The Centre for Sustainable Cropping

The long-term viability of farming in Scotland depends on the sustainable management of our agricultural habitats.

The James Hutton Institute

Balruddery Farm, Dundee: A James Hutton Institute LEAF Innovation Centre. The Centre for Sustainable Cropping is a 40ha block of fields in the south-east of the farm.

A LEAF INNOVATION CENTRE

> ❝ We need to achieve a balance between maximising crop production, conserving arable biodiversity and maintaining ecosystem functions. ❞

A New Long-Term Experimental Platform:

The Centre for Sustainable Cropping (CSC) is a new experimental research platform at Balruddery Farm near Dundee. It is the first of its scale in the UK and will provide a test-bed for new sustainable management practices and crop varieties, designed to:

(1) **maintain yield quality** and yield stability at lower levels of agrochemical inputs,

(2) **reduce GHG emissions** and nutrient leaching from the system, and

(3) **enhance soil quality** and arable biodiversity

Treatments and Rotation:

Each field is divided in half to compare 'sustainable' with 'conventional' management. Both conventional and sustainable treatments will be flexible enough to track changes in commercial practices and developments in sustainable technologies over time.

Conventional management: standard commercial practice for each crop

Sustainable management: non-inversion tillage, reduced NPK, compost additions, clover undersowing, overwintering green manures, reduced herbicides and pesticides

The rotation runs over six years, and includes potatoes, winter wheat, winter oilseed rape, winter barley, field beans and spring barley.

Research:

We are studying the effect of sustainable cropping on whole system processes including:

Carbon and nutrient dynamics (GHG emissions, nutrient leaching, soil C, N, P)

Soil biophysics (physical and biological resilience to stress, and soil properties including structure, strength and water holding capacity)

Hydrology (leaching, run-off and sediment transfer)

Biodiversity (soil micro-organism, invertebrate and weed diversity in relation to nutrient dynamics, decomposition, predation and pollination)

Pest and pathogen dynamics (monitoring the effects of IPM on soil and plant pathogens, and insect pests)

Crop yield and quality (varietal differences in yield, stress response and nutritional compounds)

Field margins (diversity and margin width in relation to system processes including nutrient retention, pollination and predation)

Economics:

All inputs and fuel use are being recorded to estimate gross margins and allow comparison of the economic and environmental costs and benefits of sustainable and conventional management.

For further information, please contact:
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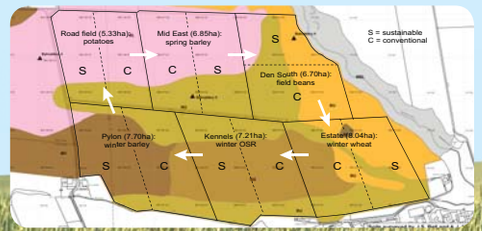
Map of the Sustainability Platform showing field allocations and soil series: Balcrannie (pink), Buchanyhill (orange), Ruthven (green), Mountboy (brown), Garvock (light brown); C = conventional, S = sustainable management



Compost spreading on the sustainable treatment at the CSC. Compost is spread at 35 tons per hectare in the spring before sowing, after the green manure crop is sprayed off.

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