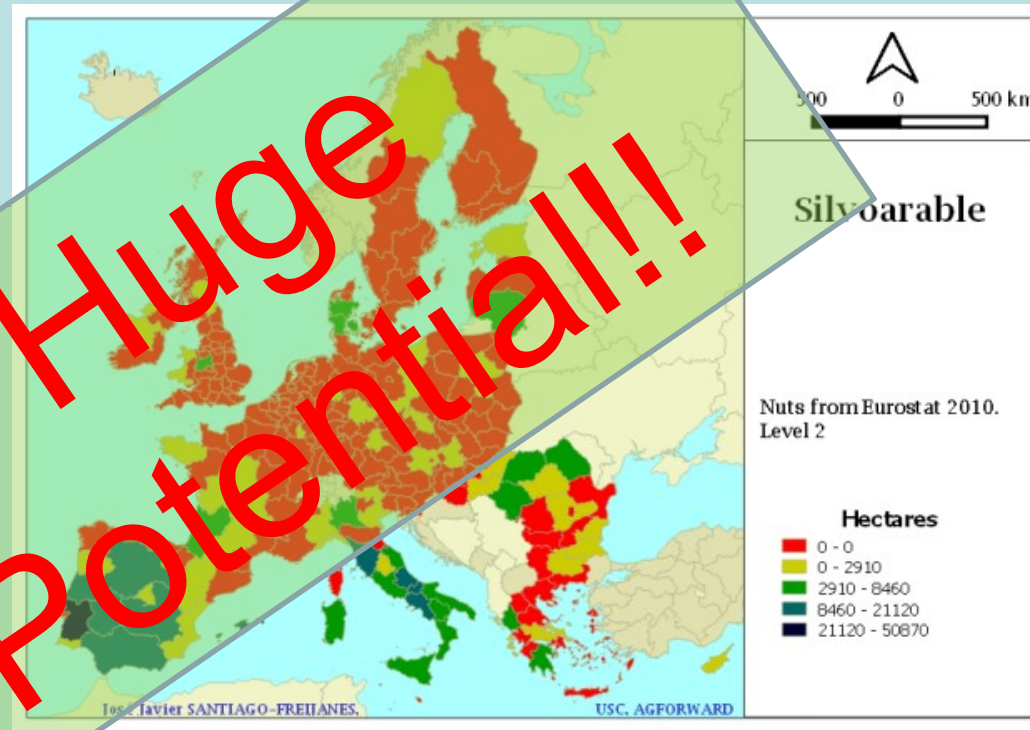


422,250 hectares

0,4 % EU Arable land

USA: <1%

Woody + annual or perennial crops



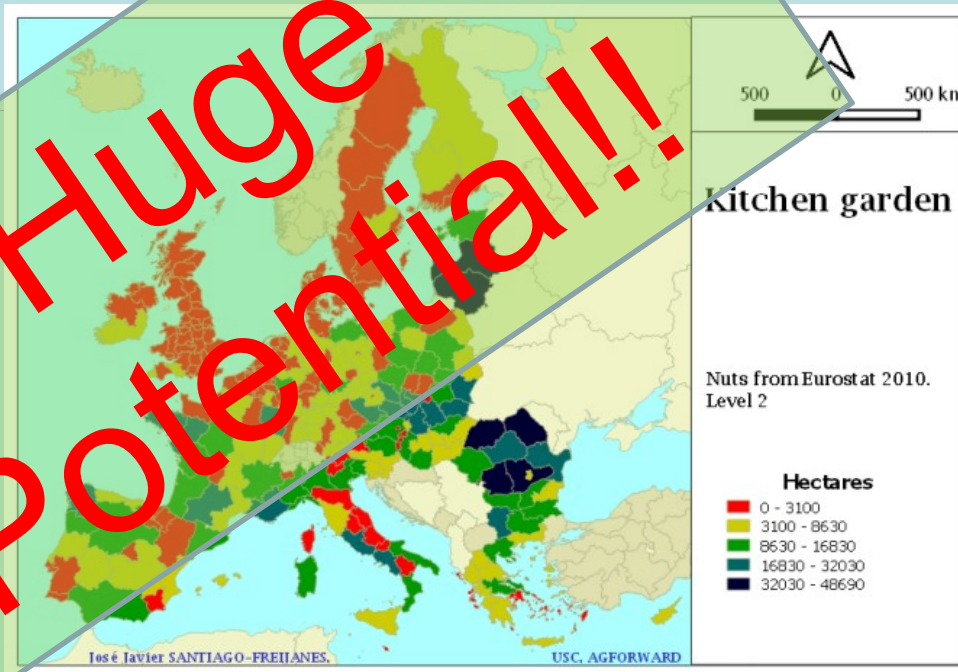
Kitchengardens

Brief description

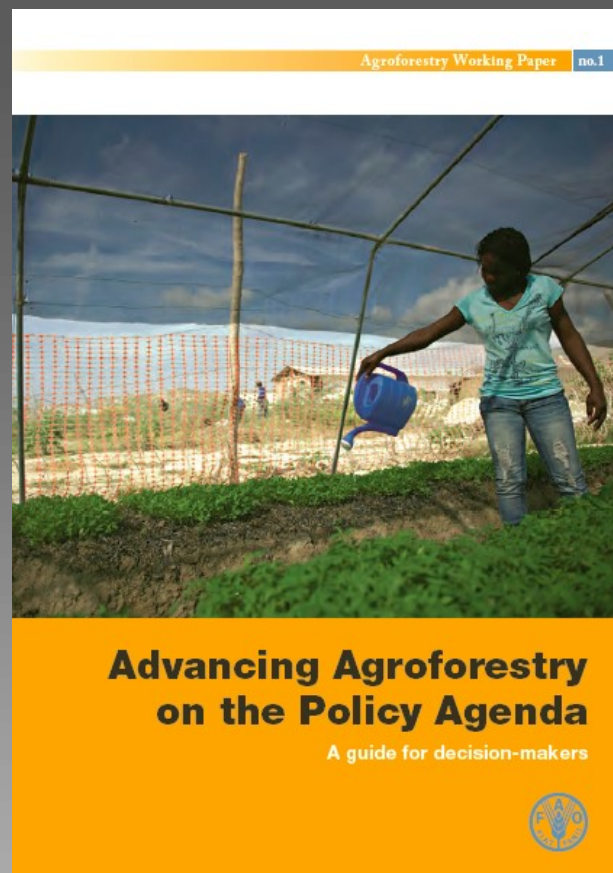
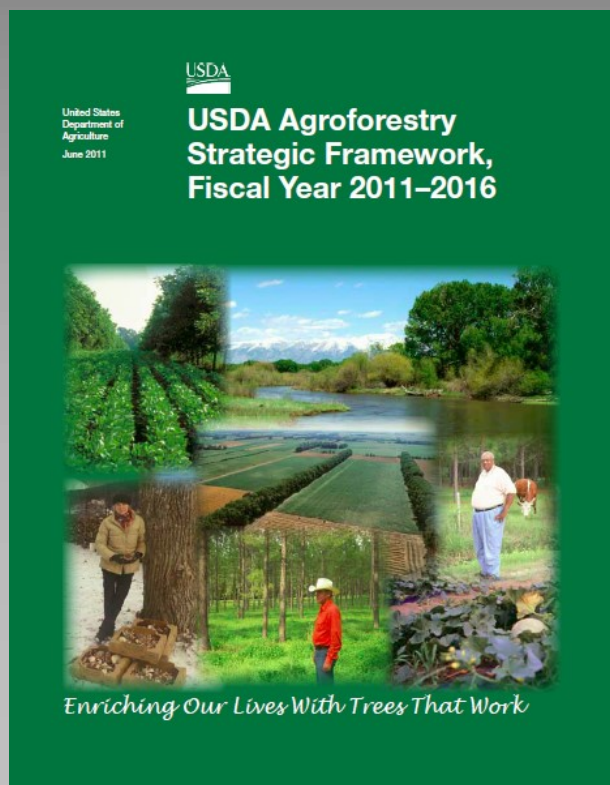


Trees + vegetable production in urban or periurban areas, also known as part of “trees outside the forest”

1.8 million ha
60% Agroforestry



LINKING BIOECONOMY//RURAL AND URBAN AREAS



French National Agroforestry Strategy

NATIONAL AGROFORESTRY POLICY

2014

GOVERNMENT OF INDIA
DEPARTMENT OF AGRICULTURE & COOPERATION
MINISTRY OF AGRICULTURE
NEW DELHI

Arable land

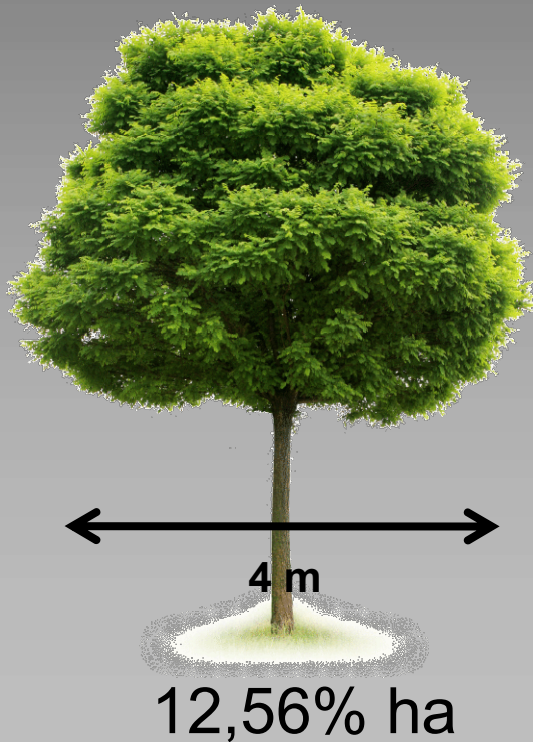
Policy

Eligibility limited by

* Regulation 1305/2013

* Delegate act 640/2014: 100 trees ha⁻¹

* Delegate act 639/2014: How are the trees known as Isolated trees

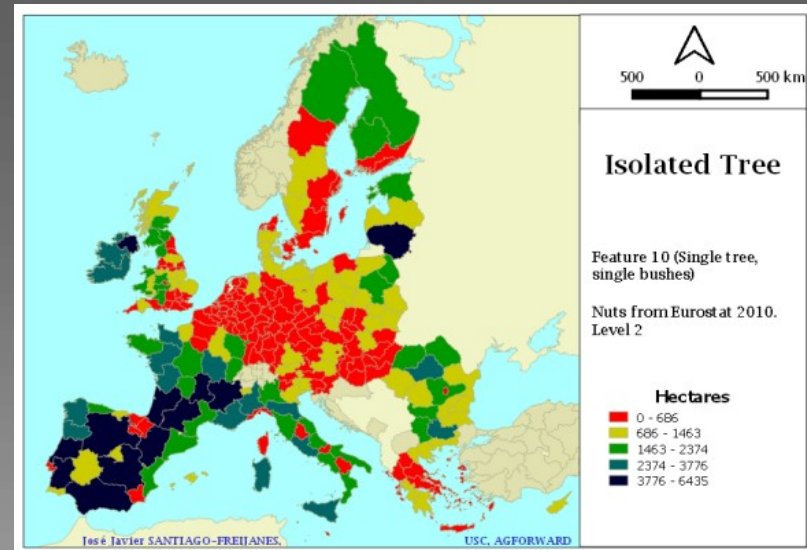
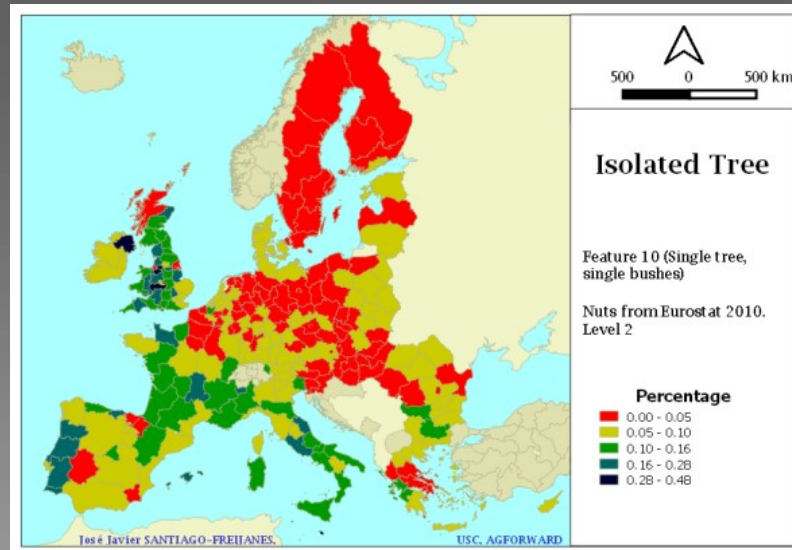


2 m x 10 m
ALREADY EXISTING

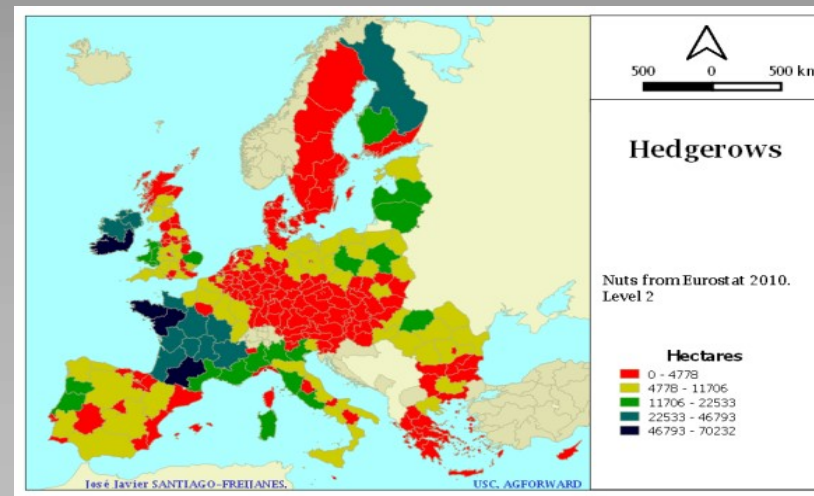
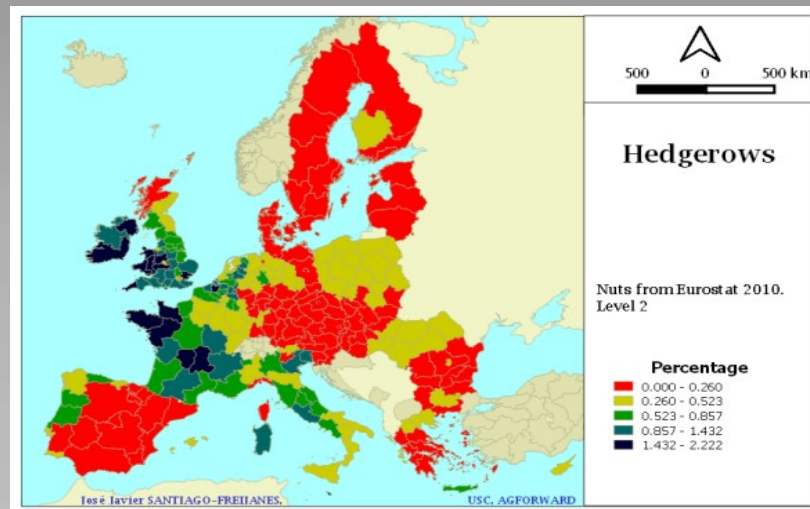


ARABLE LAND FEAR TO LOOSE DIRECT PAYMENTS

Isolated trees in Europe (300000 ha)

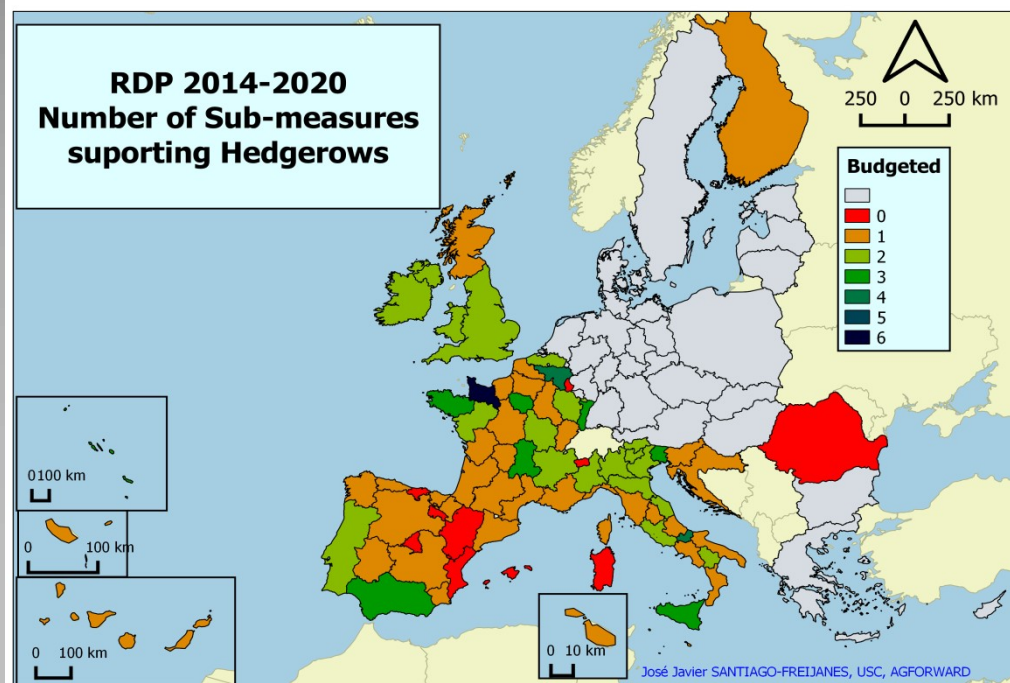
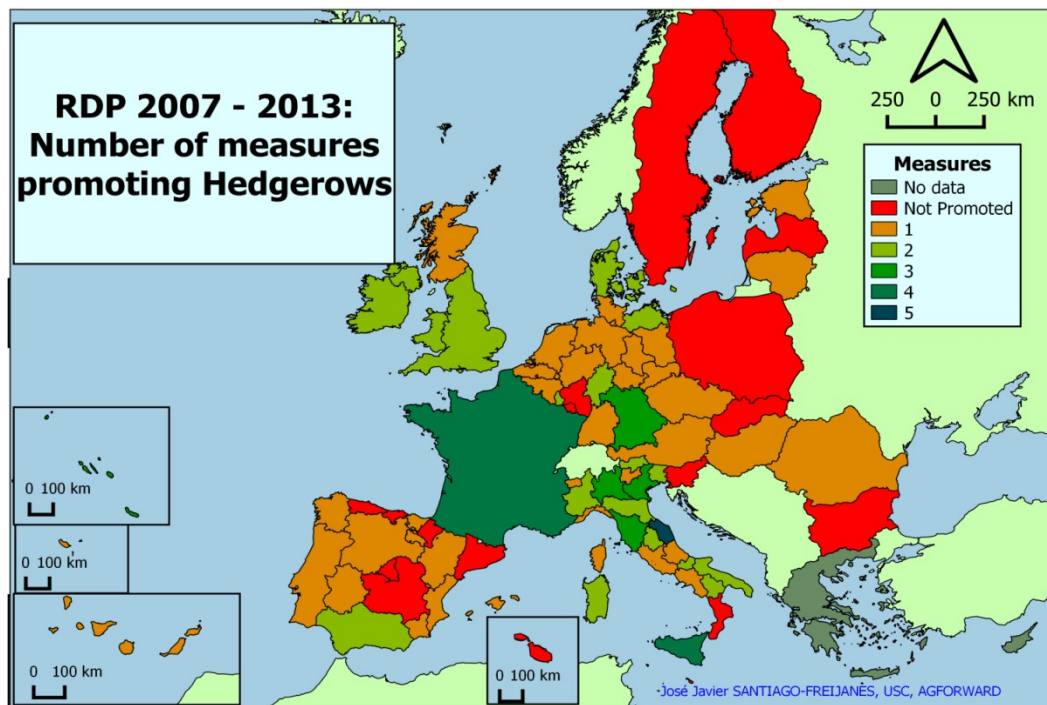


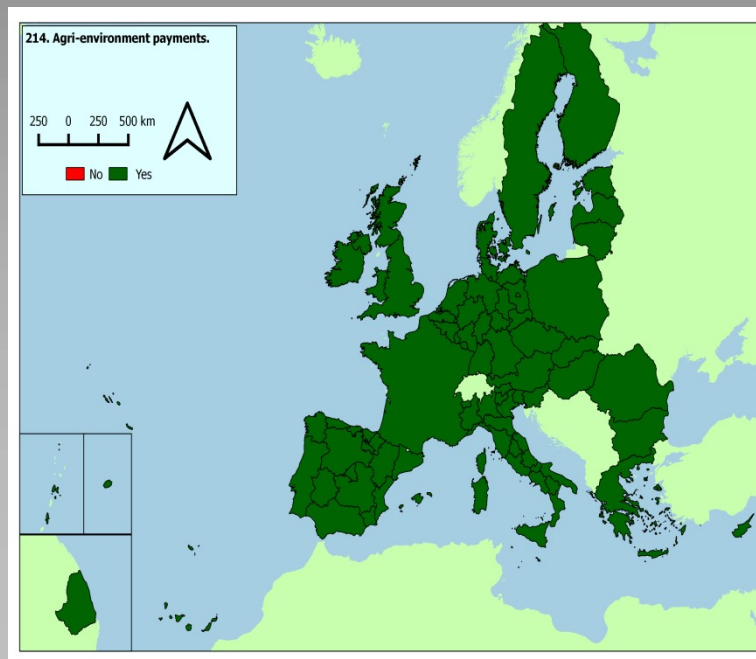
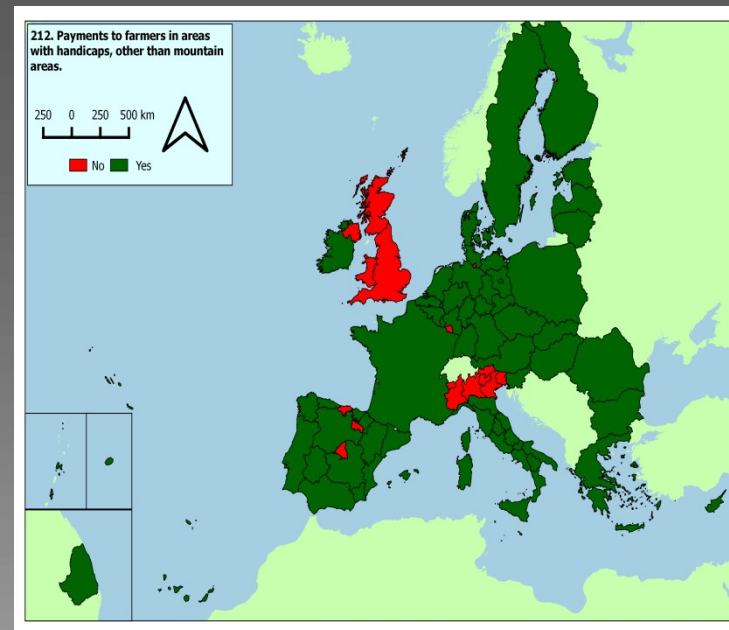
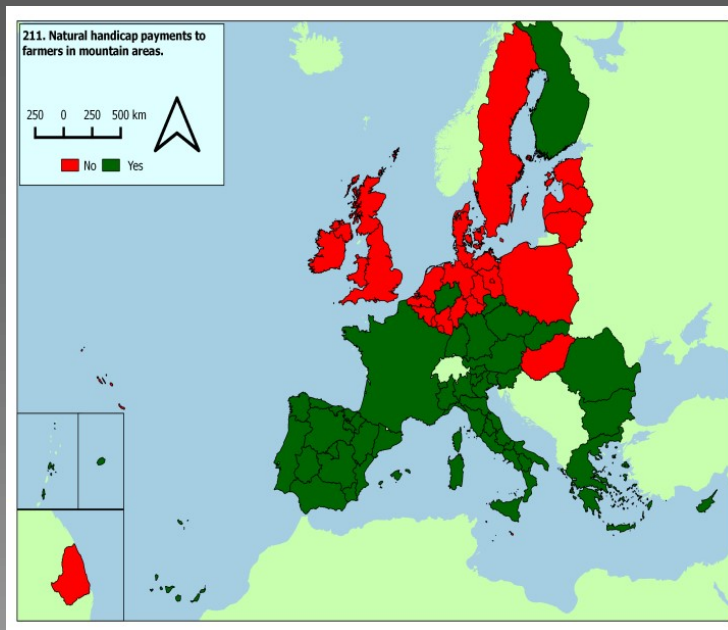
Hedgerows in Europe (Hedgerows)



CROSS COMPLIANCE

ELIGIBILITY





Measure 222

2007-2013

EU indicative measures that may be included in the information on LULUCF actions submitted pursuant to article 10(2)(d) (Decision 529/2013/EU) and may relate to Agroforestry

Measures related to	Examples
Cropland management	<ul style="list-style-type: none"> • Agroforestry
Grazing management and pasture improvement	<ul style="list-style-type: none"> • Preventing Grassland to Cropland conversion to native vegetation • Increasing productivity • Improving nutrient management • Introducing more appropriate species, in particular deep rooted species
Forest activities	<ul style="list-style-type: none"> • Afforestation and reforestation • Conservation of C in existing forest • Enhancing production in existing forests • Increasing harvested wood products • Enhancing forest management (optimize species composition, tending, thinning and soil conservation)
Preventing deforestation	
Strengthening protection against natural disturbances such as fire, pest and storms	
Substitution GHG intensive energy feedstock and materials with harvested wood products	

Conclusions

- * Agroforestry is an excellent tool to improve productivity per unit of land**
- * There is a good opportunity to mitigate and adapt to climate change and make agricultural systems more resilient by using Agroforestry**

Conclusions

***Adequate design of policies (research, learning, innovation) should be delivered in order to take advantage of Agroforestry practices to combat climate change (C increase, storage and stability)**

POLICIES

- Arable lands: agricultural activity linked to woody vegetation should be promoted:

Pillar I: tree maximum density should be left to MS accordingly their pedoclimatic conditions

Pillar II: Simplification when woody vegetation is promoted by RDP

Pillar II: Inconsistencies between Pillar I and Pillar II

Allowing to better evaluate results and impacts....

AGROFE: www.agrofe.eu

AGFORWARD: www.agroforestry.eu

AFINET: Agroforestry innovation network

Let's develop a European Agroforestry Strategy

Thanks!

mrosa.mosquera.losada@usc.es