



# Farm Carbon Toolkit

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## Farm walk with Will Blackburn, Soil Farmer 2019 <sup>[1]</sup>

A write up of the farm walk with our 2019 runner up of the Soil Farmer of the Year competition, Will Blackburn.

Will farms 470 acres in Cheshire. He runs a dairy enterprise with 300 milking cows and grows a range of arable crops. His light sandy soils make holding onto nutrients and water a challenge, and this has seen him adapt his management system to focus on building organic matter within the soil. Despite the weather having been beautifully sunny in the lead up to the event, the rain started just before the event, however we still had a fabulous group of farmers come along and hear about why Will was recognised in this year's competition.

### On the transition to no till.....



Will started drilling with a Moore drill 10 years ago for drilling grass into wheat

stubbles. The farm was still growing potatoes, which prevented a complete switch over. He explains "*when we were growing potatoes, it took 3 or 4 years of grass to get the soil back in good health. When potatoes were making good money that was ok, however when they weren't making good returns, it didn't make sense. You realise when you stop growing them how much they are damaging the system.*" Since the move away from potatoes the focus is to develop a fantastic surface to the soil which will build a humus layer (and resilience).

Will is also grateful to the cows and grass being on the farm, which has made the switch that much easier as the soil biology was already good. The soil on the farm is changing, the stones are disappearing which he puts down to good levels of worm activity, the worms are constantly active and digesting the soil, taking soil up which pushes the stones further down the soil profile. As well as the light land that is surrounding the home farm, Will has some heavier land away which is being managed in a similar way. Traditionally after 3 years of ploughing these fields would need a lot of working back down to get a good seed bed for the next crop, however with this system, that isn't the case.

### On grass and grassland management.....



The first field that we visited was a grass field. Here Will explained

more about the soils on his farm and how he manages them. The soils on this farm are good at leaching potash, so the aim is to get carbon into the soil and keep in there to make best use of it (and not lose it). Although this is a simple message, by following it and looking after the soils by not cultivating it is possible to achieve. The light sandy soils are great for turning cows out early, but in periods of dry weather they can suffer. The system being developed here is predominantly looking to provide the resilience in drought conditions. The grass seed in this field was disc drilled in. Will explains, "*By not disturbing the soil, when the conditions go dry you maintain the soil capillaries and old root channels which allow water to percolate, and the soil can perform its natural function.*" The field was in wheat two years ago and the grass was direct drilled into the wheat stubble. Slurry was applied before the wheat. Will has experienced a few issues with establishing wheat after a grass ley as the grass (as it decomposes) takes Nitrogen. As such, an application of slurry helps the wheat to get going and establish well. An alternative approach Will has also been trying is growing beans after the grass as the beans can fix their own Nitrogen.



Although grass is fantastic for soil health and soil biology, Will is

also keen on having a break from grass within the rotation and is seeing the benefits from having a break. It also provides an opportunity to get on top of the grass pests including leatherjackets. Grass management and efficient forage utilisation is something that Will has recently started to focus on in greater depth. Will maintains the grass in its vegetative state though grazing management. As well as providing high quality forage to the cows, he sees a soil benefit from this too as the grass is continuing to produce new roots until the seed head appears. By managing grass to keep it producing roots the soil biology is being fed and carbon is being cycled efficiently. Will measures his grass once a week to calculate his available forage and complete a grass budget. Measuring grass covers and calculating his feed wedge has allowed him to improve his pasture utilisation and plan ahead. He explains, "*the efficient use of grass means that we can use less concentrates, producing milk more efficiently.*" The field that we visited had been calculated to have a surplus so was recently cut for silage. Magic day on this farm is around the 14<sup>th</sup> of May, the farm is then producing a surplus from what the cows can consume. Around 40 acres were cut for first cut silage, and recently 50 acres were taken for second cut. The leys on the farm are predominantly high sugar grasses and clover. Will has had fantastic results from high sugar grasses and finds them great for milk production as well as being carbon efficient.

Will isn't a fan of intervening mechanically with machinery including the use of subsoiling or slitting as the aim is not to interfere unless there is a massive issue. He explains, "*if we can get roots, pore spaces and channels built up then the soil is more resistant to compaction, the soil starts to bounce and become resilience, however if you are tilling it, instead of bouncing back it goes down and stays down.*"

The fields are paddock grazed and at turn out in February the rotation is 40 days. After magic day the rotation shifts to 21 days. The fields are often subdivided and the cows have had 1ha/day. In the autumn higher residuals are left to allow for good covers when the cattle are turned out in the spring, with the aim that on the first time round the grazing platform the grass is taken right back down to a lower level and cleaned up ready for the season. The cows had been turned out fresh onto the field that they were in today on a 3,200 cover and the cows will be pushed to eat everything. In terms of the financial benefit of moving to this system, Will is cautiously optimistic but is waiting for a full year's results. However although the herd is currently at 300 milking cows, Will is confident that by following this management system he could increase the cows to 350 on the same acreage. The only issue being when the weather dries up. However the new system is helping build resilience into the business. Will explains *"this system buys us a week extra growth over the old system. The soil is now in the condition that it lets the water in and then through building organic matter levels up we can hold more of that water and make use of it."*



The cows

Will has transitioned from a Holstein type cow to a Procross mix that produce more milk from less feed. He imported 114 Danish reds and then added with the Procross to create a three way crossed cow which included Holstein, Swedish Red and Montbeliarde. The Holstein bit is now being replaced with Friesian to produce a more compact cow that fits the system. The milk is sold as liquid milk through Sainsburys.

## On soil analysis

Will analysis a range of fields and tends to select a good field and a poor field to evaluate the difference between them. The organic matter percentage on his sandy fields can be at 5%, whereas traditionally it was more like 2%. Will analyses for trace elements and has used biosolids to correct some zinc deficiencies on his heavier land.

## Beans



After looking at the grass and the cows we walked down the farm lane to look at

a field of beans. The beans in this field were drilled into a 10 year ley and will return to grass once the beans are off. Will is seeing the benefits of growing beans, in a different field he ran a trial last year with half planted as beans and half as wheat which was then followed by grass. The grass after beans was much better than the grass after wheat and due to the fact they are such a low input crop they deserve a place in the rotation! The seed rate for this field was 200kg and was home saved seed, but Will indicated that he would cut the rate back next year, as there was a lot of beans!

A lively discussion followed on the use of cover crops in no till systems and their place for building soil health and holding nutrients. Will explained that currently there is no window within his system to put a cover crop, however he is keen to try no till maize, following the American example of growing it after cereal rye, however he is cautious as the cover crop may slow the warmth of the soil especially on his heavier land. At the moment the aim is to keep something growing in the field all the time.

## On machinery



Will started off with a Moore disc drill but struggled on the heavy

land as there were issues with drying out and the slots opening up which led to poor establishment. He moved over to a 750a and finds that it does what it needs to do and fits the system, although he admits its quite extravagant for the number of hours that it does! However Will is completely honest that not everything has worked *“if you look at the past with everything I’ve done conventionally versus no till, I’ve had failures with both but my failures in no till have cost me less. There can always be crop establishment risks whichever system you are running. Through not cultivating though I’ve really seen the impact, as on fields where I’ve previously ploughed and the fields have been uneven and full of clods, I now have a flat field.”*

## On managing manures



The last stop on the tour was to look at the slurry management

system. Will has invested heavily in his storage and application system to make best use of slurry. He now has 6 months' worth of storage so that he can avoid having to go out and spread out of necessity, the slurry can be applied at the right time and get the most out of it. The addition of the trailing shoe seemed like the perfect next step, and allowed them to complete the circle and apply it in the right way. Will is seeing the benefits in using the method of application and is able to get the cows back grazing again much quicker. Having analysed the slurry he has also found it is high in potash, and as the farm is potash hungry, it makes sense to use the resources they have on farm.

## Where next?

Future aspiration for Will include honing the grassland management system, and building organic matter levels even more. He is also interested in reducing fertiliser levels.

A very enjoyable evening was had by all. Sincere thanks to Will for a fascinating evening.

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### **Links**

[1] <https://farmcarbontoolkit.org.uk/resources/articles/farm-walk-will-blackburn-soil-farmer-2019>