FOREST4EU

ITHub 5 - Agroforestry Systems

FOREST4EU partner: European Forest Institute
OG: Experiment Agroforestry Noord-Holland
OG's country: the Netherlands
Type of Innovation: Process

A feasible step-by-step plan with practical guidelines and concrete designs to enable the application of agroforestry on farms

Introduction

In this Operational Group, a step-by-step plan was developed to promote agroforestry integration on farms. Agroforestry offers a resilient and sustainable agricultural system, reducing production risks, enhancing ecological value, and increasing biodiversity. Agroforestry optimizes nutrient and water use, soil organic matter building, reduces fertilizer and pesticide usage, and maximizes land utilization.

The project assesses prerequisites for agroforestry and involves: 1) Inventory of existing agroforestry opportunities, combining scientific and practical knowledge. 2) Developing a practical step-by-step plan with guidelines for implementing agroforestry. 3) Applying the plan to three test cases, which will serve as examples for other entrepreneurs.

Agroforestry has a long tradition in farming in the Netherlands, where trees provided essential products like fruits, nuts, wood, and energy. Trees also offer ecosystem services like wind protection, cooling, and supply of nutrients. However, many such elements disappeared due to land consolidation and changes in agricultural practices.

Today, agroforestry systems are being (re)developed in the Netherlands with diverse business models, including recreation, education, and cooperative ventures. The emphasis is now on providing ecosystem services.

In Noord Holland, small-scale agroforestry systems have been developed near characteristic farms. The landscape's open areas, particularly arable land and meadows with organic soil offer opportunities for agroforestry. These systems contribute to wind erosion reduction and local biodiversity.

Choosing the right agroforestry system depends on factors like farm type, size, landscape, and the entrepreneur's interests and skills. Customization is essential, as one system may not fit all farms.

The design process involves several steps:

- Assess the current state of the farm and determine what should be retained or improved.
- Define goals and ambitions, considering biodiversity, risk management, and product diversification.
- Analyse the local environment, considering soil type, groundwater levels, historical land use, nature goals, and land use regulations.

- Design the agroforestry system, considering species selection, planting distances, and interactions between trees and crops.
- Develop a revenue model by defining the target audience, customers, strategic partners, and sources of financing.

Agroforestry designs must account for competition for resources, including water, nutrients, and light, and consider interactions between different species. Shade, windbreaks, and light competition should be addressed in the design. The agroforestry design plan emphasizes that the revenue model is crucial when choosing tree and shrub species that yield regular harvests, and maintenance is essential also for non-harvested trees in the agroforestry system.

As a follow up project of this operational group, in collaboration with Nature and Environment Federation South Holland and Utrecht, Louis Bolk Institute and Fruitz for Life, knowledge needs in the field of agroforestry are further expanded. In the follow-up project, practical experience will be gained through the construction of 'test plots' and make this knowledge available to a large group of farmers through the development of Do-It-Yourself test packages with associated fact sheets. More information: https://www.mnh.nl/project/proefpercelen-agroforestry/

Lessons learnt

Due to the occurrence of open landscapes, there would be many opportunities for agroforestry in the Netherlands. Some important lessons learned include: 1) Understanding the historical role of trees in farming landscapes is essential. Recognizing that trees have traditionally provided essential products and ecosystem services for farming families can help rekindle interest in agroforestry. 2) The project demonstrates the potential for diversified business models in agroforestry. Combining agriculture with recreation, education, and cooperative ventures can generate additional income and create a more resilient farming system. 3) The need for customization and creativity in agroforestry design is a significant lesson. One size does not fit all, and the project encourages farmers to adapt agroforestry systems to their specific circumstances, considering factors such as farm type, size, landscape, and personal interests and skills. 4) Agroforestry design is an iterative process. It evolves as more knowledge is gained, and this allows for ongoing improvements in agroforestry systems.

Figure 1. The fruit orchard "Fruittuin van West" was one of the participants in the "Proeftuin Agroforestry" Operational Group. The fruit orchard is grazed by hens and has a large variety of fruit trees, which can be harvested by the visitors themselves. Fruits ready to be picked are announced on the website.

The information presented in this factsheet was developed by the FOREST4EU partner, drawing on the innovations and knowledge generated by the indicated operational group with their explicit authorization.

Further information

Voedselbos en Agroforestry: https://www.mnh.nl/project/voedselbossen-en-agroforestry/

Funded by the European Union

Funded by the European Union (Grant n. 101086216). Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or REA. Neither the European Union nor the granting authority can be held responsible for them.