Farming For a Better Climate

Practical and profitable ideas to reduce the farm carbon footprint

Twitter: @sacfarm4climate

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SAC Consulting is a division of SRUC

Leading the way in Agriculture and Rural Research, Education and Consulting
Presentation overview

• Background

• Key action areas

• Climate Change Focus Farms

• Results from 2010 – 2013

• Promoting practical measures
Agriculture and climate change

• Approximately 80% of Scotland is used for agricultural purposes

• Emissions from agriculture and related land use accounted for 20% of total Scottish emissions
  • Carbon dioxide (CO₂)
  • Methane (CH₄)
  • Nitrous oxide (N₂O)

• Scottish Government need to demonstrate a reduction in emissions across all sectors

Challenge:

- Ambitious climate change legislation - need to demonstrate action across all sectors.
- Need to reduce emissions **but** still maintain a profitable and competitive agricultural sector.
- Voluntary rather than regulatory approach preferred

- Increased demand for food production
- Variable climate/unseasonal weather conditions
- Requirement to demonstrate emissions reduction

Maintain a profitable farm business
Scottish Governments Farming for a Better Climate initiative

• Targeted communication strategy
  – Focus farm network
  – Workshops and demo events
  – Dedicated website

• Aims to
  – Help farmers to adapt to climate change
  – Positive impact on business performance
  – Encourage farmers to adopt efficiency measures and lower farm emissions

• Key to reducing emissions is **Improved farm business efficiency** within **five key action areas**
Five Key Action Areas: 1 Energy and Fuel
Five Key Action Areas: 2 Renewables
Five Key Action Areas: 3 Sequestration
Five Key Action Areas: 4 Nutrients
Five Key Action Areas: Livestock
Climate Change Focus Farms

- Representative of major sectors
- Volunteer for three year term
- Work with agricultural adviser to identify practical measures
- Carry out ‘before and after’ carbon footprints using SRUC AgRE Calc©
- Explore/discuss findings with local farming discussion group
- Identify/implement practical measures
Five new focus farms…4 more to come
First 4 Focus Farms...
Nine new Focus Farms...
Climate change focus farmers 2010 - 2013
Glenkilrie, Nr Blairgowrie
Glenkilrie: What worked well (1)?

- Reducing energy use –
  - Feed mixer wagon – 600l reduction in fuel/£450 saving
  - Desk study – electric quad bike would save over £1,000 in fuel costs over 3,650 miles

- Renewables –
  - Biomass boiler with home produced wood chip
  - Desk study showed a saving of £3,440 plus income of £6,350

- Fertiliser and manures –
  - Soil sampling identified silage fields outwith target pH – could be losing 30% of potential yield
  - Rolling programme to bring all fields up to target status
Glenkilrie: What worked well (2)?

• Livestock –
  ➢ Know pit silage value – adjusted ration to save £3,000 in feed costs
  ➢ Calving batch at 24 months rather than 36 months – £7,000 saving
  ➢ Switch from straw to wood chip bedding; around £1,000 saving in straw costs
  ➢ Condition scored and grouped; fed accordingly
  ➢ Herd fertility – aiming for 95% calving percentage. Removing those with poor fertility.

• Easily saved £11,000
• 10% reduction in carbon footprint
Torr: What worked well (1)?

• Reducing energy use
  - Tractor maintenance/matching right machine to job in hand
  - Retrofitted a variable speed milk pump
  - More care with hot water use in the dairy
  - Actions contributed to 21% reduction in electricity saving £1,900 and 33% decrease in fuel use saving £6,600

• Livestock
  - More rotational grazing
  - Condition scoring of cows; grouped and fed accordingly
  - Forage analysis; £10,350 saving on feed costs
  - Reduced age of calving
  - Shed; increased cubicle space and altered ventilation
  - Increase in milk production ~ £17,500
Torr: What worked well (2)?

• Farm soils
  - Soil sampling
  - Identification and alleviation of compaction – est. £950 through better use of grass
  - Identify and improve soil structure – allows livestock to remain outside for longer
  - Improved drainage – better yields?

• Fertilisers and manure use
  - Targeted nutrient application
  - Increased slurry storage*
  - Slurry application – trailing shoe; 30% more grass?

• Easily saved £37,000
• 11% reduction in carbon footprint
Unpredictable weather

• “Our changing weather makes the job harder to plan for”
• Changing variability can be counter to the longer term trend

2008: September floods
2007: June and July exceptionally wet
2006: Warmest July since records began

(Slide – G Kerr, 2014)
Workshops and demonstration events

• Additional FFBC meetings across Scotland

• Joint meetings with other organisations
  – Soil Association
  – Forestry Commissions
  – Scottish Environment Protection Agency (SEPA)
## Additional on farm meetings across Scotland
(Climate change mitigation = more practical than you think)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
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<tbody>
<tr>
<td>Identifying and rectifying field drainage problems</td>
<td>Slurry and manure, soils and grassland mgmt</td>
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<td>Machinery choice, tyre pressures, fuel savings</td>
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<tr>
<td>Energy management</td>
<td>Improving efficiencies in the sheep flock</td>
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<tr>
<td>Using Soil GIS analyses for improved nutrient application</td>
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<tr>
<td>Woodland management and RHI opportunities</td>
<td>Improving livestock fertility</td>
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<tr>
<td>Renewables; opportunities and pitfalls</td>
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<tr>
<td>Optimising use of slurry and manures, application methods and nutrient planning</td>
<td>Eradicating Johne's disease from the herd</td>
</tr>
<tr>
<td>Soil structure; identifying and rectifying problems</td>
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<tr>
<td>Renewables – Micro hydro site visit</td>
<td>Getting the best out of fertiliser applications</td>
</tr>
<tr>
<td>Improving efficiencies in the beef herd</td>
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</tbody>
</table>
No one size fits all...

- I’ve never really been interested in sitting in front of a computer at the end of the day. My wife does the bookkeeping and any of the other admin work, so I don’t really have a reason to use the computer. I help the kids out with their homework but I don’t want to sit in front of the thing for any longer than I have to”

- “Farmers are using satellites, laptops and smartphones in their tractors and turning them into mobile offices. They’re tweeting with other farmers about plantings, crop yields and weather...”

(Stocks, 2011).
Farming For A Better Climate

Farming for a Better Climate (FFBC) combines ideas trialled by our volunteer Climate Change Focus Farms and information from up-to-the-minute scientific research.

Our agricultural consultants offer practical advice to help you choose the most relevant measures to improve both your farm performance and resilience to future climate change effects. We can help your farm to thrive in a carbon-conscious future and adapt to a changing climate to secure farm viability for future generations.

Following the success of the initial four Climate Change Focus Farms, five new farms have volunteered to investigate the on-farm business benefits from taking a low carbon approach.

With support from SRUC, the Climate Change Focus Farmers are able to work through a range of practical options to see what additional benefits low-carbon activities can bring to farms across Scotland.

Follow us on Twitter

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**Improve Farm Profitability**

Five key actions to improve your farm profitability and adapt to a changing climate.

**Carbon Footprinting**

Carry out a carbon footprint to identify emission sources and improve farm efficiency.

**Adapt to Climate Change**

How could your business be affected and what steps could you take to reduce risks?
Newsletters, case studies and Practical Guides

Farming for a Better Climate Newsletter

Soil structure and tyre choice at Upper Nisbet

Biomass; Benefiting from renewables at Woodend Farm

TIm John Seed. I farm at Woodend Farm near Dornie, 200ha arable unit, in partnership with my wife, Louise, son Donald and daughter Lindsay.

We try to run a soil-based Farming Partnership (FWP) as a contemporary agricultural unit that aims to be self-sufficient and sustainable in its use of natural resources. As well as farming, I’m also a bio-energy specialist with over 20 years experience in the renewables industry.

To date, we have installed a biomass boiler to dry our grain and heat the house on the farm via a district heating system. We have solar panels which can provide enough power to run the grain dryer and farm during a summer day. We have plans for a wind turbine, which with the solar power will provide enough power for the whole farm all year and let us replace two cars with electric vehicles.

We have installed energy efficient measures such as double glazing.

How might Climate Change affect our farm?

Climate change could affect Woodend in a number of ways. For example, extremes of weather mean we have to be able to establish, harvest and dry our crops quickly and efficiently. Recent winters have seen more cold and problems in getting heating fuel delivered through the snow, meaning our fuel and on-farm energy systems need to be robust to survive these conditions.

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Optimising tractor fuel use

What does fuel use have to do with Climate Change?

Under the Scottish Climate Change Bill, Scotland is committed to reduce greenhouse gas (GHG) emissions by 50 per cent by 2030. This stretching target sets the pace for change, with significant savings on the fuel bill and improve farm profitability.

Top Tips for EVERY farm...

- Ensure the appropriate tractor is used for the job
- Minimize fuel loss by connecting vehicles to permanent frames or defined routes as much as possible
- Look for low CO2 emissions or low specific fuel consumption when replacing farm vehicles
- Ensure vehicles are regularly serviced – poorly maintained vehicles have higher fuel emissions and fuel consumption
- Throttle down – go up. Keep revolve at low as possible, this could save 35% on fuel cost
- Ensure the correct tyre pressure is used
- Planwork to minimize journeys
- Consider minimum tillage

Practical Guide

Practical Guide

Websites

www.farmingforabetterclimate.org
www.sacconsulting.co.uk
www.foe.org.uk
www.foe.org.uk
www.scotland.gov.uk
www.epc.org.uk
www.carbontrust.co.uk
www.energysavingtrust.org.uk
www.biomassenergycentre.org.uk
Farming for a Better Climate
Farming/Agriculture

About
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Description
Farming for a Better Climate (FFBC) provides practical support to benefit the farm and help reduce our impact on the climate. Taking action as a sector, both to reduce greenhouse gas emissions and to adapt to a changing climate, will secure farm viability for future generations.

FFBC is run by SRUC on behalf of the Scottish Government. We combine ideas

Basic info
Joined 27/08/2014
Facebook
Location Auchincruive KA6 5HW

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Phone 01292 525 089
FBC
SACFarm4Climate
Practical info and ideas to improve farm efficiency, profitability and cut the farm footprint. Find us on Facebook.
scotland
farmingforabetterclimate.org
Joined November 2011
21 Photos and videos

Tweets

<table>
<thead>
<tr>
<th>Tweets</th>
<th>Tweets &amp; replies</th>
<th>Photos &amp; videos</th>
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<tr>
<td>FFBC retweeted</td>
<td>Farming Futures @FarmingFutures</td>
<td>14 hrs</td>
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<td>Climate smart farming to improve farm profits farmingfutures.org.uk/blog/climate-s...</td>
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<td>FFBC @SACFarm4Climate</td>
<td>Visit flood management techniques put in place on Borders #farms. Find our more at facebook.com/pages/Farming---... @consultingSAC VASprogramme</td>
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<tr>
<td>FFBC retweeted</td>
<td>Paul Cawood @audlemagronpaul</td>
<td>Dec 2</td>
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<tr>
<td>Box muck and a cover crop. Look at that for a worm midden! #rootsnotsteel</td>
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Who to follow

- Zwartbles Ireland @ZwartblesIreland
- CKD Galbraith Cupar @CuparCKD
- Simon Wearmouth @Agricultural...

Popular accounts
Find friends

Trends

- #KleenexKiss
- #SuperBowl
- Seahawk
- Scotland
- Rangers
- #WorldWetlandsDay
- Katy Perry
- #DeadlineDay
- #PatriotsWIN
90% of farmers still rely on farming media for their information needs (Agridata, 2011)
Summary

• Practical measures to improve business efficiency and demonstrate actions to reduce GHG emissions

• Benchmarking/Carbon footprint highlights areas for action and measures improvements

• Working with new climate change focus farmers 2014 - 2017

• ‘Something for everyone’ - even technically efficient farms can make savings and reduce their carbon footprint
Acknowledgements

• Scottish Government

• Co-authors

• Climate Change Focus Farmers

• Farm Facilitators
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