

## Large-scale Dairying in an NVZ



<b>Name</b>	Hugh McClymont
<b>Farm</b>	Crichton Royal
<b>Locality</b>	Dumfries
<b>Farm Type</b>	Large dairy
<b>Size</b>	300ha, all rented ground
<b>Staff</b>	7 full time, 1 part time plus 5 contract staff

### Background

I manage SAC's Dairy Research Unit farms here at Crichton Royal near Dumfries where we are lucky to have easily worked ground with freely-draining soils. We run two dairy units on the farm. We are in the Lower Nithsdale NVZ.

The research side of the farm means that we have a higher staffing than would be normal and it also alters some of our practices but we still operate as a commercial dairy farm.

We milk 480 cows three times a day with yields averaging 9000 litres. We make grass silage, maize silage and grow cereals for feeding to dairy cows. Recent investments on-farm have included additional slurry storage and a new milking parlour.

### How might Climate Change affect our farm ?

In terms of what Climate Change may bring us, one of my main concerns is to do with extremes in summer weather. Prolonged hot spells could mean increased ventilation requirements to minimise heat stress. This could include both passive ventilation as well as fans in some situations. Dry periods in summer could impact grass growth - growing maize for silage spreads the risk and gives flexibility to the systems.

All farmers are being forced to plan now for livestock disease control - Bluetongue is a good example. Because of our research activities here we already work closely with our local practice vets as well as with SAC's vets and we have an overarching Herd Health Plan as well as series of specific protocols for cow health.

We are exploring grass diseases with the involvement of SAC plant specialists.

Milder winters may mean that we can extend our grazing season. Milking almost entirely off grass would reduce our conserved forage requirements.

On the positive side, the EU "dairy zone" may move northwards meaning that Scotland's milk producers may find themselves increasingly at the forefront of production.

Turn over to find out about changes we have made that will help to reduce Greenhouse Gas emissions - many of them help improve efficiency and hence reduce production costs too.

### Case Study

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 Case Studies and Practical Guides, at

[www.sac.ac.uk/climatechange/farmingforabetterclimate](http://www.sac.ac.uk/climatechange/farmingforabetterclimate)

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

### websites

[www.farmingforabetterclimate.org](http://www.farmingforabetterclimate.org)  
[www.sac.ac.uk/climatechange](http://www.sac.ac.uk/climatechange)  
[www.farmingfutures.org.uk](http://www.farmingfutures.org.uk)  
[www.bbc.co.uk/climate](http://www.bbc.co.uk/climate)  
[www.soilassociation.org](http://www.soilassociation.org)  
[www.dairyco.org.uk](http://www.dairyco.org.uk)  
[www.scotland.gov.uk](http://www.scotland.gov.uk)  
[www.ipcc.ch](http://www.ipcc.ch)  
[www.carbontrust.co.uk](http://www.carbontrust.co.uk)  
[www.sepa.org.uk](http://www.sepa.org.uk)

## Case Study



Injecting Slurry

"My own personal target is to grow all our grass and crops using nutrients produced on the farm.

Ten years ago we thought we were doing a reasonable job of efficient nutrient use but now we know that we were just starting out back then.

We now recognise that, in making the N in slurry and manure work really hard for us, we are keeping our costs down but also, critically, we are reducing our farms' Greenhouse Gas emissions. Slurry injection has been the key step we've taken.

Our research programmes will always mean we have higher inputs than a conventional unit of our size but we still have the same underlying need - to produce milk profitably and sustainably and with a high degree of environmental responsibility."

### Funding

A Whole Farm Review could help to identify self-funding possibilities and business opportunities.

Check out the Scottish Rural Development Programme (SRDP) with your adviser.

Also, energy auditing is available free-of-charge from the Carbon Trust and elsewhere.

Herd Health Plans are supported under Land Managers' Options.

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## Energy and Fuel

- Our plate cooler for milk, designed by SAC specialists, is making considerable energy savings.
- We take pre-heated water from the milk cooler into our hot water wash tanks and then heat it further overnight on off-peak tariffs.
- When we installed our new parlour in an existing shed we renewed the translucent roof panels - this helps save energy as well as improving the environment for the cows and for the farm team.
- Variable speed vacuum pumps make sense for us as they use much less energy.
- We record and monitor tractor fuel use for all in-house and contractor operations and relate it back to the task being done.
- My team all pay really close attention to equipment maintenance.
- When we change equipment we are always looking for information about energy efficiency.

## Fertilisers and Manures

- Because we are in an NVZ we have to pay attention to N use. We're very aware of getting the best value from our inputs.
- My target is to grow all the crops on the farm from farm-produced nutrients. Reductions in purchased P&K have allowed savings but we purchase in N,P&K as animal feed.
- We sow grass mixes with about 4% white clover and we monitor clover content.
- 90% of the slurry we apply is shallow injected. This improves palatability and reduces N<sub>2</sub>O losses

## Renewables

- A neighbouring farmer has a wind turbine - we explored this option previously but it warrants further evaluation particularly in the light of new tariff structures.
- We're investigating a biogas plant - we need to be sure of both the technical and the financial issues.
- We have potential for a community heating scheme involving neighbouring college buildings.

## Locking up Carbon

- We're careful not to leave bare soils over winter, particularly after maize
- We bale our straw to use for bedding but we plough most of it back in later as FYM and so we boost soil C that way
- We have about 4ha of trees on the farm and I plant 10-15 new hardwoods every year

## Livestock and Slurry

- Because we are a Dairy Research Centre, we are constantly looking at milk production efficiency which includes genetics, feeding and management. Our stockmen are a key part of the team. We communicate our research findings and demonstrate practice at Open Days.
- Our slurry stores don't have covers because the large additional costs didn't represent good value for us at the time. But they were designed to take retro-fit covers if circumstances change.
- We have obtained SRDP funding for a slurry separation plant to increase nutrient efficiency and ease slurry management pressures.