



Opportunities and policy needs to enhance agroforestry in France

Free-range laying hens in a desert apple orchard increases biodiversity, help managing grass growth, and add fertiliser. (Copyright ITAVI)

The many different agroforestry systems present in France

In France (European territories), we can observe two predominant agroforestry models: silvoarable (intercropping trees with field crops) and silvopastoralism (pastoralism in a partially wooded environment). Silvoarable agroforestry was commonly used in the past but was slowly abandoned for mechanisation and parcel size purposes. However, it is slowly re-implemented to increase productivity and to adapt agriculture to climate change. Silvopastoralism is commonly observed in poultry production to encourage animal exploration of the outdoor run to improve animal welfare and the image of free-range production. In other animal production (cattle, pork), agroforestry was less used. But like silvoarable agroforestry, silvopastoralism is currently being implemented more and more frequently to counter heat waves and their impact on animal welfare in a global warming context. Other less commonly used agroforestry models are growing but still represent a small fraction of agroforestry practises and received few political supports. Eco-pastoralism is a mixed farming cooperation of two farmers: a shepherd sending his animals grazing on a fruit-grower 'orchard' or vineyard. Finally, eco-pasturage consists of a shepherd sending his animals grazing in non-agricultural areas (rural like forests or urban like hospital/museum parks). These are a new emerging farming models which have yet to be developed further.

Policies contributing to agroforestry systems maintenance and development

Agroforestry systems have been encouraged by European, national and regional policies. Direct funding of agroforestry development has occurred mainly at a regional level. For example, in Rhône-Alpes region, through the poultry sector plan, seedling, plantation and protection equipment and advice was funded at 40% for implementing trees in poultry outdoor run. In the Nouvelle Aquitaine region, through the competitiveness plan, a rate of 16 € per seedling with protection was offered for the development of agroforestry on pastures (any type of animal production). At a national level, free-range 'Label Rouge' poultry production are obligated to have a certain amount/surface of trees in the outdoor run. Other policies do not fund directly implementation of agroforestry systems but intervene indirectly throughout more global environmental measures: aids conditioned throughout maintenance of areas of ecological interest (including trees and shrubs), carbon credits or ecological continuities in environmental management plans which can include implementing agroforestry systems. In the research sector, funding (European, national or regional) is being more and more oriented towards climate change including agroforestry systems. For example, in Auvergne-Rhône-Alpes region, 50% of research funding is oriented towards climate change.

Agroecological scenarios

TYFA (Ten Years for Agroecology) is an agroecological scenario for Europe in 2050 conducted by Iddri, a French institute, with an emphasis on climate challenges, that gives some clue for policy makers on the potential consequences on farming, food, environment via a modelling exercise. The hypothesis are fertility management at territory level, abandonment of pesticides, extensification of vegetal production and livestock production (organic agriculture as a reference), re-deploying of natural grasslands, adoption of food regimes more balanced on a healthy point of view. In this scenario, re-diversification of production systems and landscapes (including agroforestry and crop-livestock systems) are a cornerstone, but in combination with other agroecological practices.

In France, a plan for agroforestry was conducted during the period 2015-2020 to develop these practices. The different measures proposed are still relevant to be extended and will be a source of inspiration for the further recommendations.

Benefits and challenges of agroforestry systems

Benefits

Hedges and trees have many functions, economic and ecological. For the farmer, it leads to an economic diversification, providing a larger range of products. Trees and hedges can provide several agroecological benefits when considering the interactions with the crops or livestock. For the crops, it can improve soil fertility (by the roots and leaf-litter) and water and nutrients supply (thanks to the deep roots), leading to better productivity, moreover the auxiliaries hosted can provide biological pest control and consequently reduce phytosanitary treatments. For animal production, it can improve the animal welfare (by the shade provided and the wind reduction generated) and also the animal performances (the leaves can provide additional feed). For eco-pastoralism and eco-pasturage, these practises provide the shepherd with extra pasture land and in eco-pastoralism it helps the fruit/wine grower to control sodding in the orchard or contribute to landscape/green areas maintenance.

From an environmental point of view both systems can contribute to higher biodiversity (it creates a semi natural habitat that can provide a shelter for various species), climate change resilience (adaptation and mitigation), carbon storage, microclimatic regulation (wind breaker, cooler environment) water regulation (run off protection and floods control by soil conservation measures) and soil erosion control (by the soil cover). It can also contribute to forest fire prevention (less flammable material on the forest floor). For society, it contributes to societal services as maintenance of the rural landscape, aestheticism, and it can create related jobs.

Challenges

At the farmer level,

- Economic: cost of planting, long return on investment, economic viability not clear,
- Social: workload of maintenance of trees and hedges, administrative burden-work for funding access,
- Operational: mechanisation difficulties for intra-parcel AF and hedges,
- Psychological: in their mental representation/perception, trees are pretty but seen as unnecessary and complicated to handle,
- Cognitive: lack of knowledge and awareness on the local adapted practices and benefits of AF,

At the environment level

- Agricultural Knowledge Innovation System (AKIS): lack of research on adapted crops, lack of knowledge and local references on adapted systems (large diversity of forms of AF) and their performances (indicators of viability calculated generally on a single production and not systemically/globally), lack of extension services on AF, AKIS including extension and training organized in silo on animal production or on arable crops or on perennial crops,
- Policy funding: complex and heterogeneous access to funding (depending on the regions, all the measures are not activated),

- Regulatory: complexity of the framework (multi-layers), soil tenure, tree status and rights, securitisation of the relationships between owners and renters/leasers, fiscal measures,
- Conjunctural, during a sanitary crisis: difficult to project on poultry outdoors run, not the priority during influenza sanitary crisis;
- Animal health: free-range pigs need extra double-fencing to protect from wild boar, if present in the territory.

Recommendations for policy measures to develop agroforestry

The following recommendations are in part taken from the 'Plan de Developpement de l'agroforesterie 2015-2020', mainly at the environment level:

1. actionable knowledge production and dissemination (making it visible): R&I on shade varieties selection, local technico-economic references on adapted practices and validated benefits (factsheets), demonstration and promotion of good practices via pioneer farmers implementing AF in concrete real conditions,
2. education and training: training on observation capacity and local adaptation of AF practices,
3. extension / technical support: adaptation of the arguments to the different profile of farmers, viability indicators of mixed systems based on the interactions between the components of the systems, focus on collective advice, incitation to collective action (pooling human resources for maintenance of AF/hedges),
4. coordination between AKIS (Agricultural Knowledge Innovation System) actors on AF: national network,
5. political-regulatory-funding: accessible and simple, coherent between different policies, for example an incentive measure is currently lobbied at AuRA (Auvergne-Rhone-Alpes) region level for EU's CAP (Common Agricultural Policy) 2nd pillar that proposes an aid for the investment in planting AF-hedges at 80%-funding and the technical support organised in a collective format (less than 20% on the subvention total) to a group of AF farmers,
6. sector development support: economic valorisation of AF products, new sustainable local supply chains (label, brands, consumer understanding of the benefits of AF, etc.)
7. territory concertation: coherent strategy at territory level co-designed and concerted in a multi actor setting, consolidated climate energy territory plan (AF considered as a carbon measure), sustainable management plan,

References

- IDDRI (2018) An agroecological Europe in 2050: multifunctional agriculture for healthy eating
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