

# RHIZA

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## Case study: How smaller farms can benefit from variable rate applications

### Overview

An arable farmer from Northallerton, Phil Reed grows 33ha of arable crops and a further 22ha of grassland for suckler cows with the assistance of Agrii contractors. Knowing his land the way that he does, Phil has often recognised the varied nature of his fields, noting that in some areas he has a very narrow window of opportunity when the conditions are right to prepare the land. Determining these variations and targeting problem areas became his priority, with the goal to farm more efficiently now and in the years to come.

Looking to even up the crop biomass across his farm and gain more precise applications on his fields, he signed up to RHIZA's Essential plan which not only gave him access to satellite imagery and local weather data, but also enabled variable rate application maps to be produced in conjunction with his Agrii agronomist, Richard Bowes.

### Essential plan

RHIZA's Essential plan is the place to start when it comes to planning targeted applications. It provides access to variable rate planning, where users can choose one nutrient (N, P&K or Lime) or seed service as an option to improve establishment and optimise inputs.

The Essential plan also includes all Base plan features:



Satellite imagery



Weather data



Pest and disease forecasting



Crop growth models



Soil data




Mobile scouting app



*Phil Reed (left) on his farm with Agrii agronomist Richard Bowes (right)*

### Approach

1. Satellite imagery, using a combination of normalised difference vegetation index (NDVI) and green chlorophyll vegetation index (GCVI) analyses, showed the variation in biomass across each of Phil's fields. This was then used to split the fields into management zones.
2. Variation in imagery was examined in early spring to understand how the crop had established itself through the winter months. Looking carefully at the data, Phil and Rob were able to assess this and decide on a nitrogen strategy together.
3. Nitrogen was variably applied according to the biomass of each zone. A base rate of 114 kg/ha was applied as standard. In the lower biomass zones, nitrogen was increased by 20% to promote higher tillering, whilst in the higher biomass zones where sufficient tillering had taken place, a 20% reduction was applied.



**“In the future, if the government is going to pay us anything, we’ll need to show things like this – that we’re putting the nitrogen in the right place and we’re doing it right.”**

## Results

- Z** Extase yielded 9.7t/ha over weighbridge at under 18% moisture content
- Z** Harvested bushel of 78kg/hl – over 80kg/hl when dried
- Z** Obvious biomass levelling - difficult to identify the difference across management zones

## Conclusion and next steps

The results of targeted nitrogen applications certainly proved their worth on Phil’s farm. Areas of light land on the field which had historically displayed a thinner crop biomass absorbed the extra nitrogen and yielded more. Impressed with the results, next season Phil has decided to variably apply nitrogen across the farm for a second application after an initial flat rate which will be applied in March.

The outcome of Phil’s decision to variably apply nitrogen has clearly made an impression on the way he will operate his farm moving forward. He will go one step further with targeted applications by variably apply lime to his fields where tests have identified shortfalls. Applying inputs in this way will save him approximately 8-9t of lime; like his nitrogen applications, he will make savings by only using product in the areas where it is most needed.

Using RHIZA’s variable rate plans has helped Phil’s business save time and reduce the amount of fertiliser wasted in areas where product wasn’t required – a situation in which the farmer, the farm and the environment as a whole have all seen the benefits.