

Practical Guidance

The role of trees in sheep farming

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Sheep are a characteristic part of the British landscape and have played an important part over centuries in shaping the UK's ecology, rural communities, industry and economy. Sheep farming is important to domestic and global food supply. The UK sheep industry's knowledge and skills and UK sheep genetics are of importance internationally. Sheep farming can also have a critical role in the management of the environment for wider public benefits in the uplands and lowlands in supporting biodiversity, managing water quality and flood risk, maintaining treasured landscapes and providing the basis for mixed rotational farming systems.

This booklet looks at the role of native trees and shrubs in the management of sheep. Thoughtfully integrated into sheep management systems, trees can boost production and improve animal health and welfare whilst also providing wider benefits to the environment.

Shelter and shade

Outdoor lambing has become increasingly popular since it reduces labour costs and offers reduced disease build up compared to housed lambing - the most significant costs in sheep production. Even in areas where outdoor lambing is impractical or indoor lambing is still preferred due to unpredictable weather, early turnout is increasingly common. Good shelter is recognised as important for successful outdoor lambing and for young lamb survival. Exposure to cold is one of the biggest causes of neonatal loss of lambs - around a third of lamb deaths are due to exposure and starvation. Sheltered, well drained fields provide the best physical conditions for lambing and good mothering. By creating the right conditions for ewes and young lambs, lamb mortality can actually be reduced compared to housed lambing, as a result of improved bonding with the ewe and lower exposure to disease risk.

Studies have shown that in cold, wet and windy weather lamb losses can be reduced by up to 30% if good shelter is provided. Twins and triplet lambs derive the greatest benefit from shelter due to their relatively lower birth weight and higher susceptibility to cold, wet and windy conditions.

Shelter belts can be designed to assist natural behaviours of ewes and provide opportunities for isolation during lambing. Isolation increases the chances of early development of a strong bond between the ewe and her lambs, better suckling and colostrum intake and reduced disease risk and greater resistance to the cold.



Exposure to cold is one of the biggest causes of neonatal loss of lambs. Sheltered, well drained fields provide the best conditions for lambing.

Shelter should be designed to provide good cover down to ground level. The use of shrubs to give a dense base to tree shelter belts will ensure plenty of low level cover. Similarly hedges should be maintained to be free of gaps which can funnel wind. Laying hedges or planting hedging shrubs to fill gaps will maintain protection from wind chill.

If drift lambing is being practiced, shelter can also be used to divide a large field into paddocks.



Pontbren - A farmer-led approach to sustainable sheep production

Pontbren is an upland landscape in mid Wales. At the end of the 1990s three Pontbren farmers decided to change the way they managed the land. They were soon joined by neighbouring farmers, and by 2001 the group consisted of 10 farms across 1000 ha of the catchment.

Although they had been getting more for their stock as a result of agricultural improvements, fertilizer and feed bills were growing too. They decided to reduce inputs and moved to hardier sheep breeds able to lamb outside and needing less housing during the winter. Given the altitude and exposure of the farms, they realised there was a need to increase shelter through restoring neglected hedges and woodland, and planting new shelter.

The farmers knew where the shelter was needed, which land was wet and where foot rot and liver fluke were prevalent.

They were able to design hedges and woodland belts where they could help with collecting in sheep, and fence out steep slopes. In wet areas, rather than continue an often fruitless battle to improve drainage, the areas were fenced and made in to ponds, which now provide an additional supply of water. They also used tree planting around the farm boundaries to improve biosecurity by reducing the likelihood of contact with neighbouring flocks.

At the start of the project only 1.5% of Pontbren was woodland, mostly neglected riparian woodland. They



have now planted over 120,000 new trees and shrubs, 16.5 km of hedges created or restored and nearly 5% of the Pontbren land is now 'woodland'. This has been achieved with no loss of agricultural productivity.

It soon became clear that the tree planting in addition to providing shelter was reducing water run-off. Initial investigations showed that water infiltration in recently planted shelter belts was 60 times that of the neighbouring grassland. Through reducing overland flows and increasing infiltration, peak stream flows were also reduced. Research from the project suggests that well sited tree shelter belts and restored hedgerows can result in reduction in peak stream flow of around 40% within this type of upland catchment.

This project has showed the importance of an intimate knowledge of the land in designing and siting tree belts. They have managed simultaneously to improve the resilience and sustainability of their farms whilst delivering public benefits of improved water quality and flood mitigation. In addition, the new planting and restored hedgerows and woodland have delivered biodiversity benefits and helped store carbon.

Trees and woodlands are now an integral part of farm management in Pontbren demonstrating the benefits for upland livestock farming, water management, wildlife and landscape.



Grass growth

Shelter reduces wind speeds and thus reduces evapotranspiration of water from grass. In dry spring/summers – increasingly frequent, even in upland areas – this can be a critical factor in continuing grass growth. The shelter also has the effect of increasing soil temperature in the early spring and late autumn, extending the growing season for grass.





Animal health and welfare



There are a number of ways in which trees and hedges can contribute to improved animal health and welfare. In addition to reducing neonatal lamb losses due to exposure and hypothermia, reducing exposure to extremes of weather, both cold winds and extreme heat, can help improve general health and welfare through improved nutrition, reduced stress and improved immune function.

Liver Fluke

Recent years have seen an increase in incidence and spread of liver fluke, partly due to the movement of stock, but also a series of wet years which favour populations of snails which carry the parasite. Quarantining of stock

brought onto the farm is important in avoiding introduction of liver fluke. Effective treatment and control is also vital to managing this parasite and its complex life cycle.

When siting tree shelter belts the opportunity can be taken to fence out wet areas where liver fluke is known to be prevalent. Tree shelter belts and wide hedges - particularly those across the slope- can also increase water infiltration in to the soil, reducing surface water and the wet conditions likely to favour the snails which act as host for the parasite.

Mastitis

Mastitis in ewes is the result of bacterial infection which generally develops in the early stages of lactation. Teat lesions caused by excessive sucking by lambs allows entry of the bacteria.



The problem is worsened by exposure to cold winds and contamination of the udder by mud which can predispose ewes to infection. Providing tree shelter belts can reduce the risk of mastitis.

Lameness

Lameness can be the result of a number of infections including foot rot, foot scalds, Contagious Ovine Digital Dermatitis (CODD) and as a result of soil balling on hoofs. Lameness can reduce lambing percentage, birth weights and growth weights of lambs, as well as affect milk production and lower fertility of rams.

The incidence of many causes of lameness can be increased by damp conditions underfoot which soften the interdigital space and make it more susceptible to infections. High stocking rates, particularly on poorly

drained pasture with severe poaching will worsen conditions and increase incidence of several causes of lameness.

Detection of disease and timely effective treatment is critical as well management approaches which reduce the spread of disease.

Reducing surface water can help minimise the area of wet ground liable to poaching and acting as a breeding ground for disease, and also reduce the incidence of soil balling on hoofs. Tree belts across the slope intercept runoff and reduce surface water collecting on pasture.

Biosecurity

General biosecurity of the farm can be increased by creating tree belts or thick hedges around the farm boundary, reducing the possibility of direct contact and spread of disease with neighbouring flocks.

Wider benefits

Increasing tree cover on farms, as well as supporting production, can also provide wider benefits.

Water quality and flood risk

Even modest increases in tree and hedge cover can dramatically increase water infiltration and reduce runoff. This has two implications for water management.

Firstly water which infiltrates into the soil in tree belts of hedgerows is less likely to carry potential pollutants into water courses – this includes sediment, organic matter, faecal organisms and nutrients. Loss of soil and nutrient is a cost to the farm but it also has implications for water treatment costs further down stream.

Secondly by increasing infiltration the rate at which rainwater reaches

streams and rivers is slowed. The effect is to reduce peak flows in the water course and potentially reduce flood risk downstream.

Wildlife

Incorporating natural features such as trees, woods and hedges onto the farm increases the area of habitat available to wildlife. Many species of birds and insects also benefit from the shelter afforded by trees. Fruits, pollen and nectar from flowering trees and shrubs provide food, particularly early in the season before many non-woody plants come in to flower.

As the climate changes, natural features in the landscape will aid the movement of species as they seek to adapt to the changing climate.

Producing wood

Whilst the primary design of shelter belts should be based on developing cover which supports sheep production, the trees can also provide useful products for use on the farm or for sale.

Firewood and chip for wood fuelled boilers can be produced from thinning or coppicing the trees as part of routine management. Woodchip can also be used to provide alternative bedding either to replace straw or to mix with it.



Sheep on woodchip bedding



WTPL/Matthew Vaughan



Planting your shelter belts and hedges

Maintaining and restoring existing hedgerows is a good starting point for developing good shelter. New hedges created to aid sheep handling or divide large fields can provide additional shelter as part of the overall management of the flock.

The greatest shelter benefit can come from belts of trees. These can be integrated by planting adjacent to the existing hedges – planting on the northern or shadier side to avoid shading out the hedge. Additionally, wet areas, awkward corners and areas known to be susceptible to overland runoff can be planted to reduce access to wet or difficult to manage areas and lessen the amount of surface water likely to lead to poaching or act a habitat for liver fluke snails.

The choice of UK native tree species will help ensure the trees are well suited to the site and are able to deliver the wider benefits to wildlife. Exact choice will depend on location, soils and altitude. Newly planted trees will require weeding for the first few years and protection from voles, rabbits, hares and deer depending on where you are in the UK.

Free advice and support

The Woodland Trust offer free advice and support for tree and hedgerow planting on your farm. Our advisors can help identify the best trees for you farm, together with suitable grant support where available.

Call **01476 452356** for a free visit or look on our web site at **woodlandtrust.org.uk/plant-trees**

Dr Fiona Lovatt, Sheep Veterinary Consultant, said:

"From a flock health point of view there are a number of situations where a sheltered field is invaluable – not least in reducing the risk of hypothermia in new born lambs and the risk of mastitis in their mothers. Tree and hedge planting can improve drainage and play a vital role in integrated sheep farming which must be good for both the flock and the environment."



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