

Glensaugh Agroforestry Demonstration

■ EXPERIMENTAL PLANTING AND GRAZING MANAGEMENT 1988-2001

This site was planted as part of a research project in spring 1988. The original idea was to demonstrate reduction in livestock output, in an integrated sheep grazing and woodland management (silvopastoral) system. The timber was an alternative, potential source of income.

Tree planting and maintenance:

- **Tree species** Three species were selected (**Hybrid Larch**, **Scots Pine**, and **Sycamore**), to compare hardwood and softwood productivity.
- **Plot size** The grazed agroforestry plots were around 0.8 ha, although some of these have now been amalgamated. The woodland controls were smaller (0.25ha).
- **Tree density** The trees were planted using two plot grid densities (400, 200 & 100/hectare (ha)), with an unplanted control plot, and a woodland control plot for each species.
- The trees were planted in pairs - the poorer removed in year 4 (Y4). Beating up (replanting lost trees) was carried out in the first three years.
- **Tree protection** The trees on the grazed plots were planted in 1.8m tall, rigid plastic, tubes for protection from livestock. These damaged tree form of the conifers (particularly Hybrid larch) and were replaced by wider, netmesh guards after year 6.
- Weed killer maintained a one metre diameter, grass-free, area around each tree for the first three years. No other vegetation control was used.
- **Tree management** An early, science-based, decision was made for no pruning until a significant reduction in sheep production was measured.
- This happened under the **Hybrid larch** (400/ha) in Year 11 (1999). We pruned the lowest whorl of branches providing the canopy remaining was more than 50% tree height. The following year (2000) all larches were pruned to 50% of their top height.

Pasture and Grazing:

- **Sheep Flock** A flock of Greyface ewes was established to graze the site. Greyface are a relatively large animal, hence tall tube protection.
- **Stocking** Individual plots were stocked with ewes and lambs each April; lambs were weaned in August, and dry ewes left grazing until November, they were fed elsewhere over winter.
- **Stocking Rate** A stocking rate target of 12.5 ewes/hectare was aimed for, with seasonal flexibility according to sward height. An average sward height of 35mm
- **Pasture management** Until 2001, four NPK fertiliser applications (totalling 160kg/ 48kg/ 48kg) were made during each grazing season.

■ MAIN FINDINGS

- The pruning, for all species, was left too late for optimum sward maintenance. The branches were thicker and harder work to prune as a consequence.
- The trees (all species) in the lower density planting plots did not grow as well at Glensaugh, as those in the higher density (400/ha) plots.
- Sheep benefited from the shelter provided by the trees, and consequently put on weight.



■ INTERIM MANAGEMENT

Since the experiment ended, in 2001, management of the plots has been on a care and maintenance basis, with no monitoring, due to a lack of resources. Fertiliser application and grazing intensity have been reduced, in line with management trends at Glensaugh, and wider industry practices.

Tree and plot maintenance:

- **Redundant fences** around established plots, and tree protection, are being removed.
- Fences around potential experimental plots (e.g. new planting) are maintained.
- Six hybrid larch plots (100 & 200 trees/ha) were **clear felled** in 1995.
- **Hybrid larch** plots have not been pruned since 2000.
- **Sycamore** (2001 & 2006) and **Scots Pine** (2006) were pruned to 50% of tree height at the time of pruning and continue to be monitored.
- There has been **no thinning** of the agroforestry plots to date.
- The **woodland control plots** continue as controls - no pruning, thinning, or grazing.

Pasture and Grazing:

- The site continues to be grazed by crossbred ewes and their offspring. Both **crossbred** (Mule) ewes with their **Texel** cross lambs, and purebred **Blackface** ewes nursing twins, graze the plots.
- **Stocking rate** typically 8-10 ewes/ha required to maintain sward height (xxmm)

■ DEMONSTRATION AND MANAGEMENT TODAY... AND FOR THE FUTURE

Our current management objectives support our continuing management of the site. Allowing us to experiment, monitor and demonstrate good practice. Also to share practical experience and provide guidance to those interested in learning about, or setting up, silvopastoral systems.

We are considering the options for each of the plots, and experimentation for the future.

- Suckler cows are to be allowed to graze freely through plots 10 (summer) and 12 to 14, and the adjacent open ground, from 2008.
- Comparing different levels of tree and grazing management.
- New planting of mixed hardwoods - Sycamore, Ash and Oak - e.g. at 400/ha on Plot 9.

Future plantings will look at:

- The performance of different species - especially native hardwoods, and planting densities, using 400/ha as minimum.
- Effects of early pruning and thinning regimes.
- Effects of open grazing for cows, compared to sheep
- Planting with the contours rather than across them - avoiding the straight lines that were an essential feature of the original experimental design.

■ IMPORTANT MESSAGE

If you want to integrate growing trees and grazing livestock on the same land - **remember**

- this is a long term commitment and investment for you...
- good preparation and planning are important...
- tree selection, based on site suitability, and regular management are crucial... but,
- it adds value to your livestock; you can produce high quality timber, and you also raise the biodiversity and amenity interest and value of your farm, for the future...

It's worth it!