Nick August,
The Cotswolds, Oxfordshire

'Soil is the most important asset of my farm business and it's my priority to look after it"

Nick August runs a farming operation of over 400 hectares near Burford in Oxfordshire. Nick, a farmer and contractor, sees his soil as the key asset to a sustainable business. His aims are to protect and enhance soil quality on farm by implementing a variety of techniques. Key soil management tools are used to reduce compaction, to improve soil quality through increasing the soil's biological function and to protect against nutrient and soil loss.

Key to the success of system is the use of a range of tools ranging from direct drilling and controlled traffic farming (CTF) to having a diverse rotation, using cover crops and grazing stubble turnips with sheep. Reducing traffic of agricultural machinery on the land has brought many benefits by reducing compaction and increasing soil function and workability.

On-farm trials in collaboration with Natural England's *Catchment Sensitive Farming* have investigated the role of cover cropping on soil biological quality, nutrient loss and run off. The results have shown that mustard and other broad-leaved cover crops have clear soil conditioning properties. Nick also works closely with the *Campaign for the Farmed Environment*, which is an industry initiative that supports farmers to implement voluntary measures on farm to protect biodiversity and vital resources.

Improving organic matter	**Cover crops** **Direct drilling- reducing tillage** **Crop rotations** **Grazing of stock**
Reducing the risk of soil erosion	**Cover crops** **Over winter stubble**
Reducing compaction on land	**Controlled traffic farming**

Crop rotation

A diverse crop rotation has been established to improve resilience to crop pests and to allow for soil quality to be developed. Currently the land is farmed using a winter wheat → winter oilseed rape → winter wheat → winter cover crop → spring barley → winter cover crop → spring peas.

Cover crops

Cover cropping has become an integral part of the system, providing vital support for the soil during the rotation, improving soil biological function and decreasing nutrient loss and run off. Nick states that it is becoming more important for the cover crop and subsequent spring sown crop to become established to help with blackgrass control with the spring pea crop, a legume, helping to improve soil fertility. Furthermore cover cropping provides the necessary protection of the soil over winter thus reducing the threat of erosion.

In the past years many different cover crops have been trialled as well as stubble turnips. However Nick has also experimented with a range of cover crops to make sure they can provide a wide range of benefits - providing winter forage, frost hardiness, blackgrass control and most importantly soil improvement and soil conditioning qualities. The break within the rotation from winter sown crops to spring sown barley

creates an opportunity for Nick to really make an impact on his soil with a cover crop so choosing the right crop each year is vitally important.

Some cover crops deliver multiple benefits, others are more limited, but for Nick it's important to create an integrated cropping system that allows for key soil improvement but also financial benefit. Oil radish and winter turnip rape have both provided excellent soil protection and forage for the stock and haven't been heavily impacted by pests. Although both crops are grazed hard, the regrowth was quick therefore providing soil stabilisation, and reducing nutrient leaching from the soil.

Nick does not have any stock himself but in integrating arable and livestock systems thus allows local graziers and stock keepers to use his land for grazing. The rental income from the grazing animals offsets to some extent the costs of cover crop establishment.

Reducing tillage

Minimum tillage to direct drilling: Changing and reducing tillage on the land has often been credited for improving soil quality and biological function. Until 2008 Nick August practised minimum tillage, however for the last 6 seasons a direct drilling approach has been adopted. This suits his Cotswold brash soil which is often only 20cm deep.

The farm has combined direct drilling and a controlled traffic farming system very successfully with positive results for soil protection and maintaining profitability. The farm has also changed the direction of drilling, working across the slope to reduce the risk of erosion.

Controlled Traffic Farming (CTF)

CTF has been a successful approach due to its efficiency and minimum impact on the soil. Limiting time and impact of the machinery on the soil is vitally important for soil quality development, as heavy machinery can result in compaction.

GPS and Real Time Kinematic (RTK) technology has been used to enhance the equipment's precision placement for accurate yield mapping and field zoning. This technology helps identify the condition of the land for improved management. All tractors, drill, sprayers and grain trailer follow set tramlines on the farm due to the accuracy of their movements. Two full 22 meter headlands are established to facilitate turning and ensure accurate spraying with auto section control and reduced traffic on the land. 'Out track' controlled traffic farming is used where the combine or harvester's wheels straddle conventional tramlines, and intermediary wheelings made by tractors, and other field traffic with narrower axles.

Soil tests and evaluations have shown that there is limited compaction on the farm at Signet Hill, Burford and soil structure has improved.

Nick August uses a well-rounded approach to soil management that is appropriate for his Oxfordshire farm. His successful results come from developing high quality soils with limited compaction and high organic matter levels. By using cover cropping and through direct drilling, Nick has reduced the risk of erosion and nutrient loss on his farm.

The present state of the soils shows that by adopting management and engineering changes, farmers can and engineering can develop biologically healthy and resilient soils on their farms. By utilising the biological benefits of a diverse crop rotation and cover crops together with new developments in engineering and technology, Nick is now managing healthy and productive soils that are good for his business and for the environment.

2015 International Year of Soils

NFU