



D7.6: AGROMIX Practice Abstracts (M12)

Lead partner: REVOLVE

Participating partners: whole consortium

Preliminary results





PA1: The resilience to climate change of mixed farming and agroforestry - explaining a complex story

Work package: 1

In the agricultural context, resilience is the ability of a farm to persist, recover and keep functioning with and despite external disturbances. In the face of climate change and fluctuating or collapsing markets, complex land use systems – such as mixed farming and agroforestry, where different combinations of livestock, trees and crops coexist – can be more resilient than conventional monoculture systems.

In AGROMIX we study these complex systems, aiming to understand the factors that supporting their resilience, and unravelling the regional diversities of these systems across Europe. Resilient and climate-smart farm management brings important benefits – called ecosystem services – which include the regulation of water availability, the improvement of soil quality and biodiversity, natural pest control, social benefits, and the protection of cultural heritage.

Integrating these systems support farms to move towards a circular agro-food system, reducing external inputs and emissions whilst maintaining or even increasing their productivity. The resilience framework developed by AGROMIX offers guidance for farmers to locate their system in the multiplicity of components across the ecological, economic and social dimensions. Developing farmers' capacities to adapt or restructure their land use system would increase farms' resilience to a changing world in the long term.





PA2: Policy Co-Development for agroforestry and mixed farming

Work package: 6

Mixed farming and agroforestry have been predominant in Europe for millennia; however, the first mention of 'agroforestry' in EU policy documents was only in 1998. The practice of mixed farming and agroforestry is decreasing, falling from 30% in 2005 to 21% in 2016, and unless the closure of intensive livestock 'factory farms' is followed by the uptake of these regenerative land use systems, their decline may continue.

Across EU member states, the area currently under agroforestry is 15.4 million hectares (8.8% of farmland), which is the same land area as under certified organic production. However, neither mixed farming nor agroforestry are currently mandatory in organic standards, although they are quite common - together, implementing mixed farming and agroforestry could support the EU's aim of putting 25% of land under organic production by 2030.

These win-win scenarios need to be considered in policy development. Policy co-development refers to bottom-up policymaking (comparable to referenda in Switzerland). Only if consumers have a direct involvement in mixed farming, agroforestry, and organic production can we grow together and transform Europe's landscapes. As part of AGROMIX, policy workshops adopting a 'citizen jury' methodology will be used to compare EU and non-EU countries, federal states within national states, and EU level policies. Participants will be presented with preliminary scenario modelling results. For more information, see [the EURAF 2021 video](#).





PA3: The modernisation of agroforestry

AGROMIX Pilot Site: The Swiss Agroforestry Network (CH)

Founded in 2011, the Swiss Agroforestry Network brings together 140 members from the German- and French-speaking regions of Switzerland. In recent years, mixed farming and agroforestry have undergone an expansion and modernisation in Switzerland, which the Network has supported by advising farmers and spreading knowledge by offering conferences, field visits, newsletters and more. It has created a community of land managers committed to implementing agroforestry systems.

The main indicator of modern agroforestry is that agroforestry systems are designed to achieve desired outcomes. For example, trees for fruit or high-valuable timber production are increasingly integrated into arable systems. The distribution of trees has also changed in a way that allows farmers to use modern machinery and benefit from the reduced labour needs.

The members of the Swiss Agroforestry Network that participate in AGROMIX note that alongside the modernisation, acceptance, and interest in agroforestry has increased in Europe, especially due to the visibility given to successful modern agroforestry farms. Participants highlight the importance of networks such as the Swiss Agroforestry Network, as these can actively increase the visibility of agroforestry and engage farmers that have either been cautious to join the transition, or that have been experimenting with these regenerative systems for years, but have not gained due recognition.





PA4: The synergies between arable, trees and pig farming

AGROMIX Pilot Site: Carl Sheard, the Blue Pig Farm (FR)

The Blue Pig Farm is an organic pig farm in western France, a mixed farming pilot site monitored by the French research Institute for organic food and farming (ITAB), including 6.6 hectares that integrate agroforestry and fodder crops for pigs. The land manager's motivations for integrating crops and livestock were to combine different kinds of fodder to increase pig feed autonomy, enhance animal welfare, and improve meat quality.

Since integrating crops, livestock and trees using a mixed farming system, the farm manager noticed a variety of additional benefits, including offering shade and protection for the pigs, and the natural fertilisation of crops with pig excrement. In the future, the land manager hopes to evaluate whether the nutrients from pig excrement increase production and improve crop quality, under more rigorous testing.

However, the manager of the Blue Pig Farm also recognised that implementing mixed farming has been challenging at times, highlighting the difficulties of understanding the interaction between the different elements when it came to introducing pigs into the land where fodder crops were being produced.





PA5: Dairy production with an agroecological approach

AGROMIX Pilot Site: 'Cheese Valley' Manciano - Tuscany (IT)

Located in southern Tuscany, the Caseificio Sociale di Manciano is a cooperative cheese factory bringing together roughly 200 farmers who manage a total of 56,000 sheep and produce more than 7 million litres of milk per year.

The cooperative's members face several environmental challenges, including soil erosion, unpredictable rainfall, and higher frequency of drought during the summer. To tackle these challenges, some members have begun implementing climate-smart techniques, including the reduction of soil tillage, the intercropping of grass and legumes, an increase in the share of legume meadow in crop rotation (to boost long-term temporary grassland in crop rotation), and planting trees at the perimeter of the fields.

Farmers consulted by AGROMIX project reported positive results from these experiments, highlighting that to receive the benefits of these techniques farmers must implement a combination of these regenerative techniques at the field and farm levels.

In terms of the future of regenerative systems in the region, members of Coop Manciano highlighted the need to increase and spread the know-how of implementing agroecological practices. Much work is needed to increase advisory services, carry out research in pilot farms, establish living labs for farmer-to-farmer learning, and to strengthen farmers' networks.





PA6: Optimising no-till methods within agroforestry

AGROMIX Pilot Site: Project Hansbeke Agro-Ecologie (BE)

PHAE (Hansbeke AgroEcology, www.ppaehansbeke.be/en) is a certified organic arable farm in Belgium covering 60 hectares, which rotates the production of legumes, cereals, and temporary grassland. One of the farm's main interests is the improvement of soil quality through the implementation of agroecological principles, including the method known as 'no-tillage' (farming without disturbing the soil surface through rotation) and the incorporation of ponds, trees, hedges, and grass strips on the farmland.

After years of conventional farming, farm manager Felix de Bousies observed the damage being done to the farm's main asset: the soil. After learning about studies showing that the no-tillage approach can gradually restore soil fertility, improve soil drainage, and capture more carbon, de Bousies switched to this agroecological method in 2017.

In a no-tillage system, shallow cultivation fissures are created before sowing a main or cover crop. Weeds are controlled by light hoeing on the soil surface, the use of annual and permanent cover crops – including temporary grassland with goat grazing to exhaust weed seedbanks – and the use of 'fast growing' crops that quickly cover the soil to prevent weed germination.

It is hoped that PHAE will note an increase in soil fertility and biodiversity, improved drainage, and discover the additional benefits of reduced farm operating costs due to the no-tillage approach. The land managers also anticipate trees and hedges to benefit from the reduced disturbance of the soil, as well as from the additional fertilisation provided by biodegraded leaf litter in the absence of soil tillage.





PA7: Experiential learning for a more resilient food system

AGROMIX Pilot Site: Stadtbauernhof Saarbrücken (DE)

Founded in 2015, Stadtbauernhof Saarbrücken is a two-hectare organic farm in Germany, experimenting with regenerative land use practices. The farm produces mainly vegetables, currently starting with additional fruit production and free-range poultry. Marketing takes place within the framework of community supported agriculture (CSA), a partnership between producers and consumers. Alongside food production, the farm hosts educational programmes on a variety of topics for groups of all ages, ranging from guided farm tours, agroforestry workshops, and policy discussions, with the aim of making sustainable food production accessible for all.

The leaders of the educational programmes highlight that whilst there is a significant lack of knowledge on mixed farming and agroforestry in modern society, both children and adults show great enthusiasm for learning about these systems through the hands-on experiences that Stadtbauernhof Saarbrücken provides, which connect consumers to the source of their food.

However, a key challenge highlighted by the farm leaders is effective communication. Whilst CSA depends on the involvement and commitment of its members, there is still a lack of understanding of regenerative farming practices, showing the importance of increasing access to these educational programmes as part of the upscaling of mixed farming and agroforestry. A positive sign noted by the farm leaders is that since the start of the COVID-19 pandemic, interest in these programmes has increased.





PA8: Tackling soil erosion and flooding through agroecology

AGROMIX Pilot Site: Winthagen (NL)

In Winthagen – a region covering 200 ha in the southern Netherlands – Wageningen University & Research is working with the municipality Voerendaal and Limburgse Land en Tuinbouw Bond (LLTB = Farmers Union in the province of Limburg) to create a network that brings together farmers, landowners, the municipality, the waterboard, and other relevant stakeholders.

In recent years, Winthagen has experienced an increase in flooding and soil erosion due to the intensification of arable farming, the loss of hedgerows, and the disappearance of dairy farms, as grassland mitigates these issues. The network's intention is to bring together these actors to redesign the region's existing farming approach to overcome these challenges, and to restore the region's traditional landscapes.

According to representatives from the AGROMIX project, very few farmers in Winthagen follow mixed farming or agroforestry methods, though some have used subsidies to plant fruit trees in their meadows. However, other measures have been taken to prevent flooding and soil erosion, such as increasing soil organic matter by growing green manure, creating thresholds between potato ridges, direct seeding in grain stubble or green manure, and non-reversing tillage on the hilly plots. The latter is required by the government, whilst the previous methods are applied voluntarily.

According to the farmers consulted by AGROMIX, their investments in organic soil matter, green manure, and other regenerative methods have all helped to reduce flooding and soil erosion in their region.

