The Aquifer Partnership

Protecting Our Precious Groundwater

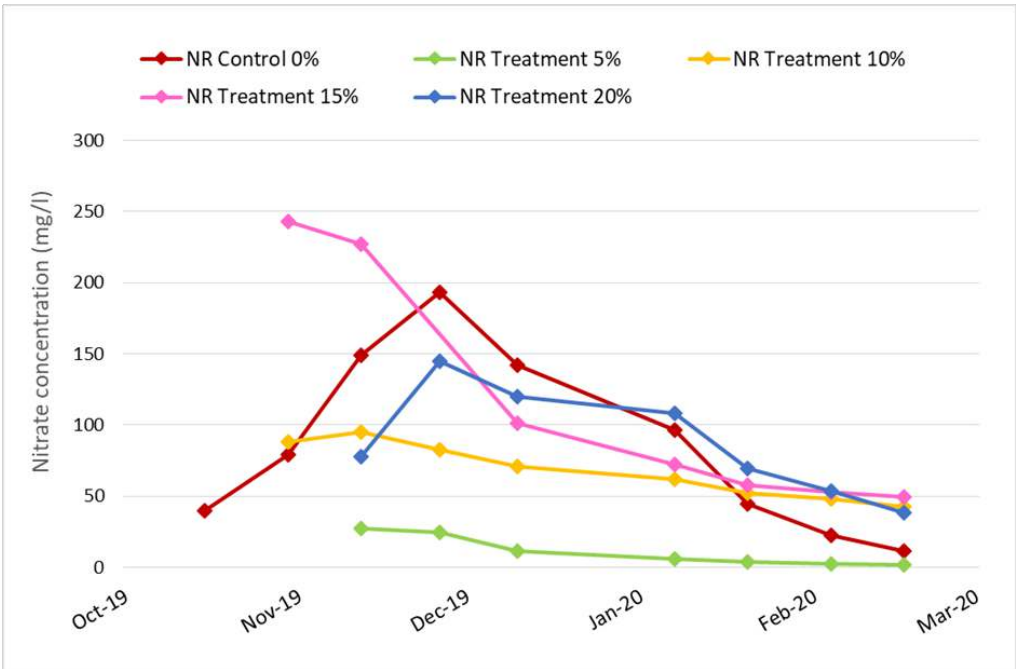
Bevendean Farm Trial - Case Study

Stuart and Jason West at Bevendean Farm

Mixed arable and livestock

The whole farm is 324 hectares, roughly half in an arable rotation and half in grass

Oilseed rape, winter barley, Spring barley and winter wheat.



Soil Mineral Nitrogen (SMN) porous pot sampling graph

Graph showing nitrate leaching after harvest and over winter. Nitrate leaching is typically highest over winter when soils are saturated.

Stuart is hosting the N reduction trial.

In this trial, nitrogen fertiliser across four plots is reduced by 5%, 10%, 15% and 20%. The yield and grain quality, as well as the varying cost of inputs, are monitored across the plots and compared with the 'normal' level of fertiliser. TAP is also measuring residual soil nitrogen levels after harvest and monitoring nitrate leaching over the winter using porous pots. The results of the trial in year 1 are inconclusive but the trial is being repeated to provide some more robust data.

For Stuart, this was a first step towards reducing nitrogen inputs across the farm in the long term. As a commercial farm, reducing the cost of inputs can improve the profit margin and the scientific approach taken by TAP is allowing Stuart to take stock and review his fertiliser inputs.

Changes to farming practices as a result of the trial

Wheat has to have a high protein content to qualify for bread making, which can be sold for a higher price. Stuart accepts that some of the thin chalky soils on the farm struggle to produce high protein wheat because of their inherent lack of fertility. Rather than pushing the crop with more nitrogen fertiliser, Stuart is considering moving to a lower input / lower output system. The early results of this trial show that this approach could be more economically and environmentally sustainable in the long run.

Because of previous cover crop trials at Mile Oak Farm and Housedean Farm, Stuart is now using over winter cover crops wherever he can.

'Are all these inputs needed? Can I save money? Can I improve the soil?'

Advantages

Having a cover crop incorporates a better quality of organic matter back into the soil, helping to prevent soil erosion, which can be a problem on the hills of the South Downs.

If the results of the N reduction trial continue to show that wheat can be grown with lower inputs but an equal or greater economic return, Stuart will consider rolling this out more widely across the farm.

Cover crops have a range of benefits when compared to leaving soils bare over the winter, not least locking up nitrogen which can be released in the following crop and reducing leaching to the aquifer.

Potential savings per year

The first year of the trial showed the cost of producing wheat (cost of inputs vs return on yield) was virtually the same when applying up to 15% less nitrogen fertiliser than normal. Given the importance of the aquifer and the need to make farming more sustainable, this is serious food for thought.

Experience of working with TAP

By working with TAP Stuart says he has been able to take a closer look at the crop and the inputs that are applied. The extra scientific monitoring and support has enabled Stuart to question: 'Are all these inputs needed? Can I save money? Can I improve the soil?'

Stuart wants the nitrogen fertiliser in his crop, rather than in the water where it becomes a waste of money and threatens the aquifer.

Future Plans

Stuart's son Jason is busily increasing the sheep herd, which may require more fodder production. The farm is likely to grow less oilseed rape now that neonicotinoid seed treatments have been banned, so will need to explore options for alternative break crops.

Like many farms, Stuart and Jason have diversified for financial stability. The farm now has commercial units and a campsite - Chalky Downs.

Other grants taken up

Stuart has been able to make the most of grant funding from Southern Water to buy a new air seeder – a machine that has enabled him to establish cover crops much more easily

Stuart has also signed up to Southern Water's nitrate leaching reduction scheme, and has been able to get incentives for things like his over-winter cover crops.