

Farming for a Better Climate



Working towards net zero carbon at Preston Hall Farms

Owned by the Callander family and managed by Bill Gray, Preston Hall Farms is a predominantly arable enterprise totalling 650 ha located at Pathhead in East Lothian.

The business grows a mix of winter oilseed rape, winter wheat, spring barley, winter oats and winter barley. The remainder of the land is woodland and grassland, the latter used for horse and sheep grazing and silage production. The business had diversified with a 40 horse livery, let shoot, houses and commercial lettings plus two biomass renewable plants.

Farm manager Bill Gray works with two permanent employees plus casual staff at harvest. Preston Hall, alongside neighbouring Saughland Farm formed the 2016-2020 Lothian Monitor Farm, working with local farmers to develop ways of farming more sustainably, and more profitably.



Integrating livestock into the arable business

Being an entirely arable business, Preston Hall doesn't have any livestock. However, with an eye on wanting to improve soil health, whilst also creating a new income stream, in 2016 the business set out to look at ways that they could integrate livestock into the business through a collaborative arrangement with a neighbouring farm - Saughland.

Together, Preston Hall and Saughland formed the 2016-2020 Lothians Monitor Farm project, with Preston Hall sowing a temporary grassland mix into a field that had been identified as a poor performing arable field. Saughland then provided livestock, a mix of cattle and sheep, to graze the field through the year, adding organic matter through livestock dung the process. Using soil samples and livestock performance data a rent was set for the field, providing an additional income stream to the business. Through this collaboration, Saughland and Preston Hall demonstrated how livestock could help to regenerate arable soils, provide a viable income source, and increase performance of the arable crops.

Case Study

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- Energy and fuel use
- Renewable energy
- Lock carbon into soils and vegetation
- Optimise the application of fertilisers and manures
- Optimise livestock management and the storage of manure and slurry

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Supporting soil health

Soil health is the number one issue on every farm across Scotland, with soil playing an important role in reducing flooding, sequestering carbon, and providing a bank of nutrients and minerals to support crop growth. Growing a healthy soil is an art; with Preston Hall being a specialist arable estate, paying particular attention to the health of the soil is important for the future profitability of the business as well as for climate change and the environment.

Bill and the team undertake regular GPS soil sampling, analysis and variable rate N, P and K application so that they can tailor fertiliser and lime to the exact needs of the soil - reducing inputs so none are wasted. Through the agri-environment and climate change scheme, Preston Hall also started growing cover crops, also known as green manures, with the business now growing 20ha of green manures on an annual basis. Mixes have included clover, vetch, ox eye daisy, yellow rattle and birds foot trefoil. Green manures are an important tool on an arable farm that does not have access to livestock manure as a method of increasing soil organic carbon (or organic matter) back into the soil. As soils increase in soil organic matter, they increase the amount of carbon stored in them - a powerful way to help to reduce climate impact.



Working with the environment

The team at Preston Hall have always had an interest and actively sought to work with the natural environment alongside the arable operations. In 2019 Preston Hall entered into a successful Agri-Environment scheme. The aim of the scheme was to increase habitat available for local species, that also integrated into the business, with a particular focus on pollinators. The Agri Environment scheme saw 1279 metres of new native species rich hedges providing shelter for stock, seeds and berries throughout the winter, a safe place to nest and hibernate, supporting plenty of insects & hedges improve the landscape value. Bill and the team also started sowing wild bird seed in corners of fields, providing extremely important habitats for over wintering farmland species, winter and spring shelter and feeding for grey partridge and other farmland birds, insects and species such as brown hare. On the pollinator side, over 3.3ha of nectar rich grass margins were created, alongside additional existing grass margins. A nectar rich seed mix ensures there is ground cover year-round, so as well as providing a varied food source for pollinators and natural predators, it also protects against surface run off and soil erosion too- benefitting water quality. Bill and the team at Preston Hall also worked with a team of researchers in a solitary bee project, that helped to demonstrate how creating species rich grasslands resulted in a direct increase of ladybirds, spiders and parasitic wasps- you can watch more at [www.youtube.com/watch?v=-mjOgSov MM](https://www.youtube.com/watch?v=-mjOgSovMM)



Benefitting from biomass

A large part of Preston Hall is covered in woodland. Some woods are many centuries old, whilst other areas have been planted more recently. The majority of woodland consists of native species, such as oak, beech and ash, alongside small areas of commercial softwoods. As part of the woodland management program, over 30 acres of new woodland has been created. When felled, higher quality timber is sold for furniture making or used for building materials, whilst the poorer quality timber is dried and processed into firewood or woodchip, for use in the biomass boilers. Any surplus firewood and wood chip is sold locally. Preston Hall also has a number of biomass boilers. The first runs on straw, and acts as part of a district heating network, supplying heat to the grain drier and farm buildings. More recently, a 995kw Herz Biofire biomass boiler was installed at the farm, replacing the original farm boiler, using wood chip grown on the estate as its fuel source, helping to further reduce Preston Halls carbon footprint.