

# WE HAVE A DREAM: FOSTERING AGRICULTURAL TRANSITION TOWARDS AGROFORESTRY

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## Abstract

Agroforestry is a sustainable land use that involves a woody perennial component (tree or shrub) and an agricultural product that should be fostered across Europe. Fostering agricultural transition towards agroforestry is complex as it should be based on farmers, multipliers, policy makers and researchers. This paper shows the current opinions of farmers about challenges to be overcome to foster agroforestry in Europe in a description of the current situation based on the AGFORWARD and AFINET interviews. Main aspects coming from farmers are discussed such as the better understanding of the agroforestry definition and the tools provided by the European Commission to foster innovation including agroforestry. We finally end with a set of proposals provided by the European Agroforestry Federation (EURAF) thanks to the work within a large set of relevant stakeholders across Europe in the AGFORWARD framework.

**Keywords:** woody perennial; farmers; interviews; opinions; solutions

## The current situation

Many farmers and scientists have realized the advantages of using agroforestry practices all over the world, considering production enhancement but also ecosystem services delivery both linked to the fulfillment of the Sustainable Development Goals. Both scientists and farmers have shown that the adequate combination of a woody component with a lower story agricultural product increase land productivity and farm resilience. On the contrary, an unsuitable combination could reduce production mostly when the practices are not adapted to local conditions. However, the inertia of unsustainable intensive production systems is still deeply assumed by a lot of farmers grown with the idea that intensification is the way to go to feed the planet. Intensification is strongly based on the natural capital deployment of previously sustainably handled agricultural lands. This fertility deployment is initially compensated by the capacity of farmers to buy external inputs in developed countries, mainly explained by the different market and man-power prices we have in different parts of the world. However, and in spite of those inputs, intensification has lead, in many cases, to a land potential productivity deployment that can be directly associated to the reduction of soil organic matter and that finally reaches the status of degraded land. Anthropogenic activity has also become relevant in the

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Health and ecosystem services delivery from agricultural management has become also an issue for consumers and society in general that advocate policy makers to find adequate solutions able to combine increasing land production and farmer incomes while preserving the natural capital and providing ecosystem services and society claims.

## Understanding the problems: asking farmers

As a sustainable land use agroforestry should be fostered. However changes of land use are not usually easy, they should consider excellent and imaginative forms to enable a social

movement that, at the same time, should more profitable and showing a benefit for future harvests. The best form to understand problems linked to the agroforestry transition is asking those farmers. This is what has been done in the two last European Union Agroforestry projects: AGFORWARD and AFINET. Rois et al. (2017) pointed out that after asking 183 farmer interviews in 14 case study systems in eight European countries and a great diversity of agroforestry practices that one major problem is that farmers are not aware of the agroforestry term, despite implementing the practice in their own farms. While only few farmers mentioned eligibility for direct payments in the CAP as the main reason to remove trees from their land, to avoid the reduction of the funded area, the tradition in the family or the region, learning from others, and increasing the diversification of products play the most important role in adopting or not agroforestry systems. A more specific questionnaire and meetings was done within the AFINET project (Table 1).

Table 1: Overall summary of the survey results (ponderate mean) of the priority European bottlenecks/challenges (Respondents could give scores ranging from 1 (being not important at all) up to 6 (very important)) from 283 respondents. SP: Spain, BE: Belgium, PT: Portugal, PL: Poland, HU: Hungary, IT: Italy, FR: France, FI: Finland.

	SP	UK	BE	PT	PL	HU	IT	FR	FI	Mean
Improving Policy Support	5.7	5.1	3.8	5.0	5.3	5.6	5.1	4.8	4.9	5.37
Optimal Combinations	5.7	5.6	4.9	6.0	5.2	5.2	5.8	4.5	5.4	5.64
Practical guidelines	5.5	5.6	4.6	5.0	5.2	5.4	5.2	4.9	5.3	5.51
Informing consumers	5.5	4.9	4.5	5.0	5.2	5.4	5.6	4.3	4.6	5.27
Legislative uncertainty	5.4	4.9	4.6	5.0	5.0	5.5	5.1	5.1	4.9	5.27
cost/benefit insights	5.4	5.4	3.9	5.0	5.4	5.1	5.4	4.5	5.1	5.35
demonstration farms	5.3	5.4	4.2	5.0	5.4	5.5	5.6	4.3	5.6	5.44
Value chain	5.2	5.2	3.8	5.0		5.2	5.4	5.2	5.1	4.57

AFINET results from farmers are clear, they have 8 major concerns when thinking of agroforestry promotion in Europe. Technical issues are prevalent from those (optimal combinations, demonstration farms and practical guidelines) followed by improving policy support and legislative uncertainty. The cost benefit insights are also claimed as important and ending with the promotion of the products through the value chain. Differences between countries can also be appreciated in the table. Countries on which agroforestry intensification has been carried out in a smaller way such as Spain, Portugal, Poland, Italy and Hungary (with values above five) scored higher all problems than countries on which intensification was part of the strong modernization for a longer period of time (i.e. Belgium, UK and France with values below 5).

### Providing solutions: understanding what agroforestry is

One of the most important problems that agroforestry has to be fostered is the lack of knowledge by the huge majority of European stakeholders of a clear definition of what agroforestry is. The recognition of agroforestry is essential for farmers to move on specific questions such as techniques to be applied but also for policy makers to foster it in a specific way. Agroforestry is defined as a woody perennial (trees and/or shrubs) and an agricultural product always provided by the lower storey and in Europe recognized as part of the Annex 1 of the CAP. Agroforestry is a type of land use that can be applied in all types of land cover such as forest and agriculture (in Europe divided as arable land, permanent grassland and permanent crop) but also urban and peri-urban areas. Common mistakes regarding agroforestry definition is the lack of consideration of agroforestry when shrubs are combined with pasture or arable

crops in spite of the agreement of most of the world agroforestry associations (FAO 2015 and ICRAF 2017). Including shrubs as the unique woody component of agroforestry is key to simplify the inventory of agroforestry across Europe and the world due to (i) the lack of an harmonized of a tree definition among countries (for Europe it can be seen in the Annex 5 of the Decision 529/2013/EU) as some of them consider a tree as woody component above 2 meters and others above 5 meters (ii) the consideration of agroforestry of young forest lands (with trees below 2 meters height) (iii) the possibility of a shrub to reach heights over 3 or even 5 meters (iv) the different forms of cropping a tree (short rotation coppice could be below 2 meters and have aspect of a shrub), the possibility of some trees to grow below two meters when adults in some countries or altitudes due to the harsh weather conditions (v) the need of harmonize the agroforestry definition with institutions such as the FAO that provides definitions to international bodies such as United Nations and Intergovernmental Panel of Climate Change that are key for the carbon market balance (vi) the role played by a shrub is similar to that provided by a tree from a productive point of view: at least two products are delivered from the land (i.e. fuel wood, fruits from the woody component and the agricultural crop from the lower storey) and increases crop resilience against climate change and extreme weather events (vii) the role played by a shrub is similar to that provided by a tree from an environment point of view enhancing use of the resources (light, nutrients), increasing biodiversity and improving soils.

Agroforestry definition is also confusing due to the words that are part of its name as it includes “forestry”, but it is extensively accepted including by the FAO (2015) and ICRAF (2017) that any kind of fruit tree can be considered as a woody perennial and therefore when combined with the agricultural product from the lower storey it is also agroforestry, in spite that a fruit tree may be not a timber tree (a good exception is chestnut that has a dual purpose). The main reason for this is that the fruit tree can play the same role than the timber tree from a productive (i.e. fuel wood production) and environment point of view). Moreover, a lot of current forests such as the Black Forest were originated with the aim of providing feed (acorns) to the animals and not timber trees. It is especially relevant to consider fruit trees as the component of agroforestry and always combined with a lower storey agricultural production as permanent crops have no tree density limit to receive Pillar I payments.

### **Providing solutions: enabling transition environments**

Transition towards agroforestry extensively use should be lead by farmers helped by scientists to find technical solutions, by well formed advisors to foster knowledge and by policy makers providing enabling environments to allow farmers to extensively adopt agroforestry practices and systems across the world and therefore Europe. Farmers leadership of the transition should be catalyzed by social and technical experts and multipliers able to understand the main problems that farmers have to overcome agroforestry use barriers. EIP-Agri has indeed understood that agricultural transition towards more sustainable practices should be based in a bottom up approach, but also in the knowledge held by researchers and in the job carried out by advisory and extension services, multipliers and NGOs. On this regard, the EIP-Agri has initially provided three main tools to foster innovations towards a more sustainable agricultural practices and systems: Focus Groups, Thematic Networks and Operational Groups. On this regard agroforestry have had its own European Union focus groups, where the participation of 20% farmers, 20% multipliers, 20% farmers NGOs and 40 %scientists provided insights about the main challenges for agroforestry to be adopted. A set of nine minipapers dealing with technical issues (Practical tree knowledge on farm level, Tools for optimal design and management, Territorial landscape management), financial aspects (Financial impact of agroforestry, Added value of agroforestry), environment (Ecosystem services assessment in agroforestry, Agroforestry as a mitigation and adaptation tool), and education (Education in agroforestry, Databases on agroforestry) were show the global aspects that agroforestry have to fulfill. The second tool of the EIP-Agri dealing with the thematic networks also fosters agroforestry transition as a thematic network named “Agroforestry Innovation Network” with acronym AFINET which is one of the 17 thematic network approved in Europe. AFINET is based on the multiactor approach concept on which 9 RAINs placed in 9 different countries of Europe (Spain, Italy, Poland, Hungary, Portugal, UK, France, Belgium and Finland) have meetings with all needed actors (farmers, multipliers, researchers, policy makers) to understand the main challenges and problems why agroforestry is not extensively used in Mediterranean, Atlantic,

Continental and Boreal regions of Europe. Four simple group of problems and challenges were directly highlighted by farmers: technical, economical, communication and dissemination and political as can be seen in Villada et al. (2018). Next steps within the AFINET project will be to develop innovations that allow agroforestry to be better known and fostered across Europe, therefore favoring transition. The third important activity used by EIP-Agri to enhance innovation promotion across Europe is development the operational groups from which those related to agroforestry can be linked to the thematic network and that are currently funded by most of the 118 national and regional Rural Development Network. At international level, and as agroforestry is seen as part of the solution of increasing sustainable land use systems it is part of the agenda of international bodies related with climate change such as the Global Research Alliance and the Global Alliance for a Climate Smart Agriculture.

### **Providing solutions: EURAF proposals**

After a deep evaluation of the current agroforestry situation in the European Union, where it is clearly seen that most agroforestry practices and systems are placed in the South of Europe and that there agroforestry can be used in more than 90% of the European agricultural area (Mosquera-Losada et al. 2016, 2018a, 2018b; Santiago-Freijanes 2018a, 2018b) a set of policy solutions have been provided (Mosquera-Losada et al. 2017). Among them it is important to highlight again the lack of identification of the most of agroforestry practices across the CAP in spite of its promotion. The first recommendation is about simplification: Agroforestry clear recognition across the EU CAP is essential to identify and foster it in an adequate way and in a reduced number of measures. Silvoarable or silvopasture practices including hedgerows are part of the cross-compliance, greening and rural development measures, being money allocated to the same activities in these three sections depending on the country. This indeed makes difficult to evaluate agroforestry promotion in Europe and therefore to construct on previous policies. Another relevant suggestion deals with the promotion of agroforestry in the Pillar I, allocated to agricultural lands as far as at least one agricultural product (Annex 1 of the CAP) is delivered. Moreover, the fully recognition of agroforestry either if established or not under 222 (CAP 2007-2013) and 8.2 measures is essential to promote agroforestry within the greening. Agroforestry could be recognized with a management plan as it is a type of land use that last more than the CAP period. In Pillar II, a clear measure with all agroforestry practices linked to the different types of land use to foster agroforestry at land level. Moreover, aspects related to education, farm agroforestry systems promotion, ecosystem services agroforestry systems recognition, landscape agroforestry promotion and innovation, among others, are also key to promote agroforestry in Europe (Mosquera-Losada et al. 2016). AFINET will keep the job initiated in AGFORWARD helping the European Commission to foster agroforestry in the post 2020 CAP.

### **Conclusions**

Agroforestry is a sustainable land use system that should be fostered. Agroforestry transition should be lead by farmers helped by other key stakeholders. Farmers indicated that better knowledge and policies are needed to facilitate the transition from intensive to eointensive farming including agroforestry. European Commission through the EIP-Agri has provided a set of excellent tools to foster innovation including agroforestry innovation. Agroforesters of Europe will continue having a European voice thanks to AFINET and EURAF.

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