

Cover crops, drainage and targeted cultivation for improved soil structure

Farmer Experience 4
Summer 2016

AHDB
CEREALS & OILSEEDS



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The GWCT Allerton Project,
Hall Farm, Loddington

Location:
East Leicestershire

Soil type:
Slowly permeable calcareous
clayey soils

Rotation:
WW, WOSR, WW, WBeans,
WW, WOats

“ We hope to make our soils more resilient by improving the structure, organic matter and soil biology. ”

To evaluate the impact of cover crops, use control strips and measure soil properties.

Why did you start including cover crops in the rotation?

We started including cover crops in the rotation as a result of introducing more spring cropping to combat black-grass. We are using cover crops to improve soil structure and mitigate erosion.

What are you doing?

- **Mixes to improve soil structure:** with shallow and deep rooting combinations from rye, oats, oil radish and tillage radish
- **Fertility building mixes:** legumes and vetches
- **Value for money EFA (ecological focus area) qualifying mixes:** phacelia and vetch
- **Single species mixes:** to look at mycorrhiza, disease, and allelopathy¹ effects

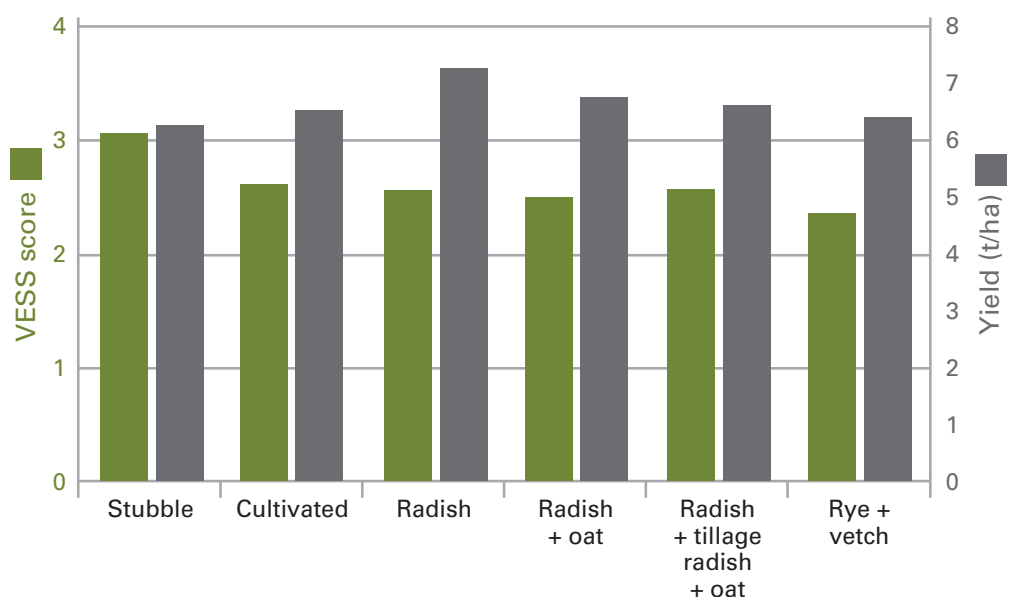
¹ **Allelopathy:** the inhibition of one plant species by another due to substances released into the environment that inhibit germination or growth.

The cost of cover crop seed ranges from ~ £10–40/ha. Stubbles were sprayed with glyphosate and sown with tine drill in August/September. Some were rolled for good soil-seed contact. The cover crops were destroyed from mid-March by spraying or grazing and spring oats were direct-drilled.

How are you measuring the changes?

In each field, we have one control strip left in stubble, an area cultivated, and areas of cover crops. We measure infiltration rates, earthworm numbers, bulk density cores, penetrometer readings and visual evaluation of soil structure (VESS)². Yield data is also analysed to determine the effect of growing cover crops.

² **VESS score:** a soil test which describes how to assess topsoil in three simple steps. Each assessment takes ~20 minutes. 1 = friable, 5 = very compact.



What has worked well?

Earthworm numbers have increased. The soils are better drained where we have addressed compaction and we are beginning to see a reduction in black-grass when cover crops have been used in combination with spring cropping. Slugs and perched water tables have been a problem where we have not addressed compaction.

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