

# AGROFORESTRY

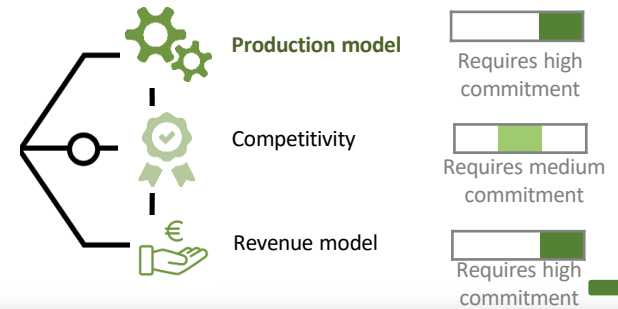
## What is agroforestry?

Agroforestry is the intentional integration of trees and shrubs into crop and animal farming systems to create environmental, economic, and social benefits.

## Why should you implement agroforestry?

Agroforestry allows to act positively on production factors such as water, soil, climate, biodiversity... For farmers, it is a diversification of products and income with fruits, fodder, the many uses of wood. The services provided by trees (anti-erosion actions, habitats and food for crop auxiliaries, landscapes, soil fertility and organic matter, litter resources, mulch, wood energy...) are perceptible in only a few years. Trees are also an excellent standing capital, which adds value to the farm.

Which impactful changes can agroforestry bring to your business model transformation?



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## What are the environmental and agronomic needs addressed by agroforestry?



Improve soil fertility and biodiversity



Improve soil structure and limit erosion



Reduce water stress

## What are the economic needs addressed by agroforestry?



Diversify productions of the farm



Ensure a complementary source of income in long term

## What are the key figures for agroforestry? \*

### AGRO-ENVIRONMENTAL IMPACTS

The overall productivity of agroforestry plots is higher than that of crop plots, up to **36% more biomass, and 60% more products sold**

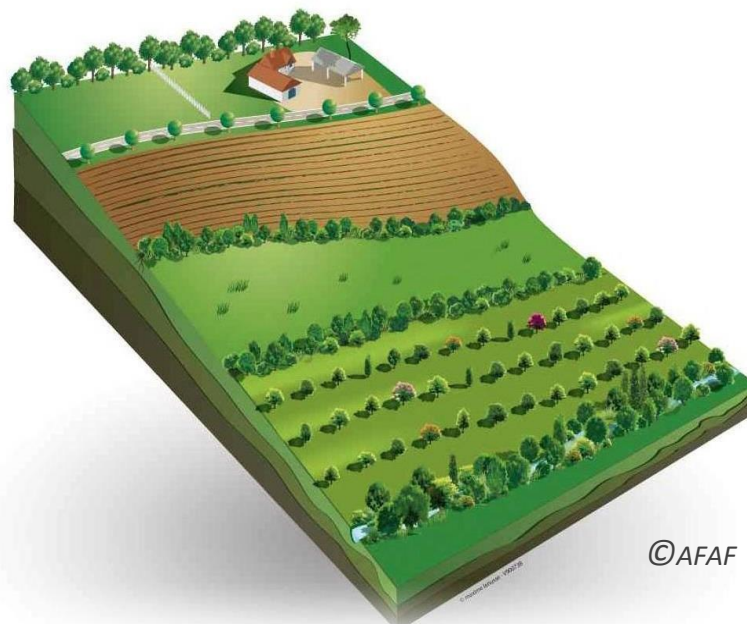
An average **increase in organic matter of about 50%**.

A **potential carbon storage between 0.1 and 1.35 tC/ha/year**

Many agroforestry models have been developed in the Mediterranean basin with a wide range of cultures: **cereals, vineyards, livestock, market gardening**

### SOCIAL IMPACTS

**The high social value of agroforestry was recognized at EU level in 2005.** Council Regulation on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) provided the first grant support for the creation of agroforestry systems due to their 'high ecological and social value'.



### ECONOMIC IMPACTS

A total investment estimated between **600 and 1 000€/ha** according to tree species **that can be covered from 50 to 80%** by support measures

An average annual return of:

- **380€/ha/year for hybrid walnut**
- **165€/ha for cultivated poplar**
- **67€/ha for cherry tree**

The **Internal Rate of Return (IRR)\*\*** varies from **1 to more than 7%** for a cultivated plantation in agroforestry, depending on the tree species. One of the main profitability parameters of these long-term investments is the number of years to obtain the desired tree size.

### POTENTIAL DEVELOPMENT

**65 million hectares (40% of Europe's arable land) suitable for agroforestry** for the following 4 tree species: walnut, cherry tree, poplar and oak

\*For a density of 50 trees per hectare

\*\* The "Internal Rate of Return" (or IRR) is an indicator of financial profitability. It is related to the concept of "net present value" (NPV) that corresponds to the discount rate that allows to obtain a zero net present value for the investment.

# How to implement an agroforestry system?



## On-farm issues

- 1 Decline in yields
- 2 Soil erosion problems
- 3 Commercial dependance
- 4 Polluted soils and water, pollution of catchment areas
- 5 Water consumption problems



## Field advice

“Thinking about your agroforestry project is not only a matter of anticipating the price of wood in 30 or 40 years. The agroforester must also think about the **place of trees in the functioning of his farm** and how it can help to respond globally to the limits of his current system.

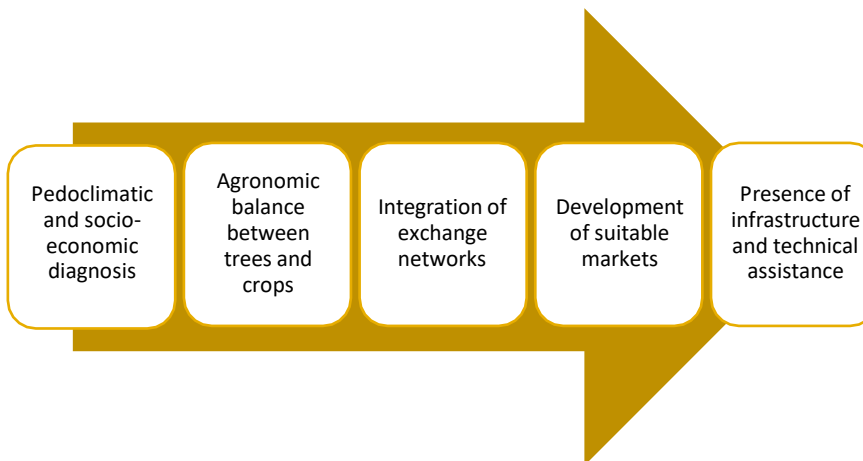
In concrete terms, **a project is set up in three stages**: a stage of pedoclimatic diagnosis (choice of species adapted to adapted to its plots), a stage of socio-economic diagnosis (to adapt the project to the to the operation of the farm and its evolution), and a stage of discussion on the main objectives of the project that will determine its structure (final selection of tree species, densities and spacing, mechanization, target area, etc.).

Each agroforestry project is unique. It responds to a specific situation and to personal objectives. Agroforestry is therefore not a recipe to be applied that you apply, but requires you to build your own project, with all the unknowns that this implies. It is therefore essential to **move forward in a network, to encourage the exchange of experiences between farmers and technicians**, within a framework of participatory research.”

Fabien Liagre (In ADEME, 2015)  
Co-founder of AFAC-Agroforestries



## Key steps to a successful implementation



## Impacts and benefits

- 1 Soil fertility and plant growth
- 2 Land restoration: reducing soil erosion and regulating water
- 3 Diversification of agricultural products
- 4 Reduction of water and soil pollution, biodiversity preservation
- 5 Resilience to weather shocks



## Points of attention

### Trophic competition' risk on short term

There may be competition **between certain types of trees and the crops planted** for space, and therefore for light, water and soil nutrients.

### Economic profitability on long-term

The **economic transition** towards an agroforestry system must be **accompanied by financial support** to ensure the viability of the farm during the transition.

### Technical improvements to be made

The modern version of agroforestry must consider the **requirements of its environment** (financial needs of the farmer, modern agricultural tools, etc.) to propose effective and adapted solutions.

## How to go further?



FOR MORE INFORMATION DOCUMENTS AND DATA	TO DISCUSS AND TEST PROJECTS, TOOLS AND NETWORKS	TO TAKE ACTION FUNDING SOURCES
<p><b>ADEME, 2015.</b> Reintegrating trees into agricultural systems to diversify production and strengthen ecosystems.</p> <p><b>Dupraz C, Liagre F. 2011.</b> Agroforesterie : des arbres et des cultures. Paris: Editions France Agricole, 414 p.</p> <p><b>FAO. 2017.</b> Agroforestry for landscape restoration: Exploring the potential of agroforestry to enhance the sustainability and resilience of degraded landscapes. Rome. <a href="https://doi.org/10.4060/i7374e">https://doi.org/10.4060/i7374e</a></p> <p><b>Jose, S. 2009.</b> Agroforestry for ecosystem services and environmental benefits: an overview. <i>Agroforestry Systems</i>, 76(1), 1–10. doi:10.1007/s10457-009-9229-7</p> <p><b>Mosquera-Losada, M. et al. 2018.</b> Agroforestry in Europe? A land management policy tool to combat climate change.</p> <p><b>Therville C., Antona M., De Foresta H. 2020.</b> The policyscape of agroforestry within Mediterranean protected landscapes in France. <i>Sustainability Science</i>, 15, n.spéc. Agroforestry for Sustainable Landscape Management: 1435-1448. <a href="https://doi.org/10.1007/s11625-020-00821-x">https://doi.org/10.1007/s11625-020-00821-x</a></p>	<p><b>LIVINGAGRO</b> is a cross-border project that addresses the challenge of knowledge and technological transfer in Mediterranean agriculture and forestry systems involving six organizations from four different countries (Italy, Greece, Lebanon and Jordan). It aims to achieve and share good practices for sustainable production, protecting biodiversity, enhancing transfer of innovation and increasing profitability for territories and main actors as well as stakeholders involved.</p> <p><b>AFINET</b> is a European thematic network that aims to support innovation in agroforestry by encouraging the transfer of knowledge between the different stakeholders in the development of agroforestry development.</p> <p><b>AGFOSY</b> is a European Erasmus + project to produce educational content for practitioners. It is based on the identification of good practices, drawn from concrete case studies, that will provide farmers with the skills and knowledge they need to implement agroforestry on their farms.</p> <p><b>AGR'EAU</b> is a project led by the French Association of Agroforestry in the Adour-Garonne Basin to propose generalizable practices combining the coverage of agricultural soils, the planting of trees and water management.</p>	<p><b>Pur Project:</b> Thanks to the financing of companies wishing to invest in their sector, on their territory and to compensate for their impact, Pur Projet finances and advises agroforestry and forestry projects carried out by farmers and foresters all over the world, particularly in the Mediterranean basin, through the "IciOnSème" program.</p> <p><b>CAP aid:</b> Agroforestry plots have been recognized as agricultural plots, thus benefiting from eligibility for CAP aid under the first and second pillars, within the limit of 200 trees per hectare. <b>European measure to support investment in agroforestry</b> (measure 222, article 44) allows financial support for the creation of agroforestry plots. The amount of aid can reach 80% of the installation costs. However, it only considers new plantations with an objective of wood production.</p> <p><b>Agroforestry on French territory program</b> is a program supported by the GoodPlanet foundation that allows to finance the planting of agroforestry trees in France.</p>