

# Precision Agriculture Project

Stephen Creese, "Rannoch Park", Longford

## Site details

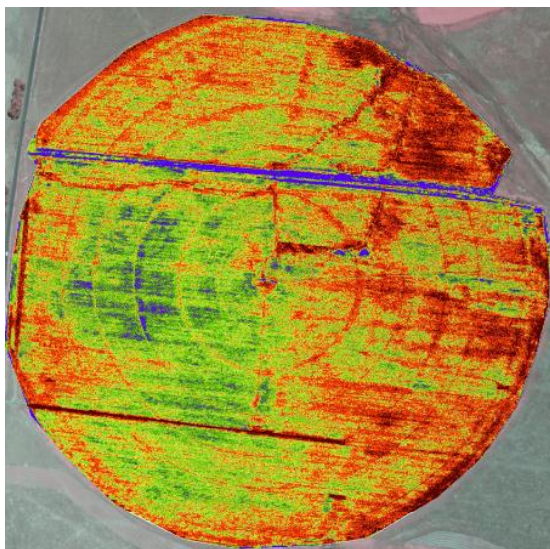
- chromosol (duplex) and tenosol (sandy loam/sandy clay loam over clayey sand, loamy sand over sand, and sandy loam/clayey sand over coarse gravelly sand)
- 38 ha paddock, divided based on annual cropping needs, centre pivot irrigator
- 2015-16 crop – onions
- representative of northern midlands cropping enterprises
- two soils with different management requirements

## Representative data layers

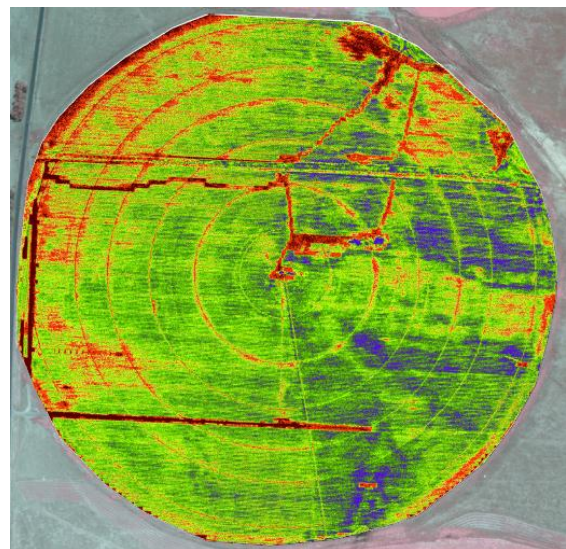
Various data layers, such as EM38 and soil pH, have been collected. Examples are shown on the next page.

## In-season NDVI images

NDVI images were captured by Terrapix two times during the growing season, as seen below.



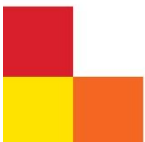
NDVI – 04 Dec 2015



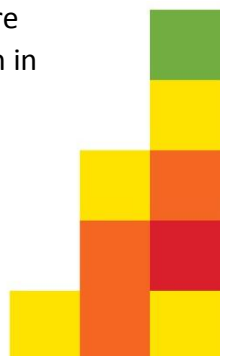
NDVI – 19 Dec 2015

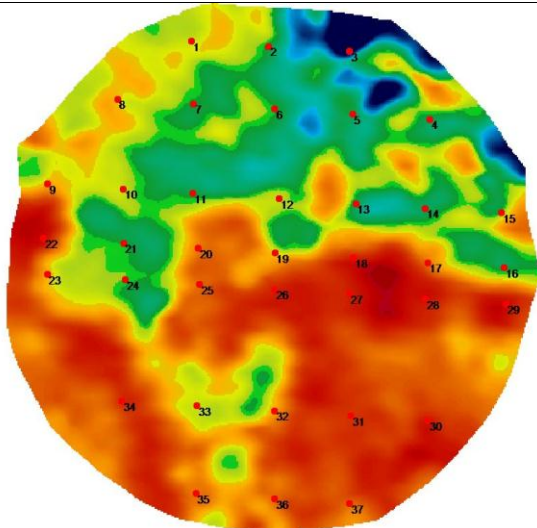
## Yield variability

Yield samples were taken from 37 points in a grid pattern across the paddock – see images on next page. This represents 1 sample per hectare. At each sample location, the onions were recovered from 1 linear m of bed, which represents 1.8 m<sup>2</sup> of crop. Samples were graded to determine marketable yield, being bulbs in the range 40 – 90 mm. Variation in marketable yield across the sampling points is shown on the last page.

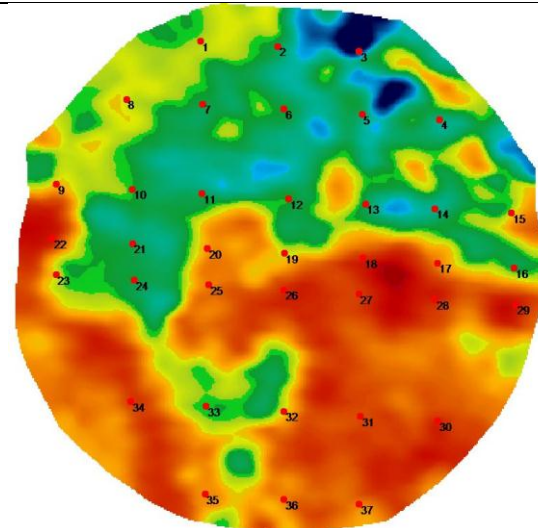


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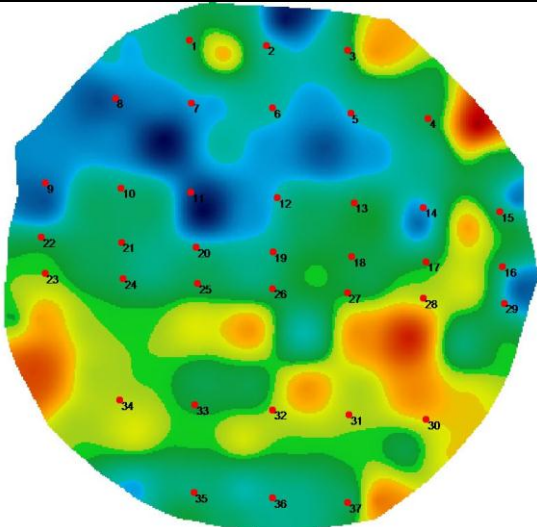




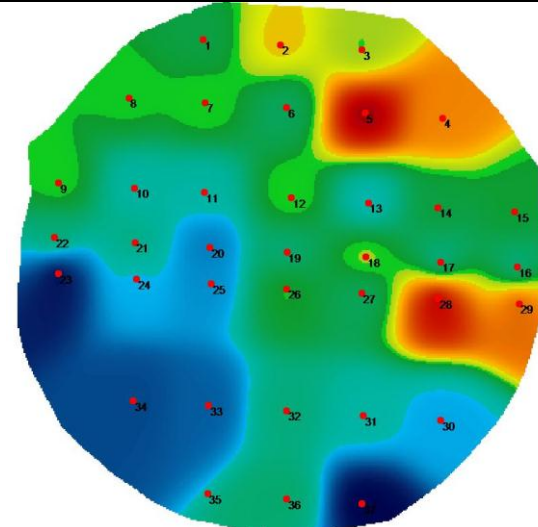
EM38 shallow



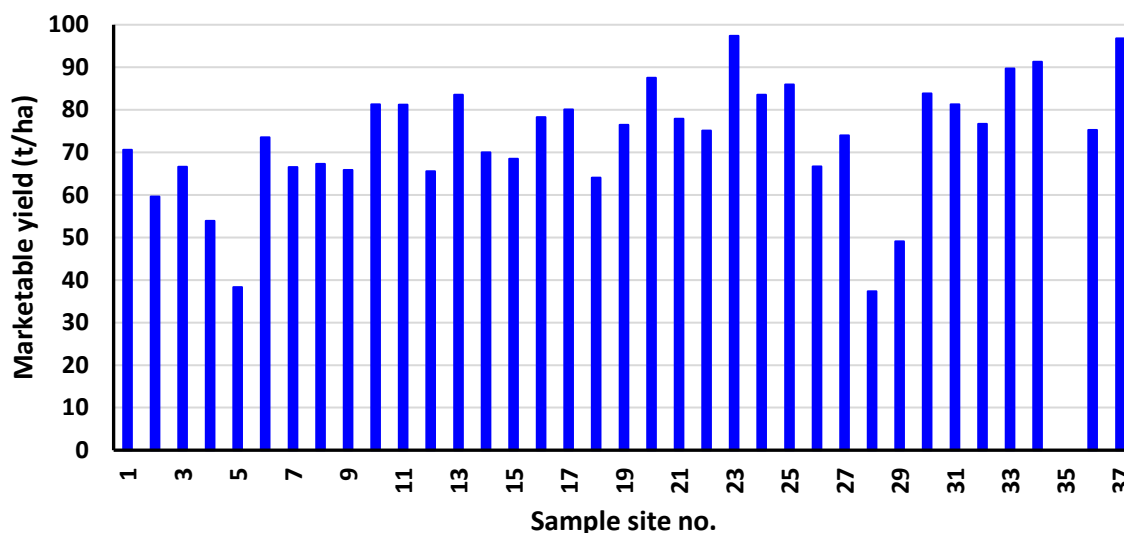
EM38 deep



Soil pH



Marketable yield



Note: Point 35 is a missing data point – sample disappeared between harvest and grading.

Site	Crop	Measure	Units	Average	Min	Max	Variation (%)
Rannoch Park, Longford	Onions	Marketable yield	t/ha	73.3	37.4	97.4	260

### Comments

This paddock showed a strong inverse response to the extended dry growing season with areas of low EC aligning with free draining sandy soil types. In-crop observations and discussions with the farm manager led me to conclude that irrigation was not adequate in these zones. Yield point 5 aligns with a salinity hotspot. December 4 NDVI has a decent alignment to yield, while Dec 19 NDVI has been compromised by the path of pivot irrigator during imagery capture.

The next crop planned for this paddock is peas followed by broccoli.

### Considerations from this season for following crop

- In light of a wet winter/spring pre broccoli I would anticipate an inverse relationship of soil type to yield. Drainage/ponding will be an interesting data set to monitor this season.

### What amendments (if any)?

- Nothing obvious from 2015/16 data sets.

### Future data sets

- Grid referenced nutrient mapping of P & K.
- CSIRO Imagery platform.