

Farming for a Better Climate



Upper Nisbet



Name	Robert & Jac Neill
Farm	Upper Nisbet Farm
Locality	Scottish Borders
Farm	Arable & Beef
Size	434 ha
Staff	2 full time

Robert & Jac Neill farm Upper Nisbet near Jedburgh which is a tenanted farm from Lothian Estate.

Upper Nisbet is a low-ground beef and arable farm extending to approximately 434 ha of which 262 ha is arable, 100 ha is temporary grazing and the remainder is permanent grassland.

The business carries 300 suckler cows, all spring calving with calves sold fat at 18–22 months. The arable rotation is 50% winter crops wheat & barley, and 50% spring crops, usually spring barley. Grass leys are used as a break crop.

How has Climate Change affected Upper Nisbet?

As a result of climate change, the Scottish climate is predicted to become warmer, especially in the summer and wetter in the winter.

There could also be more extreme weather events such as storms, floods and heatwaves. Already the extremes of weather in 2012 have had a major impact on the farming system at Upper Nisbet and other farms across Scotland.

The wet summer & autumn of 2012 resulted in higher grain drying costs, lower yields and less winter crop established. It also saw the farm use a significant amount of bought in feed to supplement cattle diets.

Heavy rain coinciding with sowing, silage time and harvesting can jeopardise grain yields and the production of good quality home

grown fodder which is critical for Upper Nisbet. Wetter soils will also reduce the opportunities for grazing, possibly resulting in the cattle having to be housed for longer.

At the other extreme, the very dry spring of 2013 reduced first cut silage yields and crop yields due to drought stress, especially on lighter soils around the farm. This resulted in Upper Nisbet having to shut up more fields for second cut and has required careful planning of winter rations.

As a *Climate Change Focus Farm* under the Farming for a Better Climate initiative, examples of what Upper Nisbet has already done and is planning to do to reduce the farm carbon footprint are highlighted overleaf.

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.sac.ac.uk/climatechange/
www.farmingfutures.org.uk/
www.scotland.gov.uk/
www.planet4farmers.co.uk/
www.adas.co.uk/MANNER/
<http://ukclimateprojections.defra.gov.uk/>



Upper Nisbet Farm Case Study



“Being involved in the Climate Change Focus Farm project has made us more aware of areas of our business that we can make changes to in order to reduce our impact on the environment. The changes that we have made have not necessarily been difficult to implement and hopefully in the longer term will save us money and enable us to be more efficient. The meetings and discussions have also highlighted areas where we do not need to make changes.”

Robert & Jac Neill

Funding and Support

Undertaking a farm carbon footprint can identify scope for emissions reduction and business efficiency savings.

In addition to a carbon footprint, an energy audit provides a very useful starting point for assessing and benchmarking fuel and electricity use and can highlight opportunities for cash savings.

The Whole Farm Review Scheme (WFRS) is designed to help farmers to develop environmentally and financially sustainable businesses. Under the scheme, the Scottish Government fund over 80% (up to a max of £2,400) of the cost of consultancy support to carry out the WFR and further specialist advice needed to implement the action plan developed under the review.

Full details of the scheme can be found at www.scotland.gov.uk/topics/farmingrural/agriculture/grants/bdandm/wfrs

Energy and Fuel

- Through the carbon footprint, fuel use had the highest potential for financial savings.
- Fuel use is regularly recorded to pick up any under performance in farm machinery.
- The current system of establishment i.e. 5 furrow plough, press, 1 pass power harrow, drill & roller used around 45 l of fuel/ha.
- A minimum tillage system based on 1 pass with a mintill cultivator would use around 25 l/ha and save time (50 mins v 150 mins).
- Energy monitoring of the grain drier is undertaken.

Livestock Management

- Cattle are weighed regularly to monitor liveweight gain through a purpose built handling system with hydraulic squeeze crush and automatic 3 way shedding gates.
- Bulls are housed in individual pens after mating to ensure a tight calving.
- The farm is a member of SAC Premium Cattle Health Scheme screening annually for Johne's Disease & BVD,
- Boundary fences on the holding have been triple fenced. Cattle only have access to piped water troughs, avoiding cross contamination from neighbouring stock.
- EBV's are used when selecting bulls, particularly to minimise calving difficulties and maximise growth potential.
- Stock are tagged electronically enabling the farm to capture data accurately as well as making handling & weighting cattle more efficient and safer for stock and staff.

Renewables

- Upper Nisbet erected an anemometer to record wind speed over a year. This revealed that wind speed was less than predicted and not currently financially viable.
- Solar photovoltaic panels on the roof of the new grain shed or in an adjacent field has the most potential with a payback period of around 12—14 years.

Fertilisers and Manures

- GPS soil sampling recommended more lime to be applied on the farm than if the fields had been traditionally sampled.
- GPS sampling picked up hotspots in fields. Traditional sampling recorded pH results of 6.5 & 6.4 and no lime requirement. Grid sampling reveals areas in both fields with pH of 5.7 & 5.4, therefore requiring more lime.
- When comparing individual fields that needed lime, traditional zone sampling rates recommended were higher; the GPS system saved 63 tonnes of lime.
- Analysis of FYM varies from year to year. In 2011, 20 t/ha supplied 17 kg available N, 44 kg/ha P₂O₅ & 160 kg/ha K₂O. In 2013 the figures were 27 kg/ha N, 62 kg/ha P₂O₅ & 100 kg K₂O.
- At 2013 prices of £270/t N; £335/t phosphate; £320/t potash the difference equates to £53 in value per 20 t application or £8,000 for 3,000 t of FYM produced annually at Upper Nisbet.
- FYM applied is accurately recorded using farm weighbridge. This together with analysis is inputted into PLANET Scotland to generate tailored fertiliser recommendations for each field.