Project overview

The NFS evaluating cultivation approaches study explores the interaction between cultivation intensity and cover crop use. This research uses a single rotation – based on winter wheat with ostensibly spring sown break crops – in a fully replicated experiment on large plots using commercial machinery.

The study compares four levels of cultivation intensity; plough, shallow non-inversion (ca. ≤10 cm), deep non-inversion (ca. 20 cm) and a managed regime (decision decided annually based on prevailing conditions and soil measurements). Each of these approaches is repeated with and without the presence of a brassica cover crop ahead of spring sown crops.

Relative yield return indicates that, of the cultivation systems that remain consistent over seasons, the plough tillage approach results in increased yields compared to other cultivation approaches, whilst the highest margins are associated with the deep tillage approach. In winter wheat recent findings have demonstrated improvements in performance, yield and margin associated with cover crop use in the rotation, notably where used in conjunction with shallow tillage approaches. In addition, differences in the performance of the crops in the rotation in relation to cultivation practice are being seen as the study progresses.

NIAB TAG

New Farming Systems

Further information

For further information on the New Farming Systems Project please go to the NIAB website (www.niab.com) or email info@niab.com.

The New Farming Systems Project

is managed by NIAB TAG in conjunction with an independent advisory group and supported by The Morley Agricultural Foundation and The JC Mann Trust. The NFS project also contributes to a range of other research programmes.

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NEW FARMING SYSTEMS

Evaluating cultivation approaches

The New Farming Systems (NFS) project is a series of experiments and system demonstrations. The project aims to explore ways of improving the sustainability, stability and output of conventional arable farming systems. The research is being undertaken on a sandy loam soil at Morley in Norfolk

New Farming Systems

Evaluating cultivation approaches

This study is undertaken on large plots (12 m x 36 m), using farm scale equipment and techniques, and employs a fully replicated factorial design. The main plot areas are 12 m x 36 m, with further details of the treatments and the design presented in the table; in total the experiment has eight treatments.

Treatment and rotational progression details

	Cropping									
Rotation	2008 (Year 1)	2009 (Year 2)	2010 (Year 3)	2011 (Year 4)	2012 (Year 5)	2013 (Year 6)	2014 (Year 7)	2015 (Year 8)	2016 (Year 9)	2017 (Year 10)
Spring breaks	wwt	sosr	wwt	sbns	wwt	sbly	wosr	wwt	soat	wwt

Cropping key: wwt (winter wheat), swt (spring wheat), sosr (spring oilseed rape), sbly (spring barley), wbns (winter beans), sbns (spring beans), wosr (winter oilseed rape), soat (spring oat)

Two management approaches

1. Current – systems run as farm standard;
2. Cover crops – as 'current' but with a radish autumn cover crop ahead of spring sown crops.

Cultivation approaches

1. Plough;
2. Shallow non-inversion (ca. ≤10 cm);
3. Deep non-inversion (ca. 20 cm);
4. Managed regime – decision on cultivation regime is based around prevailing conditions and soil measurements.