

Farming for a Better Climate



Improving farm efficiency; Findings from Glenkilrie

Glenkilrie, a 1,000 ha upland beef and sheep farm near Blairgowrie in Perthshire, participated in the Farming for a Better Climate initiative as a volunteer *Climate Change Focus Farm* from 2010–2013. With help from SRUC specialists, David and Morag Houstoun looked at practical ways to improve farm efficiencies and if these measures could also reduce the farm carbon footprint.

This case study provides a summary of the measures David put into place, based on the five key action areas (see box). Taking a second look at routine practices helped the farm business become more efficient and make better use of inputs. **These practical actions helped Glenkilrie save around £11,000 and reduce the farm carbon footprint by 10%.**

Measures to optimise fuel and energy use

With energy bills on the increase, ways to make best use of the spend on electricity and fuel are welcome. David looked at the following measures:

- Electricity use: Glenkilrie has a low electricity demand around the steady. Options for low energy light bulbs and motion sensitive external lights were identified.
- Fuel use: higher than benchmark fuel use suggested there could be scope for savings.
- Machinery: matched the correct sized tractor to the job where possible and made sure equipment was well maintained (e.g. correct tyre pressure).
- Feed mixer wagon: ensured the mixer was only operational for the minimum time and not left running whilst carrying out other jobs e.g. bedding cattle. A daily 15 minute reduction in operation reduced fuel use by 600 litres, saving £450 and 1.9 tonnes of CO₂ per year.
- Straw transport: assessed alternative options for transporting straw to reduce costs.
- Quad bike: identified fuel use associated with the quad. Considering replacement of the petrol quad with an electric powered quad bike. It is estimated it would cost around £50 in electricity to cover 3,650 miles, compared with £1,160 of petrol. Using electric instead of petrol to power the quad would save 2 tonnes of CO₂.



How can you benefit from the work at Glenkilrie?

Even well performing farms can benefit from taking a second look at steps to maximise efficiency. Savings are achievable; there are **five key action areas** that most farms will be able to benefit from.

For more information on efficiency measures and the farms taking part in the project, visit the website at www.farmingforabetterclimate.org

Case Study

Find out what other farmers are doing to improve profitability and adapt to a changing climate in our series of case studies.

There are five sets of Practical Guides covering :

Use energy and fuels efficiently

Develop 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

Find further information, including links to other Practical Guides and Case Studies, at



www.farmingforabetterclimate.org

Funded by the Scottish Government as part of their Climate Change Advisory Activity

Websites

www.farmingforabetterclimate.org

www.scotland.gov.uk

www.ipcc.ch

www.agrecalc.com

www.planet4farmers.co.uk

www.fertbench.com



Findings from Glenkilrie

On-Farm Renewables

- Assessed scope for range of renewables on the farm.
- Installed anemometer to measure wind speed: speeds lower than predicted.
- Micro hydro site identified: too far away from farm to be a viable prospect at this stage.
- Scope for solar PV: reviewing as prices for panels and installation reduces.
- Considering biomass boiler: awaiting confirmation of details of the Domestic RHI scheme.

Based on the commercial RHI scheme, a desk study identified that installation of a biomass boiler for the farmhouse could receive an income of around £6,350 and a saving in fuel costs of £3,437 per year by using home produced wood chip in place of purchased heating oil. This could save 14.7 tonnes of CO₂ per year.

Measures to optimise livestock management

- Condition scoring: cows and ewes were grouped based on condition score and fed accordingly. This makes best use of feed and can result in less calving/lambing difficulties from over fat or over lean animals.
- Feed value of pit silage: based on silage analysis results, David was able to feed concentrates to his 1,042 ewes two weeks later than usual and fed less feed for the remaining six weeks. The result was a total reduction in concentrates fed pre-lambing of 13.5 tonnes. This is a saving of just under £3,000 and 4.84 tonnes of CO₂e with no loss of production.
- Animal health planning: Continuing to screen livestock to aid early identification of disease within the herd.
- Maximising herd fertility: working towards a 95% calving percentage. Scanning cows to confirm they are in calf and removing those with poor fertility makes better use of feed and inputs and will improve herd performance over time.
- Calving at 24 months: A group of heifers were calved at 24 rather than 36 months. It was estimated that if the whole herd was to calve at 24 months, 20 fewer replacements would be carried for a year, saving an estimated cost of £7,000 and 19.9 tonnes of CO₂e.
- Using EBV's (Estimated Breeding Values) to select tups: the EBV can be used to select for traits such as daily live-weight gain or lambing ease, improving profitability on the farm.
- Bedding cattle on chipped recycled wood: this has reduced straw use. Over the winter of 2012/2013, one tonne of recycled wood chip was £60 cheaper than straw, saving the business around £960 in straw costs and 2.7 tonnes of CO₂e. Cattle bedded on woodchip also required bedding less frequently, reducing labour time and tended to be cleaner.



Measures to optimise fertiliser, slurry and manure use

- Regular soil sampling: identified some fields low in P and pH. Silage fields with a pH outside target values could be losing 30% of potential yield. A programme of targeted nutrient application and liming is underway to optimise soil fertility and maximise yields. Priority was given to better silage fields and those identified for reseeded.
- GPS soil analysis: assessed viability of GPS soil analysis on an upland farm. Variation in the soil pH within fields justified the use of GPS sampling for pH but not enough variability in P & K was shown to justify analysis costs at Glenkilrie.
- Farm yard manure and slurry storage: assessed options for farm slurry storage to maximise nitrogen value. Currently not cost effective to construct slurry tower based on N savings.

Both financial and carbon benefits are expected to be seen in future years as a result of building soil nutrient status to target levels.

What were the key findings at Glenkilrie?

- Aim to maximise the performance of every animal on the farm
- Monitoring is key to identifying current performance and opportunity for savings.
- Technically efficient farms can still identify scope for savings; David saved around £11,000.
- The carbon footprint at Glenkilrie reduced by 10% over the three year period; this figure was lower than expected due to poor weather in 2012/2013. Reductions in costs and emissions are expected as measures take effect on the farm (e.g. targeted spend on nutrients once soils are in balance, improved herd fertility).
- Weather has a big impact on farm costs and emissions as farms adapt to cope with adverse weather.
- Illustrated the benefits of implementing measures now to make the business more resilient to an uncertain climate in the future.