Farming for a Better Climate

Mountfair Farming Ltd

Mountfair Farming Ltd farm in the arable heartland of the Scottish Borders. It is a family business started by William Grimsdale and now run by his sons Jorin and Aidan.

The business grows a range of arable crops as owner occupiers and contract farmers. The 6 year crop rotation looks to maximise 1st wheat with break crops of spring oats, oilseed rape and vining peas or beans. Greening requirements are principally met by field margins of grass or wild bird seed, hedges and lastly fallow.

Name:	Jorin & Aidan Grimsdale
Farm:	Mountfair Farming
Locality:	Scottish Borders
Farm type:	Arable

6 Year Crop rotation

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Winter wheat	Spring oats	Winter oilseed rape	Winter wheat	Winter wheat	Peas/beans/ fallow

They have operated a non-inversion cultivation approach since 2002 and are seeing the benefits to soil structure and the behaviour of the soils in both wet and dry conditions. The min-till system also gives wider benefits of timeliness of autumn sowings and a reduction in overhead costs for fuel and machinery.

Taking Care of Soil Life

Chopping crop residues, using tillage methods to get the soil alive with earthworms plus using cattle or hen manure to enhance nutrient and organic levels of the soils have been key at Mountfair. Jorin and Aidan have recently introduced controlled traffic at 12m intervals, this has:

- Further protected their soil by reduced wheeling's and compaction risk
- Reduced the need for routine cultivation at 8"
- Allowed targeted cultivations to address compacted areas

As an early adopter of precision farming technology, the business has increased its use as machinery has developed. The RTK (Real Time Kinetic) auto-steering system increases accuracy and efficiency of field operations (to within +/- 2cm) with benefits for fuel use, reduced machinery wear and less operator fatigue.

GPS controlled equipment targets the use of inputs to optimise crop performance, financial margin and helps to minimise negative environmental impacts. Current precision equipment uses soil nutrient mapping for variable rate application of lime, fertiliser and seed.

Case Study

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

Our Practical Guides cover 5 key topics:

- Reducing energy and fuel use
- On farm renewables
- Locking in carbon on the farm
- Making best use of nutrients
- Optimising livestock performance

Find further information, including links to other Case Studies, Practical Guides and our newsletter at www.farmingforabetterclimate.org

Find us on Facebook or follow us on Twitter @SACFarm4Climate

Farming for a Better Climate is funded by the Scottish Government as part of the Farm Advisory Service (FAS).

Websites

www.farmingforabetterclimate.org

www.adaptationscotland.org.uk

www.agrecalc.com

Case Study last updated October 2018

The European Agricultural Fund for Rural Development: Europe investing in rural areas
Scottish Government Riaghaltas na h-Alba gov.scot
SAC CONSULTING
SRDP Farm Advisory Service

Integrating the Min-till system on the farm

Jorin and Aidan had to consider how to make the min till system work for them. For example:

- 6m Simba SL cultivator uses discs for soil mixing and tines working at 8" for loosening of compaction. This cultivator can be used as a simple one pass for establishing oilseed rape and beans or as a primary cultivator.
- 12m Kockerling cultivator with spring tine working at 5" can be used in a single pass on lighter soils or in sequence with the Simba SL.
- A tool carrier with hydraulically adjusted twin tines is used to remove tractor wheeling's caused at 6m & 12m during field cultivation and drilling.
- 12m field rollers consolidate seed beds and carry pellet applicators for preventative slug control in high risk situations.
- Fertiliser and crops sprays are applied at 36m tramline widths.
- 12 m combine header with extended grain auger allows the combine, grain trailer or tracked chaser bin to remain in a 12m intermediate tramline.

Precision Equipment using RTK GPS

There is a range of equipment in use at Mountfair:

Precision equipment in use at Mountfair:				
Tractor	Fertiliser Spreader	Seed Drill	Sprayer	Combine
Auto Steer	Variable Rate N, P & K	Variable Rate	Auto Steer and Auto Shut off	Yield Mapping

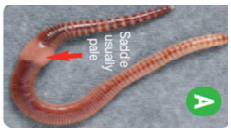
More recently a drone is being used for scouting fields to look for crop changes, and identify compaction and drainage issues.

A soil health assessment was conducted across a Mountfair wheat field in advance of a Scottish Farm Advisory Service (FAS) meeting. The assessment involved walking a W-pattern across the field, soil cores were taken intermittently to provide a soil sample for routine analysis of pH, Phosphate & Potash. An average of 7 worms found in each 20cm square of soil which were dominated by redhead worms (burrowing and surface living) and stripy composting worms.

To investigate any difference in organic matter between the upper and lower soil layer, plugs of soil from 0-5cm and 15-20cm were taken from across the field and analysed for organic matter by loss on ignition (LoI) test.

% Organic Matter (LoI)	
Upper Layers	Lower Layers
6.2%	5.08%

The results showed that the min-till system has increased the organic matter in the upper layers of the soil. The majority of the organic matter will be present as fresh plant/crop residues and living microbial biomass and active organic matter or detritus.

Redhead	Stripy
	

VESS: Visual Evaluation of soil structure

Five soil checks were undertaken which involved a Visual Evaluation of Soil Structure (VESS) and earthworm count of a 20 x 20cm block of soil.

VESS is a straightforward, quick soil test that describes how to assess topsoil in three simple steps. A quality score is given which shows if the soil structure needs to be improved to maintain soil health.
Scoring and assessment require comparison with colour chart of differing soil structure and associated soil descriptions - you can download a copy via the web address below.

Find out more

For other practical ideas to improve farm efficiency and reduce the farm carbon footprint visit the website www.farmingforabetterclimate.org.

You can also follow us on Twitter *@SACFarm4Climate* or find Farming for a Better Climate on Facebook.

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