



**Harper Adams
University**

Soil & Water Winter Conference, 2021-22

Carbon, traffic and tillage

13 January 2022 at Harper Adams University (HAU)

Live and on-line

Sponsored by:



Bayer CropScience



Soil & Water
Management Centre

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Chairman for the day, Guy Smith

of farming soapbox rather than racing driver fame and live at the event!



Presentations & synopses

Morning session

Ten years of Tillage and Traffic field experiment

Introduction, background & design

Dr Paula Misiewicz, Project lead, HAU

The internationally unique long-term Traffic & Tillage project was established in 2011 on a uniform sandy loam soil at Harper Adams University (UK). The aim of the project is to examine the effects of using standard tyre pressures, low tyre pressures and controlled traffic farming alongside three tillage depths (deep, shallow and no-till) in a cereal based rotation including wheat, barley, oats and field beans. The field experiment is a randomised block design with 4 replications, each containing 9 plots measuring 4 m wide and 80 m long.

The project has already demonstrated many positive effects of reduced tillage and traffic and these will be dealt with in detail in the following presentations.



Soil physical conditions and health

Mrs Magda Kaczorowska-Dolowy, PhD student, HAU

Magda's presentation covers the soil's physical and biological responses to the different traffic and tillage treatments. While reduced tillage has been widely accepted as a means of enhancing soil health and biology, not much attention has been paid to the potential benefits of reduced traffic. This experiment has explored these unknowns and the results will be presented here.



Crop performance & yield

Dr Ed Dickin, Lecturer, HAU

In 2021 the traffic and tillage team celebrated the tenth harvest from the long-term experiment, which is a unique opportunity to study the effects of traffic and tillage systems on crop growth and yield across a rotation. The benefits of CTF and low tyre pressures were fairly consistent for all crops, but we saw interesting changes over time in the effects of tillage system which will be discussed in the presentation.



Economics

Professor Richard Godwin, Visiting Professor, HAU

Results following the first 8 years of the trial have shown that with careful selection of the equipment both controlled traffic and low ground pressure (for deep tilled soils) are economically viable for enterprises of c.100ha or greater.



Farmer Case Studies-

Tim Parton, Brewwood Park Farm, Staffordshire

Tim, “gold” winner of the arable innovator of the year award in 2021, has been ahead of the game having adopted “regenerative” agriculture some 15 years ago. He has gradually transitioned to no-till and has concentrated on introducing “biologicals” which has enabled him to reduce fertiliser inputs, eliminate insecticides and seed dressings and reduce herbicide and fungicide use across all his crops, whose yields have improved while their cost of production has been reduced dramatically.



Mark Lea, Greenacres Farm, Shropshire

Mark and his wife Liz have farmed their 180-ha mixed enterprise organically since 2000, mostly within a five-year arable rotation with sheep managed deliberately to complement the arable side of the business. Covid however brought many changes that relieved them of the labour involved with composting and a dairy herd, moving them on to more use of an on-farm classroom, making their own flour with a French stone mill and improving their soils by reducing power-hungry cultivations.



Lunchtime technical programme and visits

Long Marsh Tillage and Traffic trial



Simon Jeffery will take us through the current state of the trial which is presently sown to a cover crop.

Global Navigation Satellite Systems (GNSS), Darren Roe, John Deere

Darren will provide an update on all that’s new in the world of satellite navigation and auto-steer, covering particularly the corrections needed for the precise and repeatable tracking required for controlled traffic farming.

Afternoon session

Farmer perceptions of carbon sequestration

Dr Jonathan Cooper, HAU

The success of land-based climate change mitigation strategies depends on engagement with landholders and other stakeholders. This presentation will explore farmers' perceptions of carbon sequestration and the barriers to its implementation.



Building soil organic matter

Matthew Shepherd, Natural England

This presentation will explore the journey of fresh organic matter inputs through the living soil and look at the consequences of carbon storage and loss during this process. It will explore the rationale for encouraging management based on OM inputs rather than OM levels, and look at how organic matter quality might influence the ability of soils to build and store SOM.



Sequestering carbon in arable soils – more difficult than you think

David Powlson, Emeritus Professor, Rothamsted Research

Increasing the quantity of organic matter in soil almost always improves soil health, and even small increases can be beneficial. However, not all increases in soil organic carbon represent sequestration in the sense of transferring carbon from atmosphere to land and thus slowing climate change. The options for achieving this desirable goal are limited and the potential often exaggerated. Without being too negative, I will aim to bring some realism to the discussion of this topic.



Farmer case study

Craig Livingstone, Farm Manager, Lockerley Estate, East Tytherley, Hampshire, SO20 8DF

Craig, winner of FW's Farmer of the Year Award in 2019, and a former agronomist with Agrii, joined the Lockerley Estate in 2016, where he is now Head of Farming. The Estate has around 1000 ha of arable cropping farmed alongside 1000 head of sheep to widen the rotation, improve soils and increase the sustainability of the system.



An overview of the Bayer CropScience Carbon Programme Initiative

Nick Duncan from Bayer CropScience

Bayer CropScience has initiated a carbon farming programme in Europe, working with farmers and the food value chain to investigate ways to decarbonise food production and explore future reward structures for those implementing new carbon reduction practices.

