

Developing research into practice with Welsh livestock farmers The PROSOIL project

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Introduction

Soil health



Forage quality



Livestock performance



Product quality



Does the *quality* of agricultural products depend on the **health** of the soil?

The Project

1. Producer led activity across Wales to manage soil health to improve product quality and financial returns
2. Scientifically determine the impact of improving soil health on forage and livestock productivity and quality - IBERS Plot and Field studies
3. Disseminate key findings throughout the agricultural industry



soil nutrient analysis

1. Standard RB209 Guidelines

- 'Sufficiency level' –once soil nutrients are at the correct index, plant growth will be economically optimal - focus mostly on NPK (+ lime)

2. Base Cation Saturation Ratio (BCSR)

- 'Mineral balancing' once there is a correct balance of the ratio of cation bases in the soil, uptake of nutrients by plants will be optimal
- focus is on soil 'health' – condition, biological activity

Soils are more than a sterile growing medium for plants

AT IBERS

Plot scale experiment evaluating different approaches to improving soil health including:

- Inorganic N (control)
- Aerated and non-aerated slurry
- Soil amendment based on BCSR theory
- Gypsum
- Anaerobic biodigester residue
- Soil aeration



Field-scale experiment comparing two soil management regimes



Farmers role in the project



To 'volunteer'- its their project too!

To work alongside 'controlled' field and plot studies but making their own treatment choice

To promote and develop interest and spread this to other farmers

To explore a wider range of conditions and management option than plot studies allow and in the context of a real farm system



Commercial Development Farms

Geographic spread

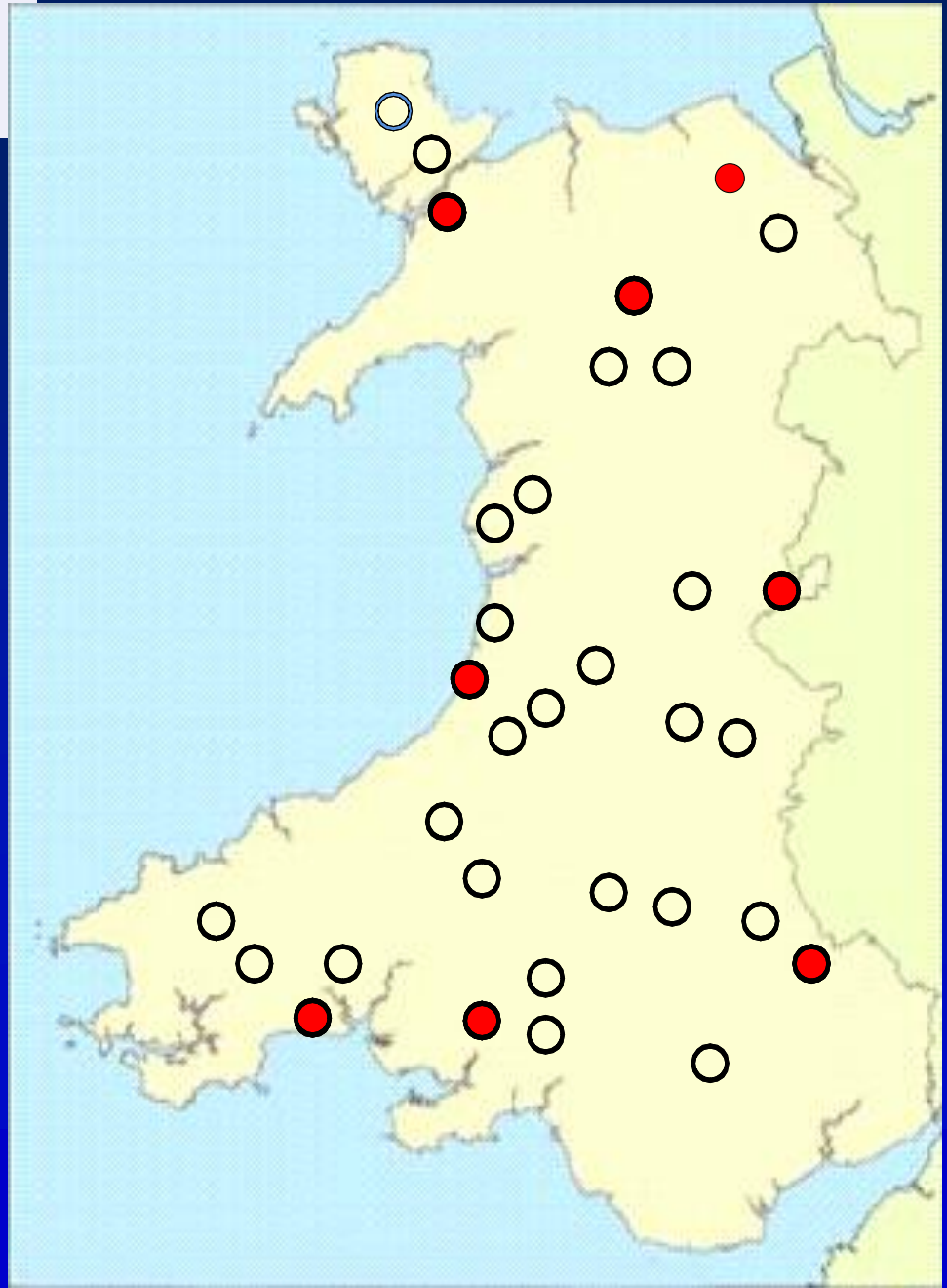
Upland/lowland

Intensive – extensive – organic

Light , medium and heavy soils

Key soil areas represented

Dairy, beef and sheep



Management options

Spiked aeration



Slurry -trailing shoe/aeration depth



Diverse sward



Digestate
(anaerobic)



Aerated and non
aerated slurry



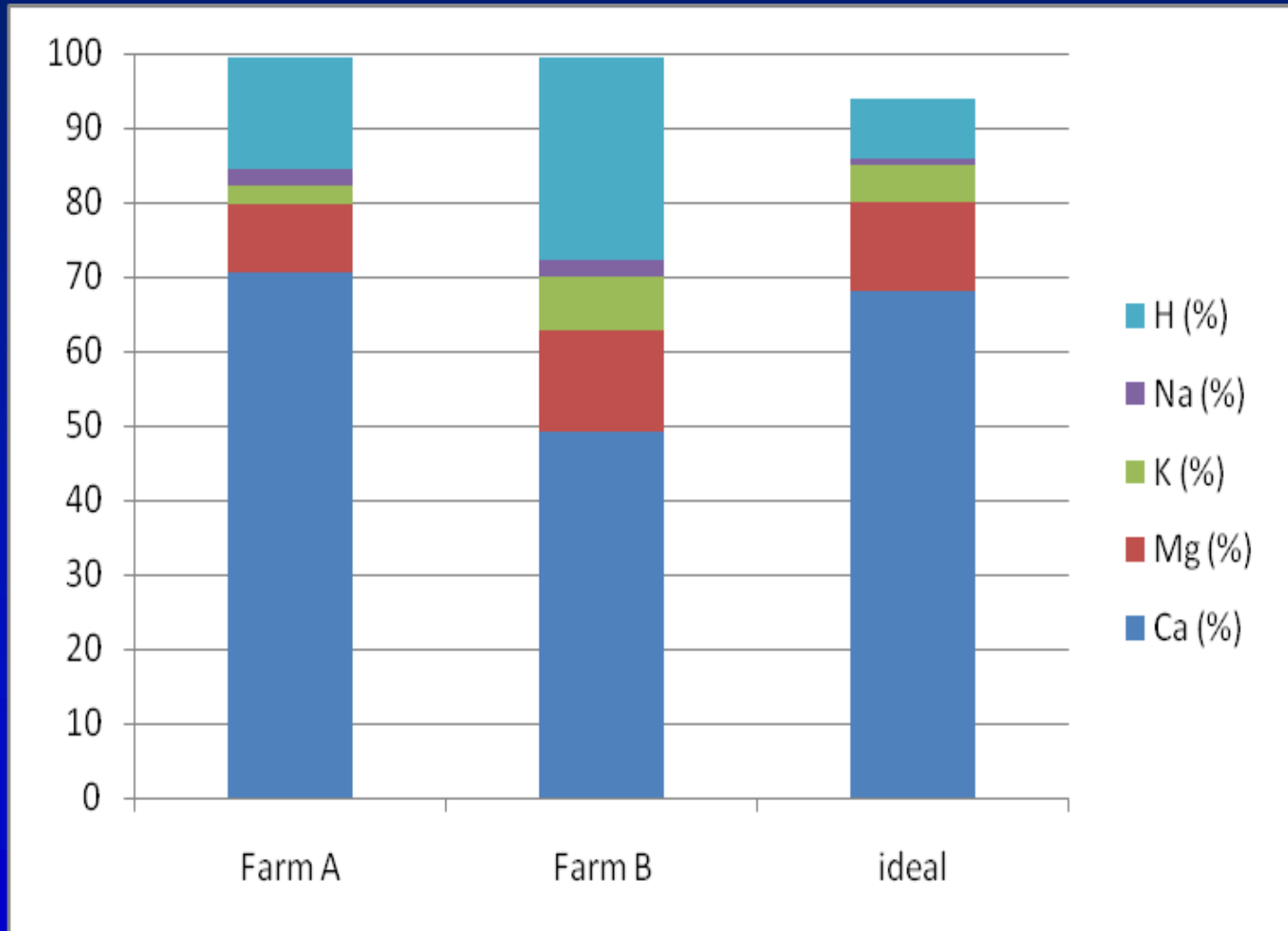
Regular subsoiling



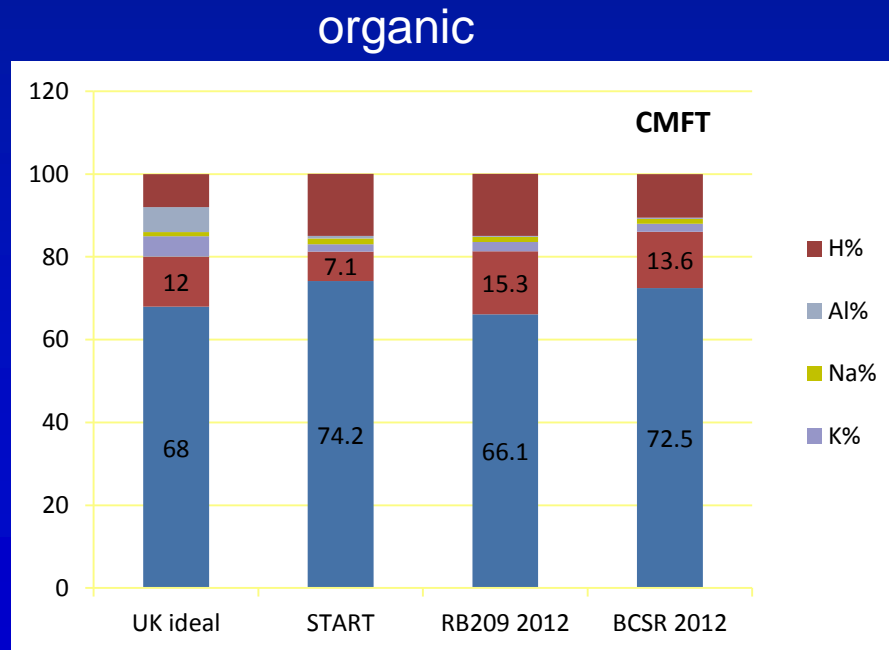
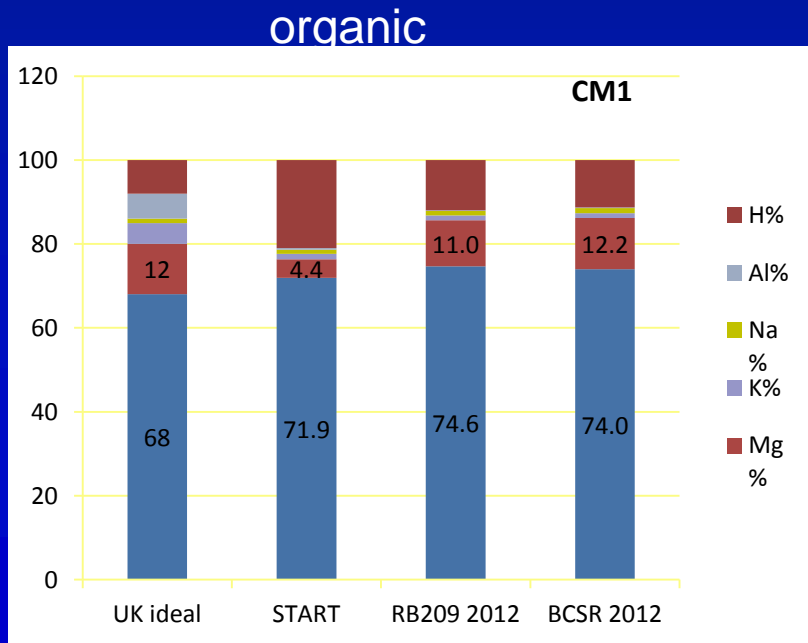
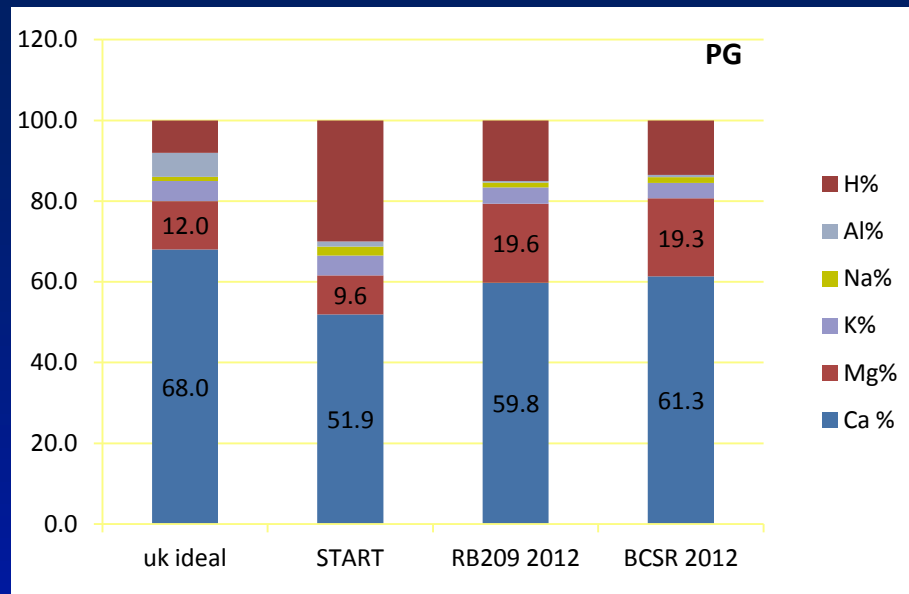
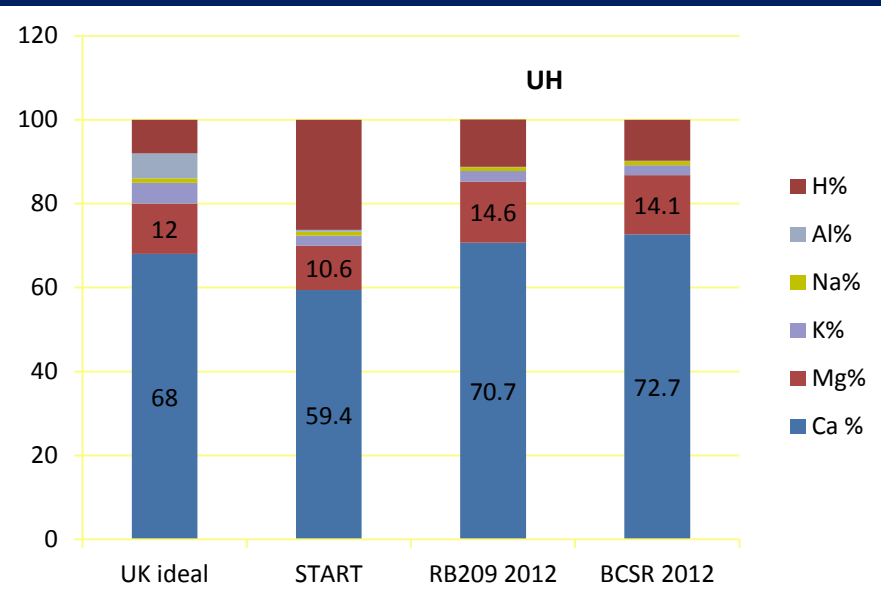
Baseline data BCSR Year 1

Farm A close to ideal

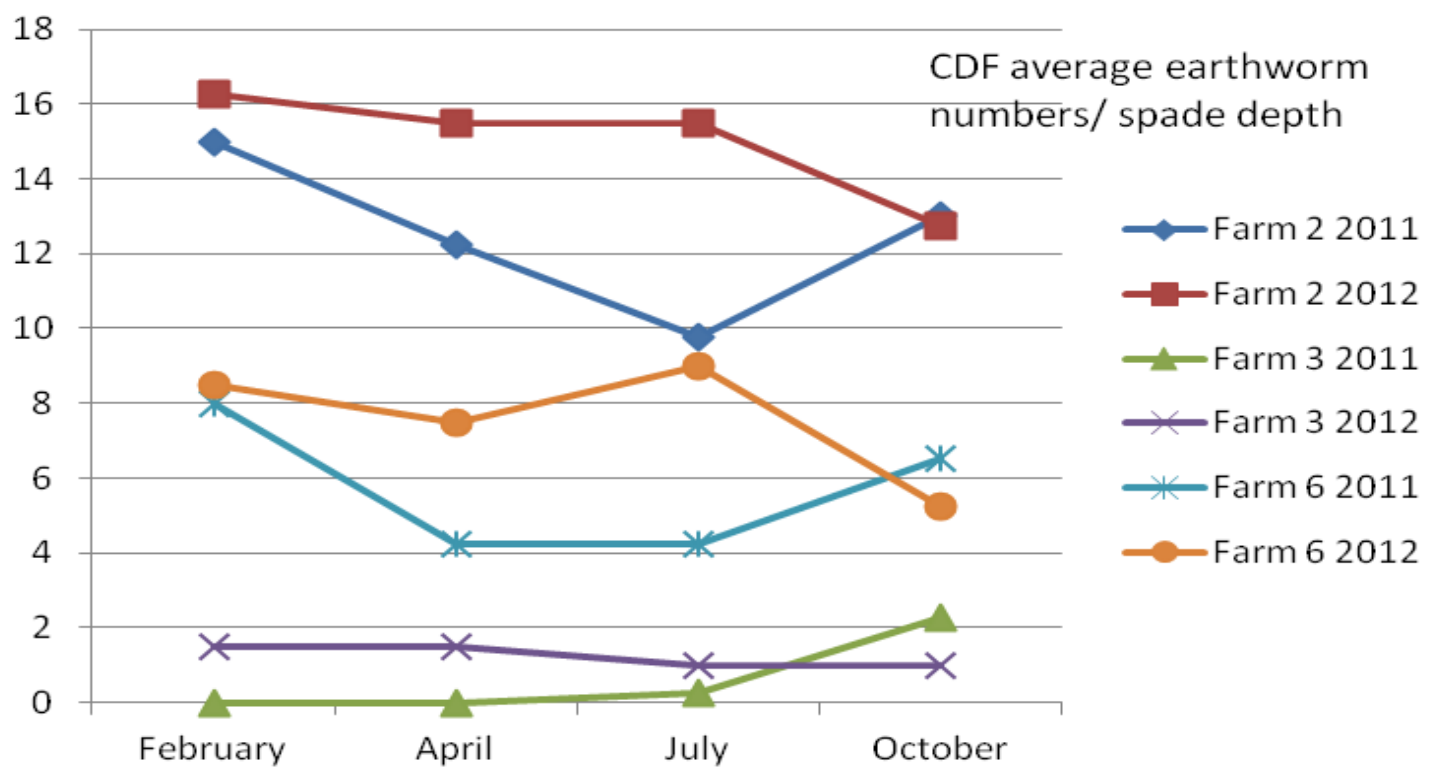
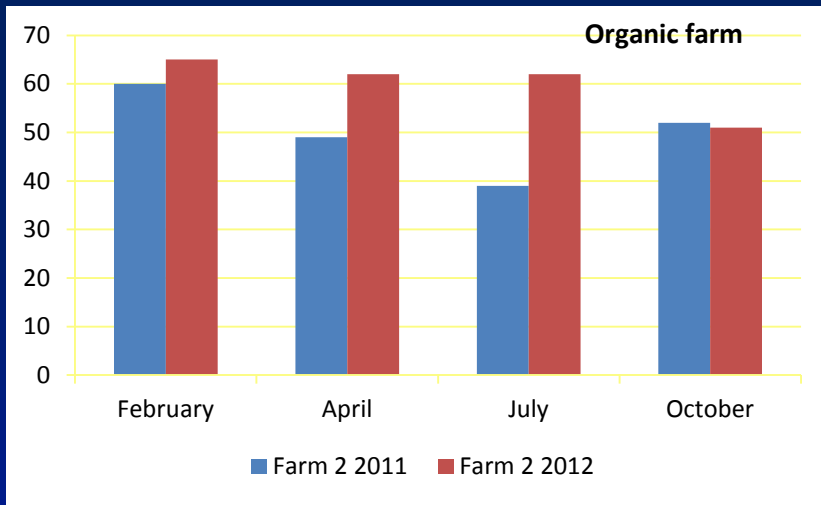
Farm B 'furthest' from ideal



Interim shifts in BCSR on PROSOIL PROJECT FARMS



Earthworms



Results & Conclusions

- Farmers value the information they are collecting – review this continually
- Newsletters keep us in touch with project farmers and the expanding database
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- Agony ‘ column, events and competitions encourage interaction
- Open events hosted by CDF farmers include range of stakeholders
- Stakeholders key to wider dissemination and for ensuring industry relevance
- Bringing farmers together regularly has created a network
- Farmers benefited from IBERS soil scientists & enjoy the link to the plots at IBERS
- Enthusiasm largely maintained, knowledge and interest from farmers is increasing
- Key areas of interest to the farmers are earthworms, soil structure and is BCSR effective
- Seeking new ways to maintain momentum as changes in soil is a long term process

The team



Acknowledgement

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Cronfa Amaethyddol Ewrop ar gyfer
Datblygu Gwledig: Ewrop yn Buddsoddi
mewn Ardaloedd Gwledig

The European Agricultural Fund for
Rural Development: Europe Investing in
Rural Areas



Llywodraeth Cymru
Welsh Government