

Cover crops for improved soil structure

Farmer Experience 3
Summer 2016

AHDB
CEREALS & OILSEEDS



David Blacker

Church Farm, York

Location:
York

Soil type:
Predominantly clay loams and silt clay loams over clay, with large variations through to sandy loam

Rotation:
WW, WOSR, WW and S Beans

Why did you start including cover crops in the rotation?

After the wet autumn in 2012, I had big areas that were still too wet to crop the following spring. Rather than leaving them bare, I planted some phacelia. I was amazed at how well it restructured and dried out the soils and how much biomass was produced.

When I changed my rotation to include spring beans, it was the perfect opportunity to add cover crops to improve the structure of the soils: I didn't want my soils bare over the winter.

What are you doing?

I am growing cover crops after winter wheat and before spring beans. I have to have a quick turnaround in order to get them planted in time and this is now a driving factor for my choice of wheat variety. I need to be able to harvest sooner, so I have chosen an early maturing wheat variety.

I have been trying different cover crop mixes to see what works for me. Some are off-the-shelf mixes (£50/ha) and I have also bought in some single species and mixed my own (£15/ha). These have included spring oats, phacelia, buckwheat, sunflowers, berseem clover and radish.

I have established them all with a strip-till drill. For the mix I made myself, I split it into seed size and drilled the big seed down the drill's coulter and spread the smaller seed on top with the slug pellet applicator on the drill and then rolled them in. The cost of drilling cover crops is approximately £15/ha. The following spring, the crops were sprayed with glyphosate and I drilled beans through them with the strip-till drill. The level of residue on the surface has not caused the drill any problems.

How are you measuring the changes?

I have logged the cover crop areas with GPS on a smartphone app. I can then overlay yield maps to see if there have been any yield benefits in the following crops. I haven't seen any yet though. I am also monitoring organic matter levels but, again, I have not seen any significant increases to date.

Below-ground improvements are purely observational so far but I am starting to measure bulk density and porosity of soils. I have seen from ink infiltration tests how important roots are for improving water infiltration.

Visually, there are great benefits to the soil structure from a cover crop when it is compared to control areas. Soils are more friable and worm numbers are greater.

“ I hope the above-ground biomass will protect the soil surface and the roots will increase water filtration. ”

Drill cover crops earlier. Once in September, only drill a cheap mix.

Further information

David Blacker hosts the York Monitor Farm. For more information, email the local AHDB Manager: judith.stafford@ahdb.org.uk or visit cereals.ahdb.org.uk/monitorfarms

What has worked well?

The key factor that has made the biggest difference so far is drilling date. The earlier the cover crops are drilled, the better they are. Once into September, I would only establish a cheap mix. I don't think it is worth drilling something expensive that late, as you will never get it to perform regardless of the mix or cost.

What hasn't worked?

Slugs can be problematic and seem to love sunflowers and brassicas. I also think residual herbicide residue is causing establishment problems, although I am unsure which ones are doing it.



Ink infiltration tests have shown the impact of roots on water infiltration.

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