

Case Study

Trees enhance flock health and field drainage

June 2015



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Strategic on-farm planting increases livestock shelter and improves land management

In the last year, Welsh sheep and beef farmer Jonathan Francis has planted almost 15,000 trees to help improve the productivity of his 113 hectare farm. Unable to turn stock into some fields at certain times because of substantial rainfall and lack of shelter, Jonathan worked with Coed Cymru adviser Mike Richards and the Woodland Trust to incorporate trees and fencing on his farm to improve shelter, land drainage and grass-growing conditions.

Proof in the planting

Tyn-Yr-Wtra Farm has been in the Francis family for generations, and Jonathan now rears 60 Hereford cross-suckler cows, 100 purebred Welsh sheep and 300 Welsh Mules. Wanting to improve productivity, Jonathan began to address some key environmental issues and started restructuring the farm. "Surface water runoff was affecting the sward, causing waterlogged fields and soil erosion which led to a loss of land alongside watercourses. There was also a need for shelter." To improve conditions, Jonathan looked to trees and hedges to help improve grassland quality, create shelter and increase biosecurity.



“Apart from losing a bit of ground, I can't see a downside to planting the trees with all of the benefits it will bring.”

Jonathan Francis, Welsh sheep and beef farmer

Narrow but strategically sited tree belts are very effective at improving field drainage. Research at a group of farms in Pontbren showed that within three years of planting – particularly on a slope – water infiltration rates were improved by 60 times compared to grazed pasture. By increasing soil permeability and water-storing capacity, trees reduce runoff, poaching and consequent damage to the sward. Such improvements also help to prevent serious flock health issues, such as liver fluke and lameness.

Targeted tree belts

A 13 hectare field was of particular concern. Sloping and open to the elements, heavy rainfall would cause severe erosion and wash sediment into the nearby brook, meaning the field could not be used to its full potential. However, Jonathan was eager to make it more productive and free up more ground for lambing. Learning from the farmer-led improvements in Pontbren, and with support from adviser Mike Richards and funding from the Woodland Trust, Jonathan created a six metre wide linear tree belt on a sloping field on the farm boundary. Planted with 2,250



Shelterbelts planted on unproductive hill land under the Glastir Woodland Creation Scheme

Key facts

The problem:

- Surface water runoff caused waterlogged fields and soil erosion, meaning some areas could not be used in periods of heavy rainfall.
- Land alongside watercourses was being lost through erosion.
- Some fields had limited shelter, reducing their suitability as early turnout sites.
- Hill ground was largely unimproved and unfenced, so could not be managed as productive grazing land.
- Farm boundaries needed to be made more bio-secure.

The solution:

- As plans did not fit Welsh Government grant eligibility criteria at that time, a tailored Woodland Trust PUR planting scheme will help to reduce surface water runoff and loss of nutrients - reducing soil erosion, compaction and the pollution of nearby water courses.
- Fields have been rationalised with dividing fences and tree belts to improve pastures and make them more manageable.
- Treed farm boundaries, linear shelter belts and small clusters of woodland will help create sheltered, well-drained fields which provide the best conditions for lambing and good mothering.
- Biosecurity will be strengthened, as the potential for disease transmission from neighbouring animals is reduced.
- The risk of neonatal loss of lambs will be reduced, and the incidence of mastitis lowered through reduced wind exposure.

native trees such as birch and oak, the belt also contains dense hedgerow species to provide low shelter for livestock, and is flanked on both sides by 340 metres of fencing – all of which was supported by the Trust’s PUR scheme which funds the planting of around 16,000 trees a year. “The belt will help to store rainwater by increasing soil porosity and intercepting overland flows of surface water during heavy rainfall. This helps to slow down water and reduce the impact of localised flooding,” said Mike.

In addition, a wider ‘buffer strip’ was planted through the Glastir Woodland Creation Scheme alongside a stream at the bottom of the field, preventing livestock from accessing the water course and protecting areas vulnerable to erosion. Mike commented, “It follows the landform rather than having a consistent width.” Over time, the field will be drier and more sheltered, improving livestock rearing conditions and pasture management which is vital for sustainable productivity.



A field before the planting of a PUR-funded shelterbelt

Hill ground improvements

Under the Glastir scheme, further work was carried out on 25 hectares of hill ground. Here, three shelter belts were planted 16-18 metres wide and 400 metres long, with more planting on steep, unproductive bracken ground totalling almost four hectares. Planted perpendicular to the wind to filter strong gusts, the belts contain species that will withstand the elements and suit the soil type. “We avoided planting oak here because the hill is too exposed and damp, which reduces its ability to survive. Instead, we’ve used a mix of hardy pioneer species including common alder, birch, willow, and aspen, together with native shrubs such as blackthorn, hawthorn and bird cherry which are all indigenous to the region,” said Mike. Again, low, dense shelter features around the edge to offer vital protection for Jonathan’s flocks, while the taller and permeable centre of the woodland will filter the wind – lessening its impact on the surrounding ground.



Additional benefits to the farm:

- More cost-effective livestock systems, such as outdoor lambing and early turnout, can be practised.
- Further shelter can be created by restoring existing hedgerows and creating new ones – also good for continued improvements to grassland management.
- Reductions in surface runoff and improvements in the land’s capability to hold water will improve water quality and slow peak flow rates in nearby watercourses.
- Linear belts and small woodland areas across the farm will improve the local landscape as well as create valuable habitats and wildlife corridors.

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Better biosecurity

In total, 3.2 kilometres of fencing has been erected to create several grazing spaces. This will eventually help to improve grassland quality, with Jonathan also transforming unproductive dingles into small clusters of woodland. “Doing this has made the land more manageable straight away because I’ve been able to graze it harder, and it is much easier to gather the sheep” said Jonathan. Although scab is once again prominent, Jonathan feels more confident about biosecurity with the risk of disease transmission lowered thanks to the shelter created along his field boundaries. Once the trees are more established, the risk of mastitis and hypothermia will be significantly reduced, giving Jonathan the option to move his Welsh purebreds outdoors for lambing and greatly reduce labour costs.



PUR shelterbelt planting underway

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