

Creating an agroforestry research capability

Both the UK and Welsh Governments have published highly ambitious tree planting agendas in an attempt to mitigate climate change and achieve carbon net zero by 2050 (UK government = 30,000 ha of trees per year for 25 years; Welsh Government = 43,000 ha of new woodland by 2030, and 180,000 ha by 2050). Although new forests have the potential to increase economic returns compared to farming in upland areas, the current forestry business model means displacement of communities currently supported by farming activities is the more likely outcome. Agroforestry is the growing of trees and agricultural crops on the same land. It offers an opportunity to achieve multiple gains, including but not limited to: increased carbon sequestration; improved biodiversity, habitats and soils; improved livestock performance and related reductions in greenhouse gas emissions; diversification of income streams; and retention of rural communities and culture. However, trees inevitably take many years to grow, and it is not possible to create agroforestry within the timespan of typical research projects.



The goal of this project has been to develop an agroforestry research and teaching resource at Pwllpeiran. Using a grant from Aberystwyth University's Rural Futures Hub, trees were planted into permanent pasture on a south-west facing slope. The experimental design was developed in close collaboration with Coed Cymru and took into account the characteristics of the site, future pasture use, and the costs of protecting the young trees. Three × 1 ha blocks of agroforestry were created with the trees planted 5 m apart in all directions. This gave a planting density within each block of 100 trees/ha, with the overall density across the field equivalent to 50 trees/ha (i.e. when land outside the

three blocks was taken into account). Five different species of tree were planted: willow, aspen, alder, rowan (mountain ash) and birch; with 20 of each planted at random within each block. These species were chosen because they are native, should be able to cope with the harsher growing conditions in the uplands, and are not toxic to stock. The bare-rooted saplings were planted by hand directly into the grassland. Each then had a staked tree guard fitted.

Initial establishment rates were good with the exception of the willow trees, which had struggled in the very dry months following planting. Trees of all species that had died were replaced in spring 2024. We will continue to monitor the growth of the trees, and in time will also investigate their effects on pasture growth and soil properties.

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