

AGROFORESTRY SYSTEMS

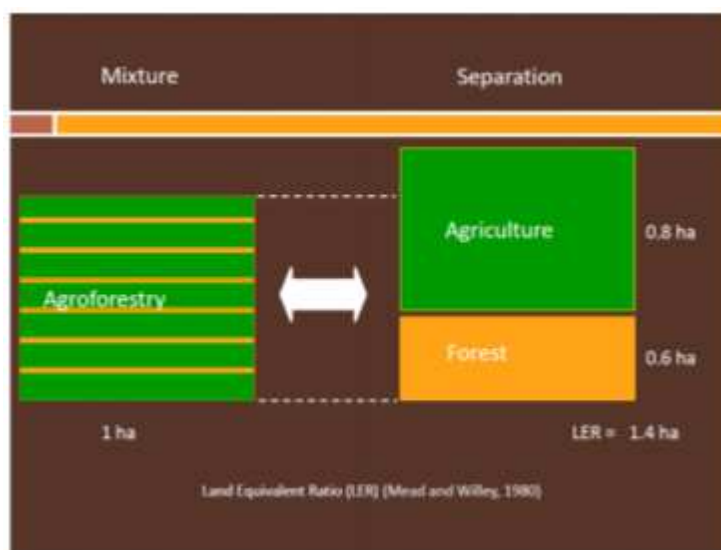
Combination of forest and agricultural uses at the same space and time



Foundation: synergies / facilitation between both productions:

- Trees help crops: lower wind speed (less crop transpiration), buffered extreme temperatures, organic matter contribution, trees host natural predators of agri pests, less wind and water erosion...
- Crop management helps trees: fertilization, absence of competition after crop harvesting...

As a result: well-designed agroforestry plots produce MORE than growing trees and crops separately:



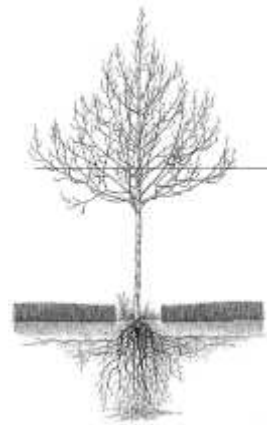
Dupraz, 2012

HOW? More effective use of resources: soil – water – nutrients – light

Trees and crops explore different soil layers and partially consume different nutrients

Trees and crops may utilize water sunlight at different moments (e.g. winter cereals + late-flushing trees)

Safe net scheme: tree roots below crop roots

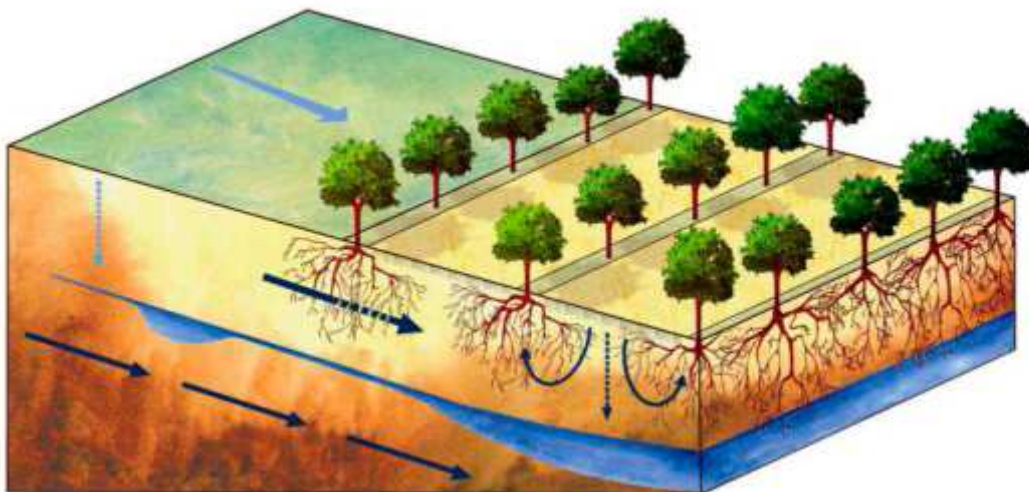


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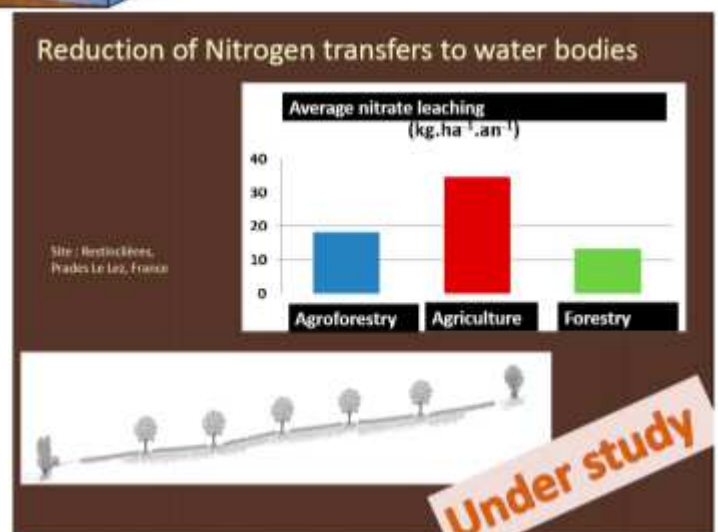
What about nitrogen leaching?

The safe-net effect allows trees harvesting all excess of nutrients and agricultural lixiviates...

i) Direct environmental benefit; ii) Increased tree production; iii) Part of the nutrients absorbed by the trees are given back as litter and organic matter → enhanced agricultural production



Dupraz, 2012



Versatility of agroforestry systems...



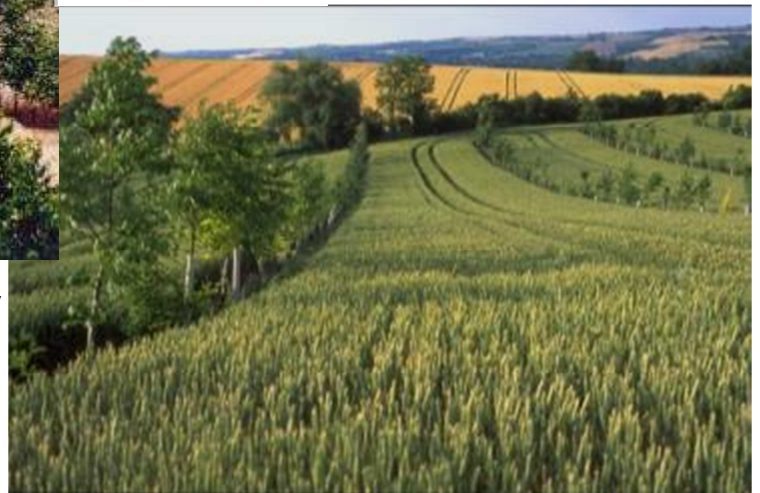
Colza



Maize



Wheat / barley



© Agroof



Tobacco



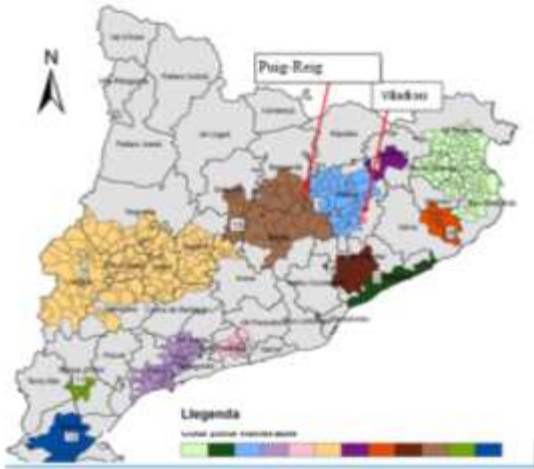
Aromatic / medicinal plants



Fodder

Agroforestry systems in “Futur Agrari” project (Action B7)

Aim: to quantify the effect of nutrient surplus uptake by different alley cropping models in fields with high fertilization rates, in two field trials:



	Puig-Reig	Viladrau
	La Molina	La Vila
UTM coordinates	410350; 6468265	449493; 4631867
Mean altitude	470 m	884 m
Annual precipitation	670 mm	1024 mm
Mean annual temperature	12.8 °C	11.0 °C
Field area	2.0 ha	1.5 ha
Crop	Cereal	Fodder
Trees	Hybrid walnut (<i>Juglans x intermedia</i>) Mj209xRa Ash (<i>Fraxinus excelsior</i>)	

Field trials location within the nitrate vulnerable areas in Catalonia

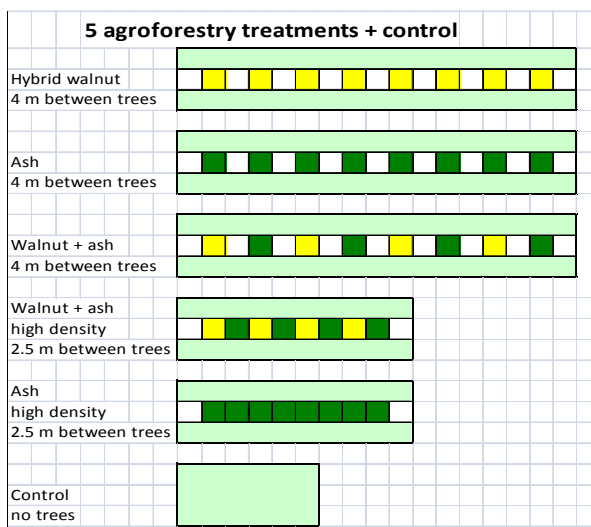


Puig-Reig

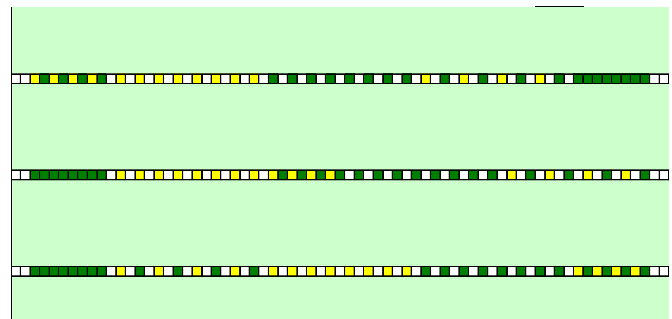


Viladrau

Experimental design:



Experimental design replicated 3 times per trial



Contact: Jaime.coello@ctfc.es

Sustainable Forest Management Unit, Forest Sciences Centre of Catalonia

Ctra Sant Llorenç de Morunys Km 2 ES-25280 Solsona, Lleida (Spain) www.ctfc.cat