

Farming for a Better Climate



Working towards net zero carbon at Gryffe Wraes Farm

Willie Harper was brought up on the family dairy farm. At 25 he had the opportunity to lease Gryffe Wraes farm from Elderslie Estate near Bridge of Weir, Renfrewshire.

Willie set up his own farming business which has grown over the years and now covers 700 acres over several farms in Renfrewshire. He also contract farms another 350 arable acres for



Houston Farms. The farm has 250 Aberdeen Angus cross and Simmental cross beef cattle and a 200 strong sheep flock with most stock being finished on the farm. Willie is married to Mairi and has two daughters.

Carbon Auditing - looking at the business through a different lens

Carbon footprinting is becoming standard practice for all farming businesses. A carbon audit enables a business to understand where their emissions are coming from, what they are and how to take steps to build a more climate friendly and financially resilient farm.

The farming sector is committed to helping tackle climate change and support sustainable farming practices to help the country work towards the net zero emissions target by 2045.

Through the Beef Efficiency Scheme, Willie undertook annual carbon audits. The carbon audit has shown Willie that he compares well to similar enterprises. The carbon audit identified areas where there was the potential to reduce emissions even further, for Willie this included looking at the use of purchased feed for the cattle. Extending the grazing season through resilient soils that are less susceptible to poaching and damage, means cattle can stay outdoors and graze longer, reducing the amount of purchased feed and bedding needed for housed stock. Although his carbon footprinting results are favourable, Willie is still looking to make changes to routine activities to further reduce emissions, for example through making better use of grass and improving livestock performance.

Case Study

Find out how other farmers are improving profitability and adapting to a changing climate in our series of case studies, or take a look at our practical guides covering:

- 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

For more information, visit our webpages at

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Protecting and improving farm soils

One of the areas Willie has looked at in terms of emissions reduction is improving the soils at Gryffe Wraes. Willie farms in a high rainfall area and is aware that how he manages farm soils could help the business to adapt to a changing climate.

Willie regularly undertakes soil sampling to assess nutrient status. This allows him to target the nutrients he applies to match crop demand. He also has a liming programme in place to optimise soil pH and make best use of applied nutrients.

Healthy soils are more efficient at recycling nutrients, store more water helping to reduce flood risks (both on farm and in neighbouring urban areas), support plants at time of drought, and require fewer inputs to be productive. Healthy soils also benefit microbes and soil invertebrate life, supporting biodiversity as part of a wider soils food web.

Livestock management

Grazing cattle and sheep stimulate grass growth. This in turn can lead to higher levels of soil carbon sequestration, effectively taking CO₂ out of the atmosphere and locking it into farm soils. Willie has introduced a more structured grazing system, resulting in better grass growth. Alongside the carbon benefits, the improvement in grassland management has also had a positive impact on stock growth rates and fertility, both having a significant impact on the financial performance of the business.

Willie makes use of technology and regularly weighs cattle and sheep to assess their performance. This allows him to tailor rations and management accordingly, optimising productivity and stock health. Going forward, data collection will be an increasingly important part of Willie's future low carbon strategy.

Manging land for multiple benefits

Willie's farm, as part of Elderslie Estate, provides a great example of how strategic land management can result in woodland creation working effectively alongside food production. Both forestry and food production can be effective ways to increase both carbon sequestration and biodiversity. Parts of the farm are used to grow eucalyptus which is sold as a bio-fuel to a local company and there are also areas of new managed woodland planting across the holding.

By introducing trees, shrubs and hedges, Willie has also provided another way to lock up carbon on the farm and create effective wildlife corridors. These actions help to further increase and support wildlife and biodiversity both on the farm and across the local area.

Adapting to change

Farmers have always had to, and always will, adapt to meet the challenges of working with the environment. Major changes are possible with the support from both the public and government to maximise benefits for all and help Scotland in its journey towards net zero emissions by 2045.

