

Growth, form and ecological interactions of Ash (*Fraxinus excelsior*) trees planted as an Agroforestry system in Northern Ireland.

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In agroforestry systems trees are managed dynamically and ecologically to integrate them into farming systems to increase social, economic and environmental benefits for land users. The potential role of agroforestry as a land use option in Northern Ireland was recognised in 1985 where a forum to consider a research strategy for UK agroforestry was inaugurated.

Subsequently, ash (*Fraxinus excelsior*) trees were established in 1989 as a silvopastoral trial where a long-term management and monitoring methodology for all components of the system were recorded. Plots were planted in Loughgall (Co. Armagh) at 100, 400 and 2,500 (woodland control) stems per hectare. Growth, form, tree protection and ecological interactions were recorded to assess the effects of the trees on agricultural production, the physical environment and biodiversity.

The Silvopastoral plots have been managed under a protocol for tree protection, rate of fertiliser application, height of grass sward and tree pruning. Pasture is grazed by sheep or cattle from April-November and fertiliser (160 kg N/ha) is applied to the sward each year. Ash trees planted at 400 stems per hectare were thinned (7.2m³ removed) for the first time in 2004 and the wood sold for the Hurley (a locally used sports stick) market.

The results show that trees planted at a density of 400 stems per hectare have reached an average tree height of 13.8cm and an average tree diameter (DBH) of 24.3cm at 18 years old. However poor growth has been recorded at the widest silvopastoral spacing. Pasture growth and livestock production were not significantly reduced after 12 years and a positive impact on microclimate and biodiversity has been detected. It has been predicted that sheep grazing density will be reduced to 50% of current levels after approximately 20 years but early results indicate that this prediction may be unduly pessimistic.

In the future the silvopastoral trial will be operated following mixed sheep/cattle grazing system and trees will be thinned again in 2010 and removal of the tree guard is being considered. The paper will present information on the potential use of this system and its economic viability in a situation where state support for farming is being gradually reduced.

Topic: Management for high valuable wood production

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