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AGROFORESTRY

Agroforestry at Elm Farm and Wakelyns

Highlights from 20+ years of on-farm research

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ABSTRACT

Agroforestry encompasses the establishment of new trees in productive fields, the integration of existing boundary hedges and trees into the farming system and the incorporation of farming into forestry. It is a land use approach that can maintain or enhance the productivity of a farming system while supporting ecosystem services including soil and water protection, biodiversity and carbon sequestration. The emphasis is on managing rather than reducing complexity, and as such, it is knowledge intensive, with farmers needing to work with their environment to create a dynamic, ecologically based management system that offers more resilience in the face of future climate uncertainty.

At Wakelyns Agroforestry in Suffolk the four different agroforestry systems, based on a maximum use of biodiversity, have been the site of many years of research trials and demonstrations. Over a 10-year period a range of agroforestry approaches have also been introduced to Elm Farm, formerly a commercial and research farm in West Berkshire.

Over the years these two farms have been key sites for the Organic Research Centre to carry out trials and build up evidence on the contribution of agroforestry to the delivery of a number of important ecosystem services such as food and fuel production, maintenance of soil health and biodiversity enhancement.

Figure 1 Silvoarable systems: wheat harvest inbetween two hazel tree rows at Wakelyns

INTRODUCTION

Elm Farm: The former home of the Organic Research Centre and an organic livestock farm in West Berkshire. Over the past 10 years, as part of a farm-scale agroforestry plan to increase the overall productivity of the farm whilst also providing environmental benefit, 3,800 new trees (apple, willow, alder, hazel and oak and other native UK tree species) were planted, the planting also included an innovative and fully replicated silvopastoral alley cropping trial. New management approaches for existing trees and hedgerows were also introduced to investigate ways of incorporating them into the productive farm system.

Wakelyns: This 22.5 ha experimental and innovative agroforestry farm in Suffolk was established by the late plant pathologist Prof. Martin Wolfe to put into action his theories of agrobiodiversity being the answer to achieving sustainable and resilient agriculture. Wakelyns Agroforestry integrates trees for timber (ash, wild cherry, italian alder, small-leaved lime, sycamore, oak and hornbeam), energy (hazel, hybrid willow and poplar) and fruit (apple, plum, pear, cherry, quince, peach and apricot) production into an organic crop rotation in four mature silvoarable systems. The first trees were planted in 1994 and planting continues today.

OUR KEY FINDINGS AND OUTPUTS

Key recent technical guides and publications outline the wealth of research and knowledge gathered by the Organic Research Centre and partners over the years from these two sites.

Wakelyns Agroforestry: Resilience through diversity[1]. Short summary booklet detailing the story of Wakelyns Agroforestry and key concepts and research, including the innovative approach to diversity at all levels from genes to landscape as the bedrock of sustainable agricultural systems; evidence collected to demonstrate the concept of decentralising and localising food and energy production; and research trials examining the productivity of the different systems and the interactions (positive and negative) between tree and crop components.

Wakelyns Agroforestry: 25 years of agroforestry[2]. Long report detailing some of the key theories investigated and evidence produced by Martin Wolfe and fellow researchers from the Organic Research Centre at Wakelyns over two decades. The report is arranged into five sections: Farm description, Decentralised food and energy production, Tree-crop interactions and total productivity, Functional diversity, Sustainability.

Figure 2 Silvopastoral systems: sheep grazing alongside a tree row at Elm Farm

Elm Farm: integrating productive trees and hedges into a lowland livestock farm[3]. This review document consolidates in detail the research results and experiences of Elm Farm's 10-year agroforestry journey. The review is arranged into four sections: New tree and hedge planting, Managing hedges for bioenergy, Silvopasture trial, Tree fodder.

Elm Farm: Planning and developing agroforestry at a farm scale[4]. This research briefing summarises the lessons learned in the planning, establishment and management of the range of agroforestry approaches introduced to Elm Farm over a 10-year period.

Technical Guide: Productive Hedges: Guidance on bringing Britain's hedges back into the farm business[5]. As a valuable resource within our rural landscapes, hedges need to be managed in a way which is sustainable, both economically and ecologically, and allows them to continue being healthy and vigorous so they persist for generations to come. The coppicing of hedges for woodfuel or other products has the potential to not only reduce the cost of managing hedges but to provide local communities with a renewable, low cost energy source whilst supporting wildlife and improving the health of hedges. This practical guide based on case studies from Elm Farm and elsewhere outlines some options for farmers wishing to take a second look at their hedgerows.

Hedgerow harvesting machinery trials report[6]. This is the full report from the hedgerow harvesting trials that were carried out at Elm Farm and Wakelyns. Based on the trial results the report assesses feasibility, efficiency, costs and viability of mechanising the process of coppicing hedges and processing the resultant hedgerow material as a local and sustainable source of woodfuel.

Technical Note: Agroforestry for livestock systems[7]. Based on research at Elm Farm and Wakelyns, this technical note highlights some of the potential benefits and impacts of utilising an agroforestry system for low-input and organic dairy systems. The research evaluated an established willow agroforestry system in terms of productivity, microclimate modification and carbon storage and investigated the establishment phase of a new agroforestry system, providing economic and environmental data on establishing and managing a new system.

Conclusion

These just some of the key highlights from a selection of the many technical guides, scientific publications and factsheets that have been produced over the years at these two important agroforestry farms. Many of the supporting publications referenced in the long reports can be found on the Organic Research Centre website or on Agricology.

Figure 3 Coppicing hazel at Elm Farm

References

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