

Precision Agriculture Project

TIA Vegetable Research Facility, "Forthside", Forth

Site details

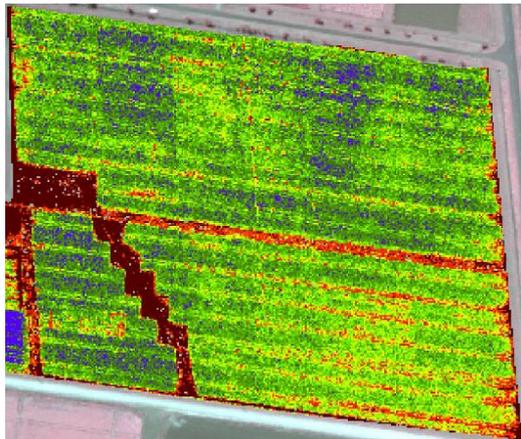
- red ferrosol (red/brown clay loam)
- 6.5 ha paddock, linear move irrigator
- 2015-16 crops – poppies
- representative of north-west coast cropping rotations
- has what are normally considered to be high quality, uniform soils, so a good site to determine if PA is an economic proposition in such a location

Representative data layers

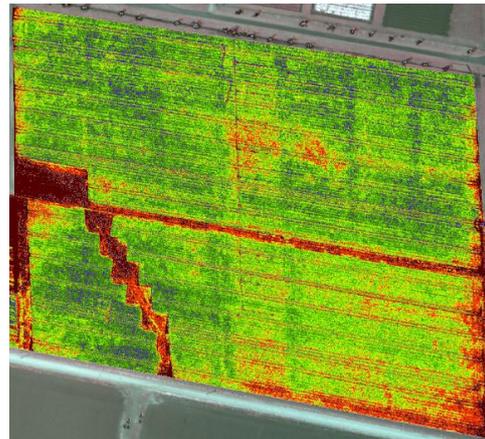
Various data layers, such as EM38, have been collected. Examples are shown on the next page. Soil pH has not yet been mapped at this site.

In-season NDVI images

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



NDVI – 16 Nov 2015



NDVI – 04 Dec 2015

NDVI @ 30 cm resolution highlights crop vigour through peak growth (run-up and pre flower) stages of poppies. An area of high biomass can be observed predominantly on the southern quadrant. Note the grid effect on the north eastern section that align with grassed pathways between plot trials in the previous season.

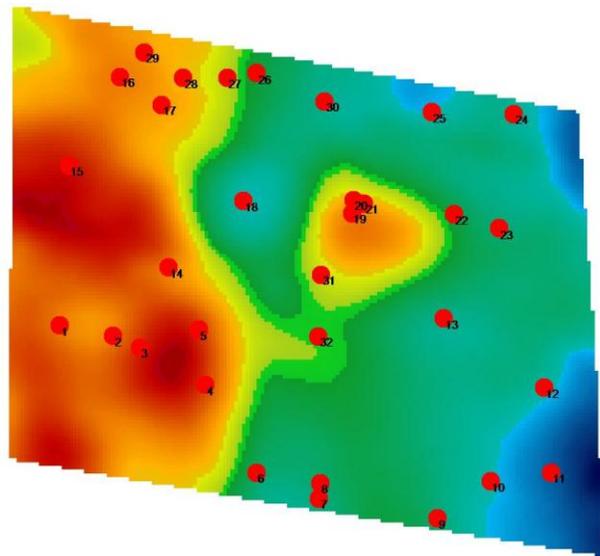
Yield variability

Yield samples were taken from 32 points in a random pattern across the paddock with the points distributed according to the underlying EM38 zones – see images on next page. This represents about five samples per hectare. At each sample location, the crop was harvested from a 1 m² plot. Samples were processed at the Sun Pharma laboratories. Variation in straw yield across the sampling points is shown on the last page.

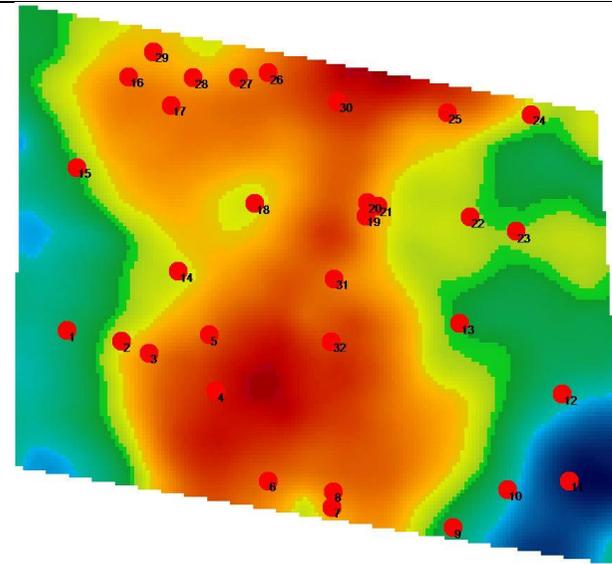


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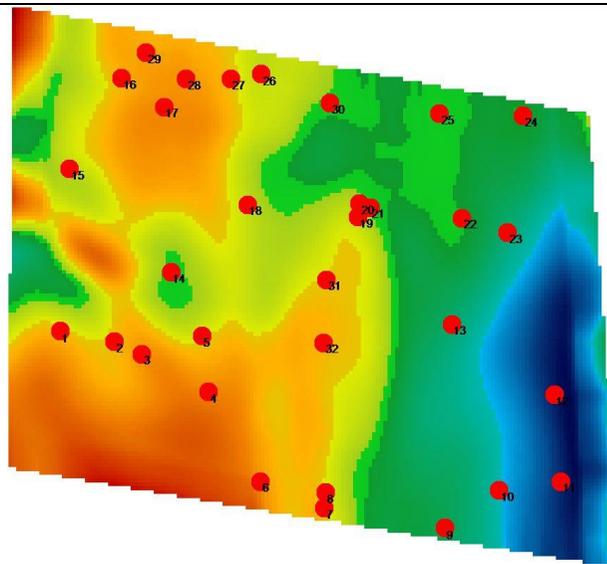




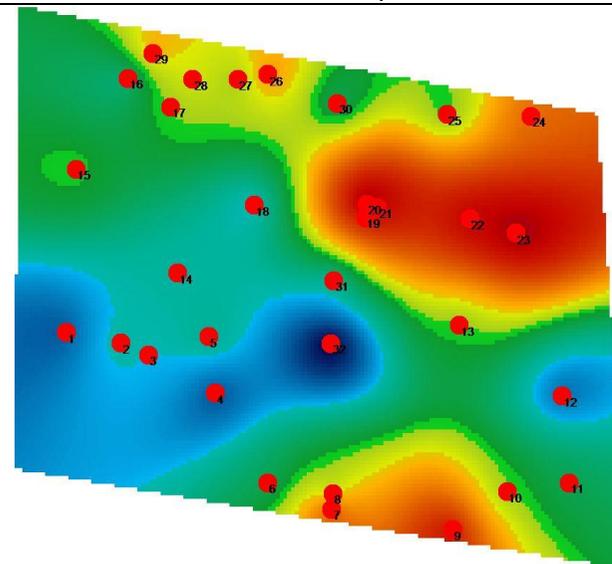
EM38 shallow



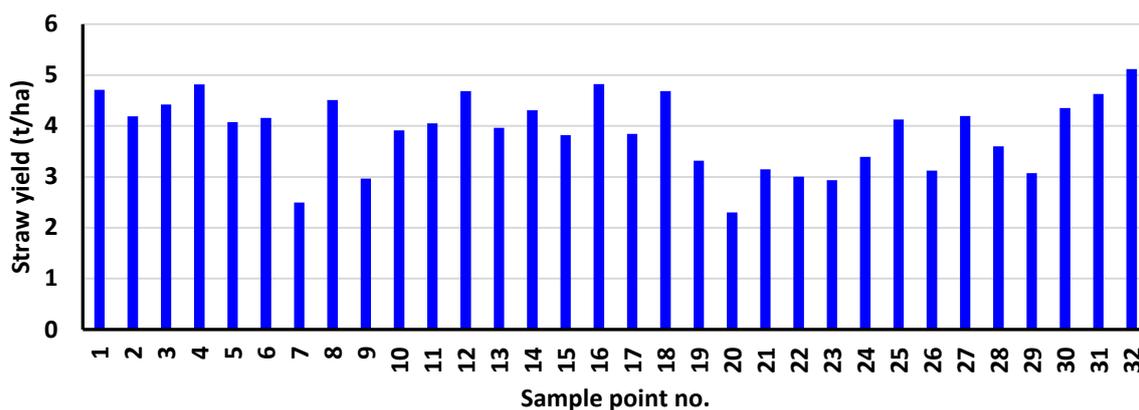
EM38 deep



Slope



Yield



Site	Crop	Measure	Units	Average	Min	Max	Variation (%)
Forthside, Forth	Poppies	Straw yield	t/ha	3.9	2.3	5.1	220

Comments

One observation from the season was that there is no point in capturing NDVI images after the commencement of flowering, as the light colour of the flower swamps the capacity to capture the wavelengths related to chlorophyll in the plants.

The next crop planned for this paddock is carrots.

Considerations from this season for following crop

- Physical paddock management issues including compaction and cultivation will be key drivers for uniform production. It will be interesting to assess whether carrot yield follows our initial measurements of poppy.

What amendments (if any)?

- The data sets have highlighted areas of lower biomass/yield that may benefit from ripping to ameliorate compaction on this site.

Possible future data sets

- Geo-referenced penetrometer data to assess spatial compaction levels.
- CSIRO imagery platform providing 12 month access to NDVI, biomass.
- Grid referenced nutrient mapping of pH, P & K.