Project overview

This NFS project examines the use of green waste compost originally comprised of three rotational systems with and without the annual application of 35 t/ha of green compost, applied between 2008 and 2011. In 2019 onwards, the study switched to a single rotation to monitor the legacy effect of the green waste compost.

The experiment is a factorial design, with four replicates, that received annual additions of green waste compost (ca. 35 t/ha) over a four year period between 2007/08 and 2010/11. Recent findings suggest that repeated applications of green waste compost can significantly improve yields in a continuous wheat rotation for at least six years after the final compost application. This yield response is likely a result of a combination of higher levels of available nutrients (phosphate, potassium and magnesium) and benefits from increased SOM.

NIAB TAG

New Farming Systems

Further information

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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

The use of soil amendments

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 takes place on a sandy loam soil at Morley in Norfolk and started in 2007.

New Farming Systems

Use of soil amendments

This study originally comprised of three rotational systems with and without the annual application of 35 t/ha of green compost, applied between 2008 and 2011. From 2019 onwards, the study switched to a single rotation, monitoring the legacy effect of the green waste compost. It uses a shallow non-inversion establishment with the specific method varying according to season and crop but typically targeting 15 cm depth using disc and/or tine based approaches.

The study is being undertaken on large plots (6 m x 12 m) and employs a fully replicated factorial design. Further detail of the treatments and the design is presented in the following table; in total the experiment has six treatments.

Treatment and rotational progression details

		Cropping													
Rotation	Compost use	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)	2018 (Year 11)	2019 (Year 12)	2020 (Year 13)	2021 (Year 14)
Spring breaks	✗	wwt	sosr	wwt	sbns	wwt	sbly	wosr	wwt	soat	wwt	wbly	wosr	wwt	wbly
Spring breaks	✓	wwt	sosr	wwt	sbns	wwt	sbly	wosr	wwt	soat	wwt	wbly	wosr	wwt	wbly
Spring breaks and cover crop	✗	wwt	sosr	wwt	sbns	wwt	sbly	wosr	wwt	soat	wwt	wbly	wosr	wwt	wbly
Spring breaks and cover crop	✓	wwt	sosr	wwt	sbns	wwt	sbly	wosr	wwt	soat	wwt	wbly	wosr	wwt	wbly
Continuous wheat	✗	wwt	wwt	wwt	wwt	wwt	swt	wwt	wwt	swt	wwt	wwt	wosr	wwt	wbly
Continuous wheat	✓	wwt	wwt	wwt	wwt	wwt	swt	wwt	wwt	swt	wwt	wwt	wosr	wwt	wbly

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