

eip-agri
AGRICULTURE & INNOVATION

EIP-AGRI Focus Group

Agroforestry: introducing woody vegetation into specialised crop and livestock systems

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List of abbreviations

| | |
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| AF | Agroforestry |
| C | Carbon |
| CAP | Common agricultural policy |
| EIP | European Innovation Partnership |
| ES | Ecosystem service |
| FG | Focus Group |
| GIS | Geographic information systems |
| MAES | Mapping and assessment of ecosystems and their services |
| MP | Mini-paper |
| PES | Payment for ecosystem services |
| RDP | Rural development programme |

1. Executive Summary

This report presents the findings of the EIP-AGRI Focus Group (FG) on 'Agroforestry: Integrating woody crops into specialised crop and livestock systems'. Agroforestry, here defined as *the practice of integrating woody vegetation with crops and/or livestock systems*, is a historical approach to farming that is being re-discovered. Agroforestry practices have the potential to be regenerative, improve and increase ecosystem services at the local and landscape level, and to improve farming productivity and profitability. These practices can be applied to create profitable systems, while capturing carbon, improving biodiversity, controlling erosion, and improving water resource management. Therefore, there is a growing interest in developing modern, viable agroforestry systems within the EU. The FG investigated challenges, opportunities, existing practices and ways forward to further develop agroforestry systems in Europe. The main question was: **How to develop agroforestry as a sustainable farming system which can boost agricultural productivity and profitability?**

The FG consisted of 20 experts from 15 EU countries with different professional backgrounds. The participants provided case studies of practical existing agroforestry systems as a base for the investigation. These were discussed thoroughly in the first meeting, leading to 9 main areas of interest to be developed into mini-papers (MP). The areas of interest were; [MP1](#) Organising added value of agroforestry, [MP2](#) Education in agroforestry, [MP3](#) Tools for optimal design and management, [MP4](#) Databases on agroforestry, [MP5](#) Practical tree knowledge on farm level, [MP6](#) Financial impact of agroforestry, [MP7](#) A territorial approach to agroforestry development: from theory to practice, [MP8](#) Important considerations and alternative approaches to assess ecosystem services in agroforestry systems, and, [MP9](#) Mitigation and adaptation agroforestry tools. At the second meeting the FG further developed the draft papers and discussed ways to move agroforestry forward within the EU. This work constitutes the basis for the final report.

Five examples of agroforestry systems are presented in this report; the sheep orchard, steep diverse production, chickens under the willows, shaping the landscape, and differentiation in the flatlands. All are examples of managing careful multidimensional design including above and below ground. The systems contain multiple species that all need to act in symbiotic ways with each other and the farm system. They are all dependent on the local context and though the basic intentions and starting points are similar, none of them look the same.

Even if the benefits of agroforestry are clear in the long run, the short-term transition of specialised crop and livestock systems to economically profitable agroforestry systems has its challenges. Key factors to enhance the increase of agroforestry in the EU agricultural landscape were identified:

- ▶ Available knowledge and skills
- ▶ A systems approach to farming, research and advice
- ▶ Understanding how to manage complexity
- ▶ Tools and knowledge for planning and design
- ▶ Room for continuous adaptation
- ▶ Knowledge of financial performance, benchmarking and cash flow
- ▶ Reaching the customer with goods and knowledge
- ▶ Establishment of agroforestry systems
- ▶ Available policy support
- ▶ How and what risks to manage
- ▶ Legal uncertainties
- ▶ Attitudes and support

These factors need to be improved or developed for and by farmers and other actors. Connected areas and questions where research, development and enabling innovation could move the establishment of agroforestry forward, were discussed and identified.

Ways forward

To address the key factors mentioned above as the Focus Group recommended to:

- Use systems and participatory approaches and methods which help all partners involved to better understand farm systems.
- Promote adequate learning and training through several means to reach all actors concerned.
- Provide relevant practical examples for learning purposes.
- Support design and decision making through networking, and structure information, guidelines and tools to make them easily accessible.
- Facilitate producer–consumer contacts and the communication of special values of agroforestry products.
- Adapt EU, national and regional laws and rules to ensure consistency and to allow the development of local best practices, and facilitate in-office management of agroforestry systems.
- Increase the inclusion of agroforestry approaches in support and incentives.
- Monitor agroforestry systems over time to assess changes and to make evaluation of performances possible.

The FG also suggested innovative actions and ideas for applied research and field testing involving farmers, advisers, industry and others. This included a number of potential topics for EIP-AGRI Operational Groups: smart practices to assess ecosystem services, sharing experiences and knowledge, optimal scales and landscape designs, creating agroforestry value chains, developing management guidelines of specific agroforestry systems and to see to the availability of lacking crop resources. The paper also contains a plentiful list of ideas for research and development projects connected to the mini-papers 1-9.

The FG also recommends the writing of “mini-manuals” showing practice-oriented step-by-step procedures to enable farmers to find the best context-specific practice. These manuals could cover topics such as: mix and distribute species, work with agroforestry on different scales in the landscape, improve water use, plan for pest management, measure carbon sequestration etc.

2. Introduction and brief description of the process

Agroforestry practices have a history as long as agriculture itself and have been applied throughout the world. However, in western modern agriculture, the term “agroforestry” is quite unknown. In its simplest explanation agroforestry is when agricultural practices include woody perennial crops and at least two branches of production (see example in Figure 1). For the purpose of this EIP- AGRI Focus Group agroforestry was defined as: *“The practice of integrating woody vegetation with crops and/or livestock systems to optimise the benefits from their ecological and economic interactions.”* As Nair (1993) points out this means that agroforestry systems are more complex than monoculture systems when it comes to structure, function and economy.

How can we develop agroforestry as a sustainable farming system which can boost agricultural productivity and profitability? An EIP-AGRI¹ Focus Group (FG) has identified, structured and developed possibilities and challenges following that question within this complex subject.



Figure 1: A silvo-arable agroforestry system including fruit, crop and fodder production



Figure 2: The Focus Group team at the first meeting in Melle, France

¹The European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI) was [launched by the European Commission](#) in 2012. It aims to foster a competitive and sustainable agriculture and forestry sector that “*achieves more from less*”. It contributes to ensuring a steady supply of food, feed and biomaterials, and to the sustainable management of the essential natural resources on which farming and forestry depend, working in harmony with the environment. To achieve this aim, the EIP-AGRI brings together innovation actors (farmers, advisors, researchers, businesses, NGOs, etc.) and helps to build bridges between research and practice.

The FG consists of 20 experts (see [Annex 1](#)) from 15 different EU countries and with different professional backgrounds. There are farmers, advisors, researchers and consultants coming from private businesses, universities, public authorities and other organisations. Based on cases provided by the participants, the group collectively explored four aspects of agroforestry production systems:

- a) What enables the establishment of agroforestry systems?
- b) What were the main challenges during establishment?
- c) What other factors are important in order to secure long term viability?
- d) Is anything else needed for agroforestry to be economically beneficial?

Based on the answers to these questions nine areas for further exploration in so called 'mini-papers' were decided on (figure 3a) and processed (figure 3b) together.



Figure 3a and b. Participants working on mini-papers at the first and second FG meeting

The list of resulting mini-papers can be found in [Annex 2](#) and [here](#) on the EIP-AGRI website. These, together with the discussion paper that started off the FG (Eksvärd 2016) provided the base for this final report.

3. Managing agroforestry: opportunities and challenges

3.1 Opportunities for the integration of woody vegetation into specialised farming systems

Historical agroforestry, a source of inspiration

All over the world there are countless examples of agricultural practices including trees. According to Nair (1993) the trees were historically there to support agriculture and the production of food. Different agroforestry systems have evolved over the course of time, place, means and goals but all build on enhancing symbiotic connectivity between the species to improve the use of the local resources. Agroforestry has been a source of fruits, crops, fodder, building materials, biomass for energy, fibre, crafting materials, spices, all kinds of animal products etc. (see examples in figure 4 and 5). Basically, any type of product or service that agriculture provides has been included.

According to the [AGFORWARD project](#) there are 15.4 million ha of agroforestry in Europe (den Herder et al. 2017). Even though the project noted that this amount may not be exactly correct and agroforestry area is very unevenly spread from one country to the next, it is clearly still important in Europe as 15.4 million ha represents almost 9% of EU agricultural land. Of these, 15.1 million hectares are different forms of livestock agroforestry and 358 000 ha are arable agroforestry (den Herder et al. 2017). The historical systems that still exist are a great source of inspiration to learn about interactions, symbioses and biodiversity in such systems. But modern systems may need to be more adapted to modern life and appropriate mechanisation and technologies, including digitalisation.

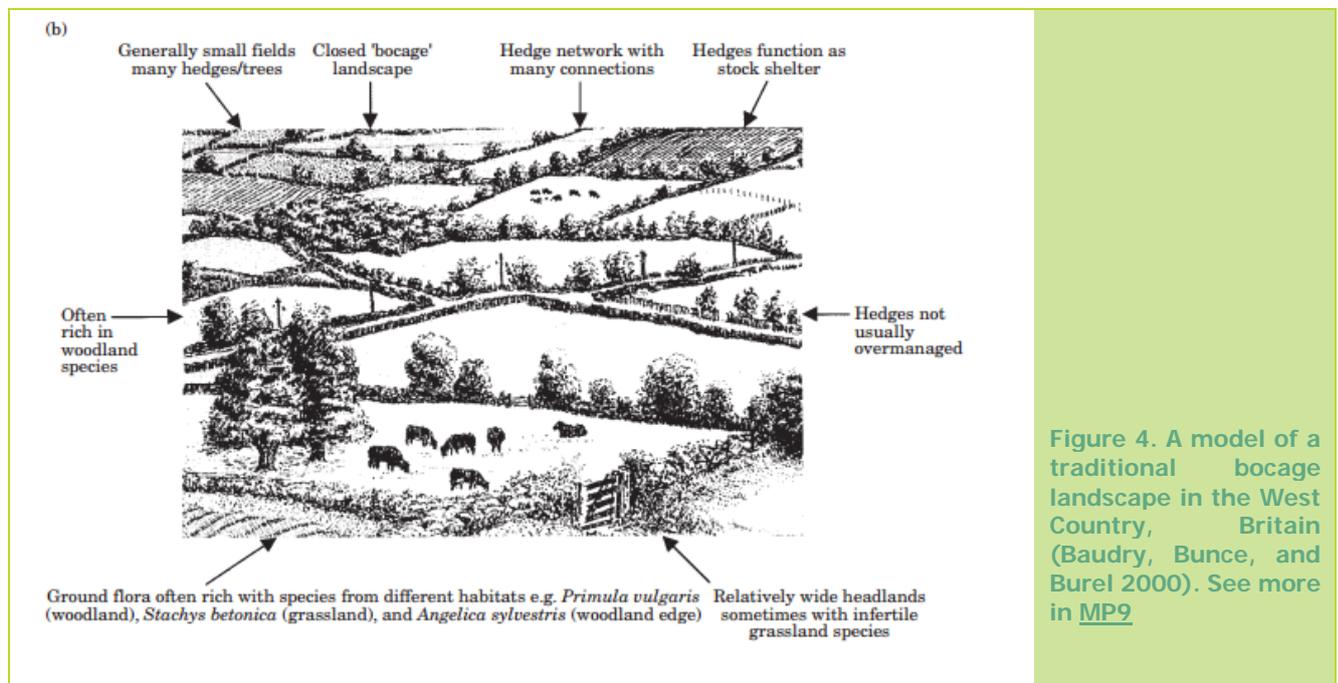


Figure 5 a, b, c. a) Swedish mountain cows freely grazing the forest (Eksvärd, K.), b) Spanish traditional "Dehesa" system with olive trees and different types of grazing animals (Carbonero, M. D.) and; c) orchards and gardens with old trees of native fruit species as hedges in Zsörk, Hungary (Csikvari, J.).



Regenerative benefits and ecosystem services

In the call for this FG it is stated that: *"Agroforestry systems can increase resource efficiency, enhance productivity, and improve the overall resilience of agro-ecosystems"*. This starting point is based on experiences and research from all over the world claiming that agroforestry would provide agriculture, from farm to global level, with regenerative benefits such as illustrated in Figure 6 from [MP7](#).

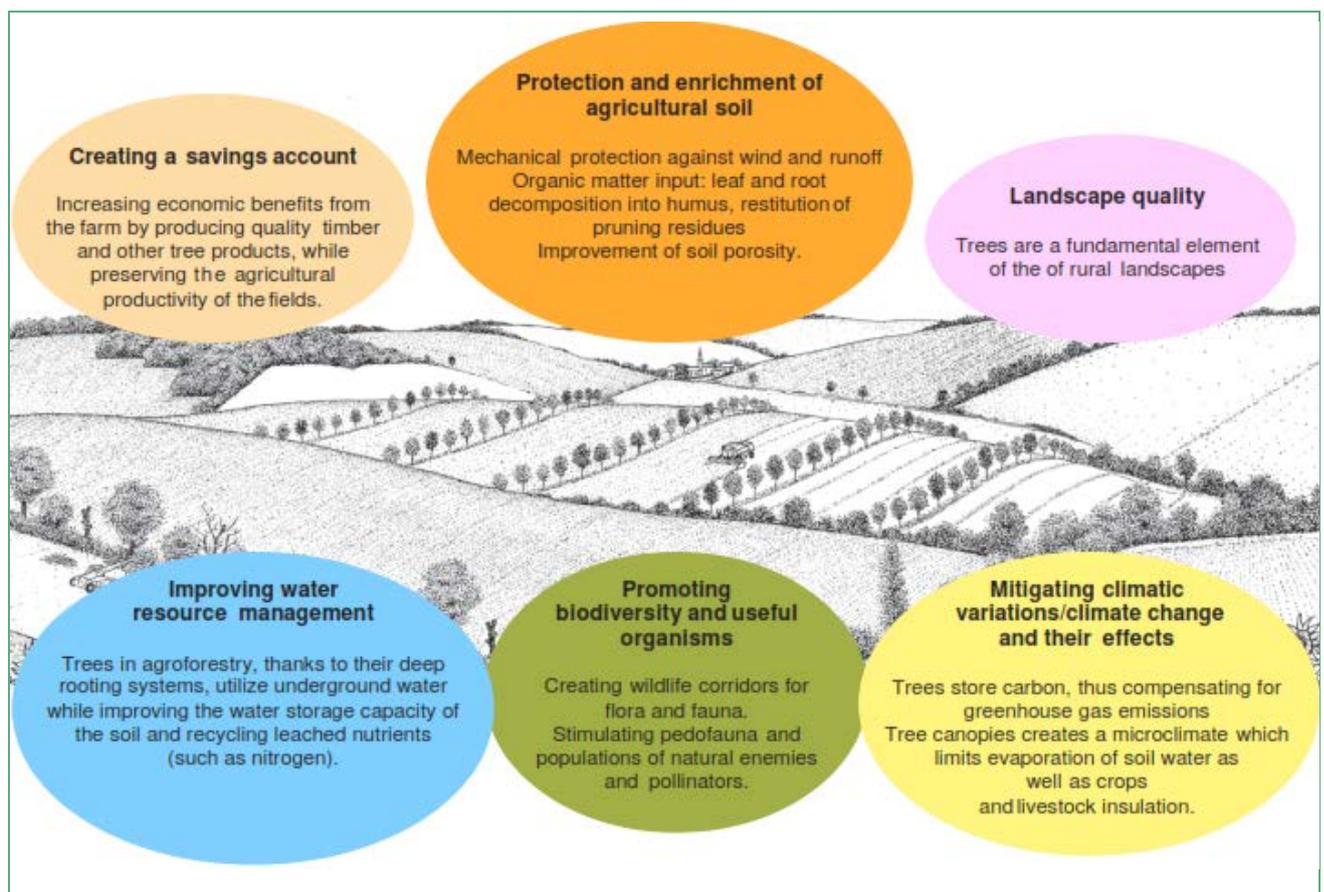


Figure 6. Examples of potential benefits from introducing agroforestry in the agricultural landscape. From [MP7](#).

Well-planned agroforestry design is based on knowledge of how ecosystems work. The designs use perennial species, biodiversity and symbiosis to create productive systems where:

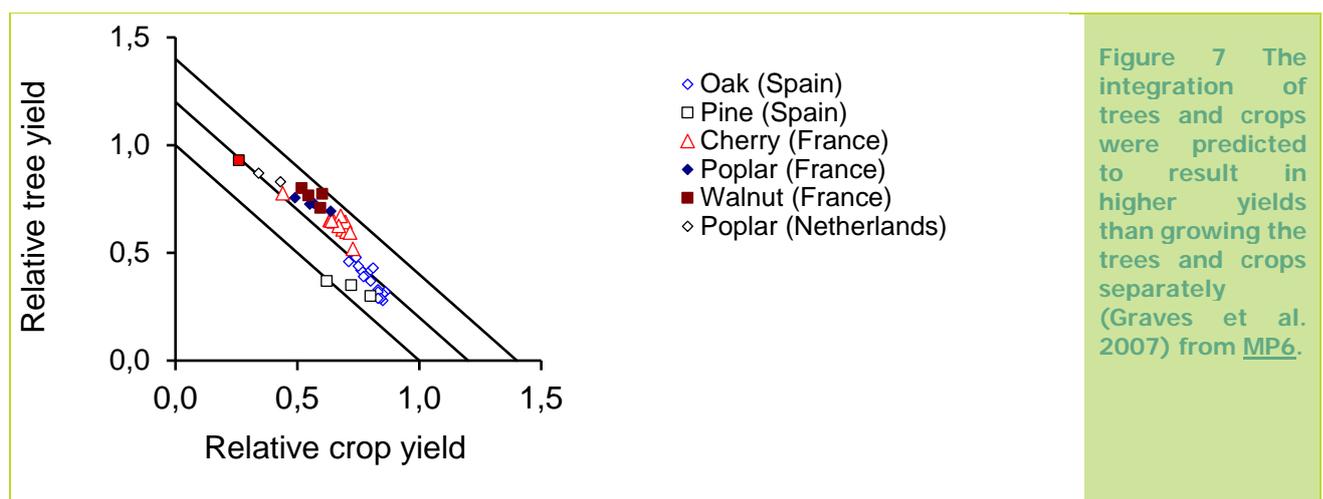
- nutrients are used and circulate efficiently;
- plants and animals play multifunctional roles;
- the biodiversity is part of the natural regulation of pests;
- photosynthesis, is enhanced;
- beneficial microclimates emerge, etc.

These are well-known agroecological principles that build sustainable agriculture. When well managed, such designs reduce input needs, reduce erosion, improve soil structure and fertility, increase carbon capture, provide more habitat for wild biodiversity and so on (Jose 2009, 2012, Fagerholm et al. 2016, Torralba et al. 2016). This means agroforestry provides the functions that build up and support life and are called ecosystem services². Especially the photosynthesis, where energy and carbon are bound, is important as this creates the “wealth” that drives the ecosystems.

Agroforestry is also promoted as a strategy to overcome issues of climate change through both reducing the source and enhancing the sinks of greenhouse gases and through adapting to a production that fits in the changed climate (Smith et al. 2014). Read more in [MP9](#).

Increased total productivity potential

Agroforestry systems provide diversified outputs, with at least two products instead of one. Even though the production per ha of each single crop may be lower than in monocultures, the total productivity of the agroforestry system is potentially larger because solar radiation and water are used more effectively (Haile, Palmer, and Otey 2016, Sereke et al. 2014). Figure 7 from [MP6](#) shows the predicted increase in total productivity in different systems in France, the Netherlands and Spain. The systems considered were silvo-arable systems combining arable crops with different tree species: walnut (France) and poplar (France and the Netherlands), Cherry (France), and oak and pine silvo-arable systems (Spain) at 113 trees ha⁻¹ (Graves et al. 2007). The model for prediction has been validated by Graves et al. (2010).



² These can be divided into provisioning services (food, fresh water, fuel wood, fibre, biochemical, genetic resources), regulating services (climate regulation, pollination, disease regulation, water regulation and purification), cultural services (recreation, aesthetic, inspirational, educational, cultural heritage etc.) and supporting services (soil formation, nutrient cycling, primary production), see [MP8](#).

The integrated systems capture more solar radiation and water, leading to higher yields than when the trees and crops would be grown separately. This has also resulted in a higher income in several cases, as demonstrated in [MP6](#).³

Improved potential profitability

Internationally, these systems have also been shown to improve self-sovereignty of food and resources as well as the development of local business (example in figure 8). Potentially, less need for inputs lowers production costs and this may also enhance monetary profitability of the systems, whether the products are for sale or consumption. In sales situations, customers may find products from more sustainable farming systems such as agroforestry to be more valuable, and be willing to pay higher prices. Income may also increase if subsidies and environmental incentives are available. As agroforestry systems are often pleasing to the eye, and often have significant cultural value, they can add an extra dimension to agricultural tourism as example 5 on page 14 shows. In another example (see example 2 on page 13), agroforestry systems work well as educational examples and can be used to facilitate discussions on ecosystems, problems with agriculture, potentials of agriculture, needs of transitions for sustainable societies etc.



Figure 8. The organisation “Association Bois Paysan” including 10 French farmers that together have established local wood industry producing logs, woodchips and “barbecue wood” from old hedgerows in the Occitanie area. Bois Paysan Distribution ® (Photo by Raphaël Kann) <https://www.facebook.com/Bois-Paysan-Distribution-262415774141154/>

³ To know more about these land equivalent ratios (LER) showing total production per area, see the first part of the YouTube film “Combining agricultural, forestry, and climate change agendas in Europe” https://www.youtube.com/watch?v=bnW8Z_Zy26E. A nice practical example of higher total production can be found at The Woodland trust in the UK producing apples and cereals. This alley system is described in another YouTube film at www.youtube.com/watch?v=63VYutmrRvY.

3.2. Managing agroforestry in practice today

Managing any farm system requires skills in many 'trades'. The more diversity there is, the more there is to deal with. Profitability is not only based on being skilled in all these trades but also on knowing how they interact. Agroforestry takes this to another level. When farmers decide to start working with agroforestry this can be done at different scales of the farm system (level: plot/field/enterprise/whole farm; spatial; temporal) and with different degrees of multi-functionality. All cases demand informed design and planning, installation, maintenance, and development and regeneration⁴.

Site specific examples

Examples 1-5 below present agroforestry systems which differ in terms of type of production, shape, landscape, size and ownership. These are a few of the cases that the FG participants contributed. All of them combine trees and other woody vegetation with crop and/or livestock integrated in a sustainable land-use system (Lundgren and Raintree 1982) which will have many benefits and will also enable the production of more biomass (photosynthesis intensification). Thus, they produce more marketable products, while creating ecological connections and providing ecosystem services. Possible products for sale in the examples below are as diverse as herbs, game and seminars.



Thank you to the farmer Benoît Gilles, France, for the case and photo.

Ex 1. The sheep orchard

In France, this full farm is managed as an agroforestry system. It consists of 29,500 trees planted across 73 ha of orchards, where 380 ewes graze all year round. Twenty years ago, the orchards in the area faced a significant decline in production due to major tree diseases and serious compaction of the soil. A few years after introducing the sheep, the trees have started to produce again with increased regularity while needing fewer external inputs. Meanwhile, weak and damaged trees have been replaced with new trees that have shown excellent growth – almost twice as fast as the average growth rate for the given species and varieties.

Shropshire sheep do not consume tree bark, so they live amongst the trees without damaging them. Manure input from the sheep helps stimulate soil biota, and their consumption of tree debris, such as fallen fruit, reduces tree pests. As soil health improves, grass and tree growth increase. No external fertilisers – organic or organic – are used and soil cultivation is no longer necessary. One cut of hay a year is harvested and stored for the winter. Species-diverse hedges around each plot provide medicinal forage for the sheep, improving health and reducing the need for veterinary treatments and food supplements.

Most products are sold directly at the farm or at farmers' markets. Fruits are sold either as they are or processed as juice (apples). Sheep are sold as lamb meat and breeders.

The main driver behind this initiative was to increase the production of high quality food, while optimising land productivity and other key resources.

⁴ To learn more on agroforestry management see the video "Introduction to Agroforestry", (www.youtube.com/watch?v=nuplHZRijgg) an US production that includes forest type trees in different agricultural systems. The section "What is agroforestry?" starts at 4:13.



Thank you to the farmers at Krameterhof in Austria Josef Andreas Holzer and Irmgard Ilg. Photos provided by Josef Andreas Holzer

Ex 2. Steep diverse production

This farm in Austria is run by a family as an open laboratory trying to find the most sustainable way to use the local resources. Agroforestry is done on the whole farm. The main system elements are: arable terraces with slopes between them with forests and wild fruits; a cascade water system for fish production; intercropping and multi-cropping; free-range livestock using natural resources which cannot be used by humans; a wide range of different species and a high degree of recycling. Among other things, the agroforestry farm produces: wood, timber, fruit (apples, pears, plums, cherries), herbs, vegetables, cereals, mushrooms, meat (beef, mutton, pork, chicken) eggs, honey, fish, seeds and horses.

The family also offers seminars, courses and consultancy services for planning permanent agriculture systems.

Ex 3. Chickens under the willows

At this large commercial farm agroforestry is incorporated in the system through plots combining willow and chicken production.

The short rotation willow coppice planted in the free-range area of the chickens produces biomass for wood stoves and shoots for osier products, such as baskets. The coppice provides natural shelter for chickens, increases animal welfare, increases the area used by the chickens and therefore spreads manure (minerals), increases biodiversity and discourages water birds to use the free-range area reducing the risk of avian influenza. The willows are harvested every second year and the chickens need to leave the area for the first few weeks after planting.

The green appearance of the free-range area of the organic chickens has helped to market the eggs.



Thank you to farmer Wim Thomassen, De Zandschulp in Overberg the Netherlands. Photo by: Martijn Boosten



Thank you to the Stanisław Karłowski Foundation at the Juchowo Farm, in West Pomeranian Voivodeship, Poland
Info source: Robert Borek (IUNG-PIB, Poland) and Betty Bootsman (Juchowo Farm).

Ex 4. Shaping the landscape

Shaping landscape structure to prevent wind and water erosion and enhance water balance is an important element of the farm management of this large and collectively run farm. In recent years, 5 kilometers of single row belts and hedges (78.000 square meter) and about 5000 solitary trees have been planted on grasslands and in fields. The multifunctional belts in the form of hedgerows act as buffers against erosion and wind. They are usually planted between fields. They also protect natural habitats and apiary sites, which are particularly susceptible to environmental influences.

The farm owner is expecting long-term benefits in the future from woody components and fruits from bushes in the hedges. The owner also concluded that management of woody vegetation in the agroforestry system is time-consuming, usually 1800 hours (planting, replanting, cutting, mowing the grass under trees etc.) or one full-time worker per year.



Thank you to Lorenza Padovan and Mauro Sangiovanni at the Casaria Farm in Veneto, Italy and the Italian Agroforestry Association (www.agroforestry.it) Photo by: Mauro Sangiovanni

Ex 5. Differentiation in the flatlands

The main interest of the farm to start with agroforestry has many roots; economic (differentiation of the income; increasing the capitalisation of the farm); environmental (increasing water quality using the buffer strip effect of trees planted along the ditches; habitat for wildlife); touristic (increasing the landscape quality).

Hybrid poplar and oak are planted in the middle of fields and along the ditches, spaced every 30-33 m. The trees are regularly alternated (poplar-oak-poplar-oak) and the distance between the trees along the line is 5 m. The rotation is 10 years for the poplar and 40 years for the oak, that means that during the rotation of the oak, poplar will be planted 2 or 3 times. In the fields corn, soybean, alfa-alfa, sunflower and wheat are grown and along the field margins hedges are planted.

The farm receives public incentives and it also generates tourism activities. Activities such as beekeeping (flowers from alfa-alfa, sunflower and wild flower growing along hedges and tree lines and ditches), game (the tree line-ditch system is very suitable for different types of game); and truffles (both tree species are suitable and the truffle is a significant local product).

Management in three dimensions

The most common agroforestry examples are at “plot level” with a relatively low level of complexity. Other agroforestry cases are more intricate and really complex at the “plot level” as when multi-strata design of increasing complexity are used for edible forest gardens, riparian buffers, alleys, hedges, field edges etc. Figure 9 illustrates, very schematically, types of crops in a complex multi-strata system.



Figure 9. Photo of a forest garden at Laggårbo, Sweden (Schaffer, C.) and illustration (Björklund, J. in (Eksvärd et al. 2016)) of the principles of multi-strata agroforestry design.

As the examples 1-5 above and figure 9 show, agroforestry takes management in three dimensions. This applies to both above and below ground. Different types of root interactions for example can be symbiotic but at times need to be managed through cutting, for the benefit of the system. This is illustrated in figure 10 showing a tree in an alley embedded in a specialised crop production system.



Figure 10. Example of the need to manage roots in specialised crop production systems (<http://www.agroforesterie.fr>).

Introducing woody perennials in specialised crop and livestock systems can lead to many varieties of agroforestry. But, still, during the FG discussions, the same type of issues, challenges and possibilities were raised to be important when starting with agroforestry.

3.3. Developing agroforestry systems in the European agricultural landscape: current challenges

Even if the benefits of agroforestry are clear in the long run, the short-term transition of specialised crop and livestock systems to economically profitable agroforestry systems has its challenges. But the limitations hindering agroforestry production today can be seen as potential opportunities for change and transition.

Even though the countries in the EU have different levels of knowledge about agroforestry, the experts in the FG identified the same types of challenges. Table 1 presents key factors found by the FG to further develop agroforestry, with a special focus on introducing woody vegetation in specialised crop and livestock systems in the European agricultural landscape.

Table 1. Key factors for developing agroforestry within the EU with special focus on introducing woody vegetation in specialised crop and livestock systems

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| <p>Available knowledge and skills</p> | <p>There are several sources of information on agroforestry today such as European and national agroforestry associations, research projects and networks; national organizations and companies; universities and schools; and numerous educational activities⁵. Still, compared to other agricultural approaches, information available is low and many basic facts are still not known.</p> <p>Woody perennials require different practical management than annual crops, and so introducing trees into an established system can raise many issues (see Figure 11). Moreover, in many European contexts farmers are not familiar with managing trees at all and may lack basic silvicultural knowledge and tree-care skills.</p> |
| <p>Need for a systems approach</p> | <p>While agroforestry systems aim for symbiosis between the different elements of the system, agricultural science normally adopts a reductionist approach, where one aspect is studied (or managed) at a time. Nutrient availability and sharing through mycorrhiza and roots at different levels in the soil for example, may require different nutrient strategies from those used for plain crop production. It is also key to understand which interactions are symbiotic and which are not. General knowledge (e.g. normal root length of a specific tree) and applied knowledge (e.g. possible root length of the specific tree in different types of soil) are both needed. Systems knowledge of complex interactions is also necessary. There is a general need to gain more insight into the overall, total functioning of an agroforestry system.</p> |
| <p>Managing complexity</p> | <p>Starting an agroforestry system takes new knowledge and skills, but also new management procedures and many new types of decisions to make. The more complex management has actually been shown to be a major reason why farmers hesitate to start with agroforestry (Camilli et al. 2016, Burgess, Garcia de Jalon, and Graves 2016).</p> <p>An agroforestry system has a succession that is much longer than a normal crop rotation, maybe even 90 years before the full rotation is concluded. The plants in the system will have different turn-over times within the rotation of the full system. This requires another type of management than a specialised single production system. As agroforestry systems are particularly dependent on place there are no fixed solutions to “copy and paste” between places. On the one</p> |

⁵ See for example: the European Agroforestry Federation (EuRAF, www.agroforestry.eu) and EU projects as: “Agroforestry that will advance rural development” (AGFORWARD, www.agforward.eu); “Agroforestry innovation networks” (AFINET, www.agroforestry.eu/afinet); “Agroforestry Education in Europe” (AgroFE, www.agrofe.eu).

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| | <p>hand, the farmer has to handle the process to build up a certain system. On the other, there are the framework conditions (soil, climate) as well as the desired functionality, the purpose of the system, the expected target and the final product. Between these two dimensions, the farmer also has to develop the skills to tend to the production in the present as well as in the long term.</p> |
| Planning and design | <p>Agroforestry doesn't stop at planting trees or shrubs. The farmer needs to know the right species for the site, depth of planting, proper soil preparation, when to weed etc. The planning and the maintenance can also raise new challenges. Even in less complex agroforestry systems - such as silvoarable systems – the farmer will need to know about the effects of wind on trees, of shadow on crops, how roots develop, competition for water and nutrients and so forth. All of this requires advanced planning and decision making. Any type of agroforestry system needs to be carefully designed, especially the perennial elements that cannot be changed easily.</p> |
| Continuous adaptation | <p>Even though the most expert planning and design may have taken place, living systems are unpredictable. Trees and woody perennials in alleys do not act the same as plants in a forest and new growing patterns may appear. Also, such a change in agricultural production of several individual farmers may have unforeseen effects on the landscape scale. Managing living systems that self-organize and where properties emerge, requires the capacity of being able to adapt and change both the approach and the system.</p> |
| Financial performance and benchmarking | <p>Financial performance can measure the efficiency of different options (see MP6). When 264 farmers across Europe were asked about their perceptions of silvoarable agroforestry, the most positive benefit was perceived to be profitability (27%) followed by improvement of the environment (22%) (Graves et al. 2007).</p> <p>As when a farmer introduces a new or crop or livestock to their farm, when they change the entire farm system, a fundamental question they ask is about profitability. This is a challenge when introducing woody perennials in specialised crop and livestock production, there just are not yet enough documented systems of this type to have anything similar enough to compare with. And, comparing with mono-cultural systems will not give useful answers.</p> |
| Reaching the customer | <p>Including timber, fruit trees or berry bushes in the fields or pastures may naturally give lower total amounts of produce of each single product than if using the whole field. Gaining access to markets by developing well-functioning value chains for the new products is important for profitability. Selling at local markets, on farm shops, through subscriptions of farm products, having community support agriculture (CSA) etc. requires a totally different approach to selling, which includes close contact with the consumer. But the premium price paid by the consumer will reach the farmer which is not always the case in traditional marketing. Considering smaller amounts of the products, the cost of handling them will also increase per unit of product.</p> |
| Establishment and cash flow | <p>As the establishment phase for fruit-bearing trees and bushes, as well as the time to mature for harvest of timber or trees for fuel wood is longer, or a lot longer than any other crop, a new time dimension will have to be integrated by the farmers. Though it may be profitable in the long run, the upfront cost and the time it takes until there is an income from the woody components of their system and its effect on the cash flow may in the meantime be difficult. Finding ways to level out costs and income over time is key in these cases.</p> <p>Another major challenge may also be processing the harvest to commercialise products. Products can be diversified so as to improve added value, shelf-life and saleability. This can lead to an increase in income, however it also leads to increased working hours. Administrative costs and working hours are frequently underestimated. There may also be costs for special machinery and new types</p> |

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|---------------------------------|---|
| | of storage. Acquiring new knowledge through courses, training and extension also costs money and time. Selling through alternative value chains can prolong the season of income of processed products. |
| Available policy support | In the EU context, the profitability of agroforestry systems is also closely connected to public support through the Common agricultural policy. The current legislative framework provides opportunities for support to introduce woody vegetation in some specialised agricultural systems ⁶ see Mosquera-Losada et al. (2016). However, the fact that agroforestry practices are not recognised in a consistent manner across the CAP, together with specific policy choices at the national or regional level, may reduce farmer's access to such support. |
| Managing risks | The expected financial performance of agroforestry systems involving tree planting is very sensitive to the choice of discount rate, i.e. how to calculate future returns. It can also be affected if predicted yields do not occur in practice. Furthermore, the value of a stand of trees may reduce to zero in a short period of time by storm damage vandalism, fire, pests or a disease. |
| Legal uncertainties | Agroforestry pioneers in Flanders believe that legal issues such as tenure situation are the most common drawback (Borremans et al. 2016). Problems may also relate to forestry legislation as in some countries planting trees on agricultural land can change the legal status of this land from agriculture to forest which may cause problems. There are other examples such as when certification schemes do not allow the double commercial use of land as was the case in Germany when free-range poultry fields were not allowed to be combined with commercial fruit production. |
| Attitude and support | Working with a new concept requires more knowledge than can be learned through a training course. Such a change takes creativity, new skills, perseverance, boldness and trust. A supportive environment that at least understands the basic challenges and needs, helps. Farmers have claimed that peer pressure to stay a traditionally "good farmer" has made them hesitate to introduce agroforestry (Sereke, Graves, and Herzog 2016). Therefore support from society, advisers and authorities is needed. Also the attitudes of authorities, advisers and research determine the level of contextual support. |

⁶ Such as: measures promoting silvoarable practices on farms such as hedgerows, isolated trees and forest strips and small stands; support for silvopastoral farms dealing with permanent crops (fruit trees, orchards) understory grazing; support for farms with plantations of high value trees related with meadow or grazed orchards; support for high nature value farms related with mountain pastoralism, and connections between agricultural lowlands and forestlands placed in the highlands (transhumance). Forest farming activities include a special type of agroforestry practices that can be considered as a complementary agricultural activity related with most of the previous farms including interactions between forest and agricultural lands (i.e. apiculture) or mainly linked to forest lands (i.e. forest farming activities not including apiculture such as medicinal plants and mushrooms).

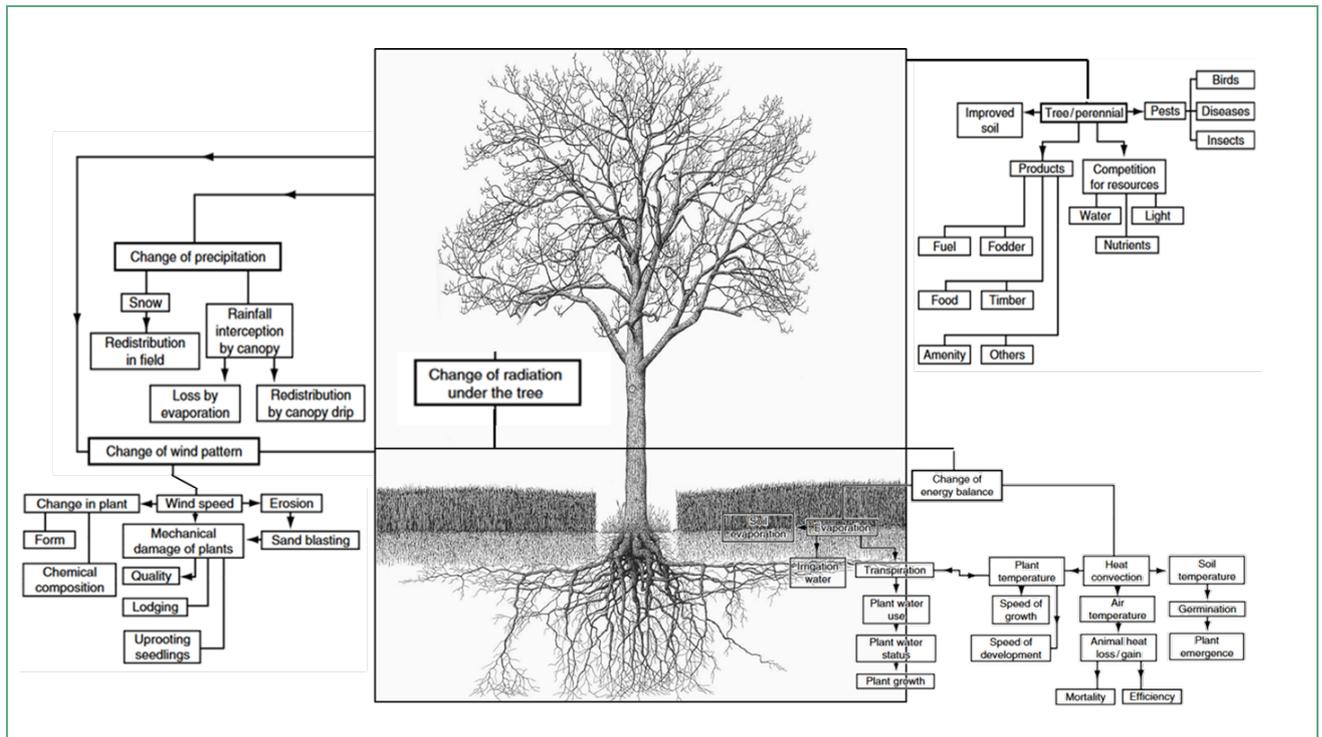


Figure 11. Issues raised when introducing a tree in an existing system. Adaptation by S. Artru of Batish et al. (2008).

4. Ways forward

The FG identified areas and issues where research, development and enabling innovation through EIP-AGRI Operational Groups would support the introduction of modern agroforestry systems in the European farming landscape. These are discussed in the mini-papers. Some recommendations of broader nature are also presented here.

4.1 General recommendations

Managing complexity through collaboration: farmers at the centre

Facing the challenges identified for moving agroforestry forward in the current European farming landscape (see chapter 3) requires many different methodologies and methods as well as collaboration between different actors. Understanding the complexity and connectivity of these systems needs to remain central to this process. A **frame to naturally connect the issues** is needed. To develop such a frame, the group collected a few examples of sources of information and inspiration. Within the EU Biodiversity strategy⁷ for example, the project “Mapping and Assessment of Ecosystems and their Services”⁸ provides approaches and indicators to map and measure ecosystem services that could be of good use. Several of the MPs also mention **participatory approaches** as good strategies to both develop agroforestry systems and spread the word. For example, **MP5** stresses that Operational Groups should have a participatory approach, with farmers not only providing information but gaining real benefit to further develop their own business.

MP7 takes it further claiming that farmers are the keystones in agricultural development of any kind integrating empirical knowledge with site-specific experience. Farmers are usually good at knowing what impacts their farm systems will have on the specific parts, and how specific problems will affect the whole system. They are great at managing the full system, juggling all the different aspects. But this type of knowledge is not easy to put into words, or write down and therefore often not recognised by other actors. They have a systems understanding of farming that no outsider can have. For authorities’ regulations, as well as advisers’ and researchers’ support, to be fruitful in the long run, farmers’ experience and competence needs to be met and understood, to be the base to build on. **MP7** claim that **facilitated collaboration between farmers and all types of professionals** with interest in agroforestry are needed to build farmer-centered dynamics to help stimulate innovation and collective momentum on the subject.

Promote adequate learning and training

As agroforestry demands for new competence, UNESCOs’ definition of Education for Sustainable Development (ESD) (UNESCO 2017) works well as every farmer should be allowed to acquire the knowledge, skills, attitudes and values necessary to **shape a profitable and sustainable agroforestry production system through different approaches, tools and offers adapted to their own local area**. In this context, there are many topics closely associated with education like training, information, interpretation, knowledge exchange, capacity building, awareness-raising, advising etc. (see more in **MP2**).

MP2 gives examples of ways for *Training & learning together* such as using **YouTube** and other media channels that may help famers improve exchange of experiences and information. They also suggest “personal learning networks” of farms with **demonstration plots** would facilitate the sharing of information, training and knowledge in a personal, participatory face-to-face way on local level. This shift towards collaborative

⁷ <http://biodiversity.europa.eu>

⁸ <http://biodiversity.europa.eu/maes>

approaches and mutual learning has also been highlighted within an EIP-AGRI FG report “Benefits of landscape features for arable crop production”⁹.

The FG also highlighted the strong relevance of the development of a **map of agroforestry systems** including basic information about farms and farmers. This to support networking of stakeholders and thus accelerate agroforestry innovation. A possibility is to extend the already started **map** for research and demonstrations sites that is being developed within the AGFORWARD project (See **MP4**)

Education and training need **relevant examples and context for any category of learners**. This means that not only examples of the practical management and work within value chains are needed, but also on how to deal with paperwork, rules and regulations. Therefore, relevant education and trainings are needed both **within and across professions**. Important for all actors is access to information and tools to support informed learning and decision making.

Structure information and provide tools for decision making

The FG discussed different supportive tools to **structure the information and data** on agroforestry and **make it available** in a form that can support decision making and understanding of agroforestry. Tools could be of any model, instrument or guideline that can **provide support in decision making and planning processes** for agroforestry system implementation. As specified in **MP3** these can include:

- guidelines, books, brochures comprising instructions and suggestions for design and management as well as knowledge on methods and procedures
- computer applications and online tools that facilitate decision making and initial design
- video tutorials
- databases of experts, advisors, consultants on agroforestry systems
- research results
- trainings & courses
- collaborative and multidisciplinary consulting services
- legislation and rules influencing the design and management
- technical books or even technical specifications
- examples and good practices

Implementation of all the information gathered at the different scales could be done in **platforms for farmers** to share info and observations on their farms.

Both **MP3** and **MP4** point to the fact that although farmers are the primary user-group for tools such as databases, sometimes they are not built with the farmer in mind. In practice, today it is often intermediaries such as advisers, consultants, support services, trainers, etc. who actually use them. Therefore, tools and resources of agroforestry systems need to be adapted for use by actors and stakeholders. Training and awareness raising on existing tools and guidelines is needed. There are two challenges: one is to **create tools that farmers can use** by themselves; the other is to work on **establishing a network of advisers and/or train advisers who already work with farmers** in other projects.

This is why traditional research and extension methods needs to be complemented with methods focused on collaboration across professions and subjects. But it is also important that the interactions with partners such as public authorities, sales channels, and practitioners, are effective.

⁹https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_fg_ecological-focus-areas_final-report_en.pdf (p. 22)

Facilitate producer-consumer contacts and payment for the values

Today, in many of the practical examples of introducing agroforestry on a conventional arable or livestock farm, this was done to make the main enterprise more sustainable (**MP6**). This can for example be to produce “woodland eggs” or to reduce soil erosion. To draw any economic conclusions of agroforestry a wider economic analysis that includes societal benefits and impacts of grants and subsidies needs to be done. As the progress on grants for agroforestry is slow, currently the financial success depends a lot on the creativity and perseverance of a farmer to find niche markets or solutions within his or her social context, as e.g. by using the products for own use as home heating, or processing the products and selling directly to customers. Thus, though potentially higher total production per area but in smaller volumes, the main challenge currently lies not in production of volume but in links with the local economy, social links and environmental gains, as that is where most profit can be made.

To gain a profit the farmers need to be paid for the added value of the products, the services provided by the agroforestry systems and for developing and handling new value chains (MP1). For a sustainable agroforestry enterprise, **marketing** and engagement in the value chain are important. To meet and take advantage of the customers’ needs, exploiting the added value of agroforestry products, finding the right markets and prices, may require **cooperation** with other farmers. This would be much supported by a certification system and labels (such as PEFC, FSC or EU organic). Such certification systems ensure traceability of the products and guarantee the promised qualities.

A **certification system** could also support the **payment for the ecosystem services** agroforestry systems may provide for society and the work farmers do as landscape managers. For example, it has been demonstrated that agroforestry systems have a **greater potential of carbon sequestration** (above and below ground) than traditional farming systems; and this carbon could be sold in carbon credits markets (Jose 2009) (**MP8**).

An opportunity for paying farmers for the extra values as ecosystem services comes from the CAP. According to (Mosquera-Losada et al. 2016) even though the situation for agroforestry support has improved going from the 2007/2013 to the 2014/2020 programming period, difficulties with promoting agroforestry remain due to a lack of consistent approach across the CAP’s pillars. When possible, farmers need to adapt to the available but inadequate policy tools rather than count on measures that are adapted to the specific needs and circumstances. To improve agroforestry implementation across Europe, the AGFORWARD Project has drawn some key points to foster agroforestry at policy level (see Mosquera-Losada et al. (2017).

To enhance agroforestry within the EU asks for **EU, national and regional laws and rules to be consistent but also to fit the development of local best practices**. Or, as the authors of **MP6** ask: is it possible to instead of having complex rules leading to simplified landscapes have simple rules that create a more complex and diverse landscape?

Long term monitoring and evaluation with focus on farm management

Most of the issues raised in this report lead to the consideration that more **documented experience** of agroforestry is needed. For education and training, developing tools for planning and decision making, to foster profitability and to be able to show customers more than the intention of sustainability through a label in the value chain.

Such monitoring and evaluation of agroforestry systems relates to the issues of appropriate approaches which is needed to develop adequate tools to show the impacts of agroforestry. Participatory monitoring and voluntary networks could help increase the number of ecosystem services assessed through involving stakeholders. Especially important, is the ability to **assess changes over time**. Therefore, a network of long-term monitoring sites in different agroecological conditions would be useful (see [MP8](#)). Also, mapping and modelling all the information already obtained from regional scale surveys would allow incorporating information on ecosystem services into policies and land use decisions.

Still, no matter how well things as carbon footprints, water footprints, biodiversity, reduced erosion, profitability etc. are monitored and evaluated, the key component of any successful agro-ecosystem is the farmer. If farmers do not find agroforestry systems **manageable in the office** in relation to customers, regulations, grants and support, and so on, they will still not be possible nor sustainable. These aspects also need appropriate evaluation.

4.2 Ideas for Operational Groups

The FG developed the following ideas for possible EIP-AGRI **Operational Groups** (OGs)¹⁰ (Table 2). The FG considered that OGs working on the issues below would greatly contribute to the increasing and developing modern agroforestry systems within the EU.

Table 2. Key issues and ideas for Operational Groups to support the development of profitable agroforestry systems.

| Key issue | Ideas for Operational Groups |
|---|--|
| Smart practices for ecosystem services | <ol style="list-style-type: none"> 1. At farm level: issues of payment for ecosystem services, carbon and water storage, flood prevention, soil erosion and water quality. 2. Hedges` contribution to ecosystem services for farmers and society. Involve farmers and view hedges from an agroforestry perspective, monitor and document information such as mapping hedge species and provide designs for new hedges. |
| Sharing practical experiences and knowledge | <ol style="list-style-type: none"> 3. Collect data and information identified in the different MP's at the local level to build information platforms and helpdesk services. 4. Produce an interactive map of sites with useful practical examples to make experiences assessable and facilitate collaboration. Include video-interviews with farmers and databases with demonstration plots. 5. Shelterbelt innovations: new life for old shelterbelts. Farmers, landowners, foresters, landscape authorities, researchers and users working together to provide state-of-the-art information on shelterbelts, new opportunities from shelterbelts, certification as key tool, new planting, planning and dissemination. |
| Optimal scale and landscape design | <ol style="list-style-type: none"> 6. How to organise and set-up appropriate agroforestry systems when focusing on a single parcel, the farm and/or the whole landscape? This is meant to develop, test and use tools dedicated to the design of agroforestry systems and practices and adapt each one to the most appropriate scale. 7. Collaboration of stakeholders in a given area to work on improvement of water quality in lakes and streams through agroforestry landscape design. |
| Agroforestry value chains | <ol style="list-style-type: none"> 8. Linking the value chain with wood value expert brokers, landowners, farmers, tree harvesters, bioenergy consumer, sawmill owners. 9. How to increase agroforestry profitability: valuing agroforestry products considering agroforestry benefits on farm system (e.g. carbon services) for labelling. This could be done with farmers studying the euro balance thanks to cost benefit analysis techniques. |

¹⁰ For more information see the EIP-AGRI brochure on [Operational Groups](#).

| | |
|---|--|
| Management of specific agroforestry systems | <p>10. Establishing OGs in selected traditional tree-landscapes, where old knowledge and new ways to diversify could support each other. These could be oriented on the practical tree knowledge and divided into different system types:</p> <ul style="list-style-type: none">• Tree management for high value timber production in agroforestry systems• Tree management for fruit and nut production in agroforestry systems• Tree breeding and variety screening for agroforestry systems |
| Availability of resources | <p>11. Establishing tree nurseries with focus on agroforestry systems</p> |

4.3. Identified research needs

The FG has also worked to identify **needs for research and development**. Understanding where to draw the line between these two in such a complex subject can be heavily discussed. Table 3 compiles ideas for research and development connected to the major issues identified by the FG, to promote innovative, productive and profitable agroforestry. For more information, please read the respective MPs.

The FG also highlighted the importance of **organising existing and future knowledge** in an easy to use way, showing a practice-oriented step-by-step procedure. They ask for “mini-manuals” e.g. on how to: mix and distribute species, work with agroforestry on different scales in the landscape, improve water use, how to plan for pest management, measure carbon sequestration etc. All with guidance to find the context-specific best practice.

Table 3. Examples of identified research and development needs for agroforestry to prosper presented in relation to the key issues identified by the FG.

| Key issues | Needs for Research and Development |
|--|--|
| Organising added value of agroforestry (MP1) in order to improve profitability | <ul style="list-style-type: none"> • Develop ways to assess performance of agroforestry systems (social, environment and economical) • Develop methods to measure all the performances of a system at the same time • Devise payments by performance • Develop dedicated value chain labels • Increase social awareness of the potentials and impacts of agroforestry |
| Education in Agroforestry (MP2) | <ul style="list-style-type: none"> • Create networks with demonstration farms at the local level • Develop online practical examples of specific agroforestry types • Provide information, trainings and inspiration to the administrative and technical sector • Develop and integrate AF at all educational levels • Establish AF as a separate scientific discipline • Further develop a sound information basis (tools, databases, maps etc.) as well as promotional materials for different levels (European, national, regional) |
| Tools for optimal design and management (MP3) | <ul style="list-style-type: none"> • Perform inventory and “auditing” of existing EU AF tools and resources • Develop suitable GIS-based AF design and management methods and tools • Develop <i>ex-ante</i> assessment tools to facilitate a common understanding of AF performances • Develop AF tools for design to be used by farmers • Do sensibility/robustness analysis of tools and resources to check their applicability to local conditions and climate changes |
| Databases on Agroforestry (MP4) | <ul style="list-style-type: none"> • Integrate existing AF databases • Organise accessibility of existing open databases • Gather and improve knowledge on every component (tree, crop, livestock) • Gather and improve data on ecosystem services connected to AF • Develop a database of videos for practitioners in all languages • Improve accessibility of databases through compiling data for end-users • Develop a map of AF systems with basic information |
| Practical knowledge of trees and other perennials at farm level (MP5) | <ul style="list-style-type: none"> • Test species which are particularly suitable for agroforestry systems (disease resistance, time of flowering, leaf development) • Breed new varieties and select trees suitable for AF systems. • Provide target-oriented finishing techniques to develop fruit trees fit for different AF systems • Document the suitability of selected varieties of wild-fruit trees |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Develop decision support tools for the application of plant protection products in agroforestry systems, taking into account the flowering periods of subcultures and tree species • Measure the effect of irrigation systems on the root competition in the agroforest system • Check the drainage effects caused by trees in agroforestry systems • Investigate optimal green strip management in alley cropping (mechanisation, robotics, alternative planting). • Measure the effect of fertiliser intensity and the open field situation on wood quality in alley cropping • Evaluate the effects of different soil cultivation systems on agroforestry • Develop technical solutions needed for AF practical management |
| Financial impact of Agroforestry (MP6) | <ul style="list-style-type: none"> • Document yields and financial results of mature trials • Do on-farm measurements of labour inputs • Develop full-cost analysis • Create tools for farmers to know the value of their trees. Give access to wood value experts. • Provide incentives for tree care over generations • Understand the impact of financing and taxation on on-farm decisions (large variability across Europe). • Research how to integrate societal benefits of trees in a farm system with subsidy/grant/tax/schemes • Investigate the role of insurance in tree management • Distribute price premiums in the value-chain/local system • Develop solutions for partners to co-finance investments in AF systems |
| A territorial approach of agroforestry development: from theory to practice (MP7) | <ul style="list-style-type: none"> • Start social anthropology research on collective initiatives of AF • Develop tools for multi-stakeholder management and planning. • Do on farm applied research on AF • Do historical research to understand how AF used to work in the past. • Research how to take into account land tenure and structure (fragmented landscape) • Work on flood prevention through AF at the landscape scale |
| Important considerations and alternative approaches to assess ecosystem services in agroforestry systems (MP8) | <ul style="list-style-type: none"> • Develop further universal and preferably rapid protocols for assessment of ES at different system levels • Define a set of indicators to assess ES in agroforestry systems • Develop a system to select and weigh services/indicators depending on the system/condition/location • Use suggested databases to improve the assessment and to optimise delivery of ES realised through the AF-practices themselves • Further develop policy instruments to encourage and support farmers in the delivery of ES • Involve volunteers/any stakeholder in the (long term) monitoring of biodiversity by feeding open-platforms • Associate carbon footprint and water footprint to assess AF dual-performance systems • Explore the landscape effect of agroforestry systems |
| Mitigation and adaptation agroforestry tools (MP9) | <ul style="list-style-type: none"> • Measure carbon stocks in AF practices and systems • Link AF adaptation potential to diseases, pests and water • Identify better AF component combinations adapted to local conditions, to increase adaptation and mitigation. • Evaluate woody product use and its substitution effect • Develop a territorial approach for adaptation increase (e.g. windbreaks) • Improve the use of available nutrients. |

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Annex 1: List of members of the Focus Group

| Name of the expert | Profession | Country |
|---|--|----------------|
| Balaguer Fabien | Expert from agricultural organisation, industry or manufacturing | France |
| <u>Boosten Martijn</u> | Representative of an NGO | Netherlands |
| <u>Borek Robert</u> | Representative of an NGO; Scientist | Poland |
| <u>Burgess Paul</u> | Scientist | United Kingdom |
| Considine William | Farmer | Ireland |
| Csikvari Judit | Farmer | Hungary |
| Grandgirard David | Farmer; Scientist | France |
| <u>Hannachi Yousri</u> | Farm advisor | France |
| Jäger Mareike | Farm advisor | Switzerland |
| Mezzalira Giustino | Advisor | Italy |
| <u>Morhart Christopher David</u> | Scientist | Germany |
| <u>Mosquera Losada Maria Rosa</u> | Representative of an NGO; Farm advisor; Scientist | Spain |
| Pecenka Ralf | Scientist | Germany |
| Poza Llorente Javier | Representative of an NGO | Spain |
| <u>Ramos-Font María Eugenia</u> | Scientist | Spain |
| Reubens Bert | Scientist | Belgium |
| Schmutz Ulrich | Farm advisor; Farmer; Scientist | United Kingdom |
| <u>Sepp Mati</u> | Farmer; Scientist | Estonia |
| Zollner Daniel | Farmer; Advisor | Austria |
| <u>Vityi Andrea</u> | Representative of an NGO; Scientist | Hungary |
| Facilitation team | | |
| <u>Eksvärd Karin</u> | Coordinating expert | Sweden |
| <u>Karasinski Céline</u> | Task manager, expert of the EIP-AGRI Service Point | France |
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You can contact Focus Group members through the online EIP-AGRI Network. Only registered users can access this area. If you already have an account, [you can log in here](#). If you want to become part of the EIP-AGRI Network, [please register to the website through this link](#).

Annex 2: List of mini-papers

Mini-papers produced by the participants in EIP-AGRI Focus Group 22 Agroforestry

| No. | Title | Authors |
|-----|---|---|
| MP1 | <u>Organising added value of agroforestry</u> | Hannachi, Y. , Balaguer, F., Borek, R., Burgess, P., Considine, W., Csikvari, J., Grandgirard, D., Pecenka, R., Liorente, J. P., Ramos-Font, M. E., Sepp, M., Vityi, A., Zollner, D. |
| MP2 | <u>Education in Agroforestry</u> | Zollner, D. , Balaguer, F., Borek, R., Burgess, P., Considine, W., Grandgirard, D., Hannachi, Y., Jäger, M., Morhart, C. D., Mosquera Losada, M. R., Liorente, J. P., Ramos-Font, M. E., Vityi, A. |
| MP3 | <u>Tools for optimal design and management</u> | Csikvari, J. , Grandgirard, D., Reubens, B., Morhart, C. D., Pecenka, R., Schmutz, U., Vityi, A., Balaguer, F., Considine, W. |
| MP4 | <u>Databases on agroforestry</u> | Vityi, A. , Burgess, P., Mosquera Losada, M. R. |
| MP5 | <u>Practical tree knowledge on Farm level</u> | Jäger, M. , Reubens, B., Boosten, M., Burgess, P., Considine, W., Grandgirard, D., Balaguer, F., Morhart, C. D., Llorente, J. P., Mosquera-Losada M. R. |
| MP6 | <u>Financial impact of agroforestry</u> | Burgess, P. , Schmutz, U., Balaguer, F., Boosten, M., Csikvari, J., Hannachi, Y., Pecenka, R., Llorente, P. L., Sepp, M., Vityi, A. |
| MP7 | <u>A territorial approach to agroforestry development: from theory to practice</u> | Balaguer, F. , Hannachi, Y., Mosquera-Losada, M. R., Ramos-Font, M. E., Reubens, B., Zollner, D. |
| MP8 | <u>Important considerations and alternative approaches to assess ecosystem services in agroforestry systems</u> | Ramos-Font, M. E. , Boosten, M., Considine, W., Mosquera-Losada, M. R., Reubens, B. |
| MP9 | <u>Mitigation and adaptation agroforestry tools</u> | Mosquera-Losada M. R. , Borek, R., Balaguer, F., Mezzarila, G., Ramos-Font, M. E. |



The European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI) is one of five EIPs launched by the European Commission in a bid to promote rapid modernisation by stepping up innovation efforts.

The **EIP-AGRI** aims to catalyse the innovation process in the **agricultural and forestry sectors** by bringing **research and practice closer together** – in research and innovation projects as well as *through* the EIP-AGRI network.

EIPs aim to streamline, simplify and better coordinate existing instruments and initiatives and complement them with actions where necessary. Two specific funding sources are particularly important for the EIP-AGRI:

- ✓ the EU Research and Innovation framework, Horizon 2020,
- ✓ the EU Rural Development Policy.

An EIP AGRI Focus Group* is one of several different building blocks of the EIP-AGRI network, which is funded under the EU Rural Development policy. Working on a narrowly defined issue, Focus Groups temporarily bring together around 20 experts (such as farmers, advisers, researchers, up- and downstream businesses and NGOs) to map and develop solutions within their field.

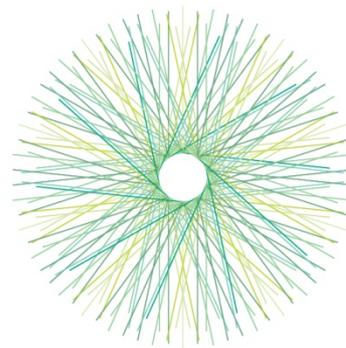
The concrete objectives of a Focus Group are:

- ✓ to take stock of the state of art of practice and research in its field, listing problems and opportunities;
- ✓ to identify needs from practice and propose directions for further research;
- ✓ to propose priorities for innovative actions by suggesting potential projects for Operational Groups working under Rural Development or other project formats to test solutions and opportunities, including ways to disseminate the practical knowledge gathered.

Results are normally published in a report within 12-18 months of the launch of a given Focus Group.

Experts are selected based on an open call for interest. Each expert is appointed based on his or her personal knowledge and experience in the particular field and therefore does not represent an organisation or a Member State.

*More details on EIP-AGRI Focus Group aims and process are given in its charter on: http://ec.europa.eu/agriculture/eip/focus-groups/charter_en.pdf



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