Climate Northern Ireland

AFBI

Case Study

Agri-Food and Biosciences Institute - Agro-Forestry Systems

6/12

Key Points

- AFBI ran trials on Agro-forestry to demonstrate the application of the concept in NI.
- Aim - to optimise Agro-forestry for use in NI and further abroad.
- This involved researching aspects such as tree species and spacing.
- Collaboration with other agencies and use of experience from a variety of countries.
- DARD is proposing an agro-forestry option in the next Rural Development programme as a result of the research.
- Delivery of key ecosystem services and resilience to extreme weather -high winds, extreme heat or flooding.

This case details AFBI's research into the use of Agro-forestry systems in Northern Ireland. These systems can provide resilience for both crop and pastoral farmland. It sits within the Natural Environment action category of the Northern Ireland Adaptation Programme.

Agroforestry is a practice to manage land resources through the integration of trees into farming systems. It is not a new idea, but the scheme has had mixed acceptance from policy makers since the idea was first recognised in the early 1980s. At this time an agroforestry forum was inaugurated in the UK and a national experimental network was set up. It co-ordinated multi-site trials where a range of management and monitoring practices were tested and applied. In Northern Ireland these trials were located in lowland and upland sites, using broadleaved tree species.

The Agri-Food and Biosciences Institute (AFBI) is a Non-Departmental Public Body (NDPB) sponsored by the Department of Agriculture and Rural Development (DARD). It was created in 2006 as an amalgamation of DARD Science Service and the Agricultural Research Institute of Northern Ireland (ARINI). The organisation carries out "research and development, statutory, analytical, and diagnostic testing functions for DARD and other Government departments, public bodies and commercial companies."

Overview

AFBI ran trials on how to optimise agro-forestry systems for Northern Ireland. These trials used several trees and aimed to assess the value of the practice through field experimentation, collaboration with other research institutes and literature from similar trials.

Aims/objectives

Determine the best means of establishing trees on pasture in the presence of sheep.

Assess the growth and form of broadleaved tree species grown at certain ranges of spacing.

Assess the effect of the trees on agricultural production, the physical environment and biodiversity.

Use the information gathered on the tree growth and agricultural production to determine the potential value of agroforestry systems in the UK.

Challenges

Agro-forestry is a long process and requires exchange of ideas and collaboration with other research organisations.

Disseminating the correct information to progress real adoption of best practices on the ground, improving the opportunities for farming with trees.

Successes

DARD is proposing an agro-forestry option under the new Rural Development Plan based on the outcomes and experience from the AFBI trials.

“The project comprised several organisations across the UK including DARD and has made important contributions in terms of its successful adoption and a better environmental, economic and social understanding of its establishment and management where livestock graze between widely spaced trees.” – AFBI

"The agroforestry project shows that there is more scope for this type of land use system which can adapt to a wider range of climatic variables and which will enhance the landscape in Northern Ireland."

Rodrigo Olave. AFBI

Climate Adaptation

A diverse farming landscape will offer better adaptation to climate change. One form of agroforestry, Silvopastoralism (trees in pasture), has been shown to have impacts like;

Enhancing biodiversity,

Providing shade and shelter for stock

Absorbing minerals leaching below the grass root layer, or excess water.

Sequestering a level carbon in excess of open pastureland

AFBI found that it is increasingly important to recognise the carbon storage properties of trees. These agroforestry systems can store up to 3.8 times more carbon than ryegrass pasture and almost three quarters of the carbon of a productive Sitka Spruce forest. Afro-forestry also offers adaptation to extreme weather, for example, high winds, extreme heat or flooding. Land and animals are more resilient with an Agro- Forestry system in place.

Lessons learned

Trials were completed with Ash trees but due to the spread of Ash dieback disease across Europe it may not be suitable in future. The project showed that planting should be centred on native species of tree as the soils suit them better.

The experimental agroforestry sites enhanced biodiversity, carbon sequestration and multi-functionality. They also offered resilience to projected shifts in the Northern Irish climate.

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