

# Precision Agriculture Project

Michael Coote, "Marengo", Waterhouse

## Site details

- predominantly podosol (dark grey loamy sand over light sand, and dark brown sandy loam over sandy clay)
- 60 ha paddock, divided based on annual cropping needs, centre pivot irrigator with VRI capability
- Undulating topography with complicated drainage issues
- strategic surface drainage installed
- 2015-16 crops – three varieties of seed potatoes (¼), grass/brassica fodder (½)
- 2016-17 crops – two varieties of seed potatoes, fodder

## Representative data layers

EM38 was re-mapped this year to fill in some holes in the data.

## In-season imagery

No flights were made for NDVI in the past season, and the satellite service (i-EKbase) proved to be too unreliable with cloud cover.

## Yield variability

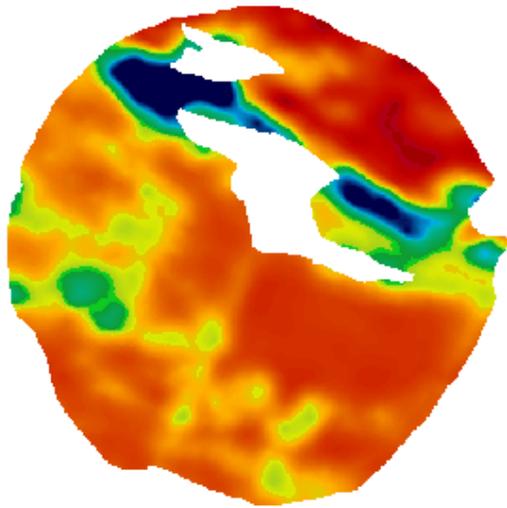
Yield samples were taken from 5 points in the Atlantic crop and 18 points in the Russet Burbank crop in a grid pattern across the paddock – see images on next page. This represents one sample per 0.3 ha in the Atlantic and 0.5 ha in the Russets. At each sample location, tubers were dug from 2 rows x 3 linear metres per row. Samples were graded in the field into weights relevant to seed potatoes (<35 g, 35 – 350 g and >350 g) and reject. Variation in total yield and the percentage making grade across the sampling points is shown on the last page.

| Site          | Crop                | Measure | Units | Avg  | Min  | Max  | Variation ratio max:min |
|---------------|---------------------|---------|-------|------|------|------|-------------------------|
| Marengo, 2016 | Seed potatoes       | % grade | %     | 74   | 44   | 87   | 2.0                     |
| Marengo, 2017 | Atlantic seed       | % grade | %     | 84   | 75   | 89   | 1.2                     |
|               | Russet Burbank seed | % grade | %     | 71   | 38   | 95   | 2.5                     |
|               | Atlantic seed       | yield   | t/ha  | 36.4 | 19.7 | 50.9 | 2.6                     |
|               | Ranger Russet seed  | yield   | t/ha  | 31.6 | 38.3 | 95.0 | 4.5                     |

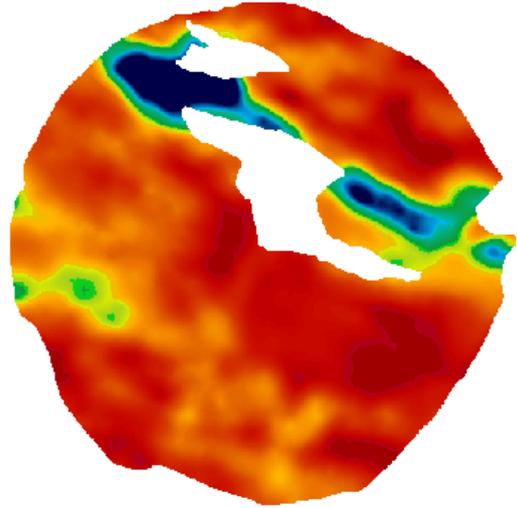


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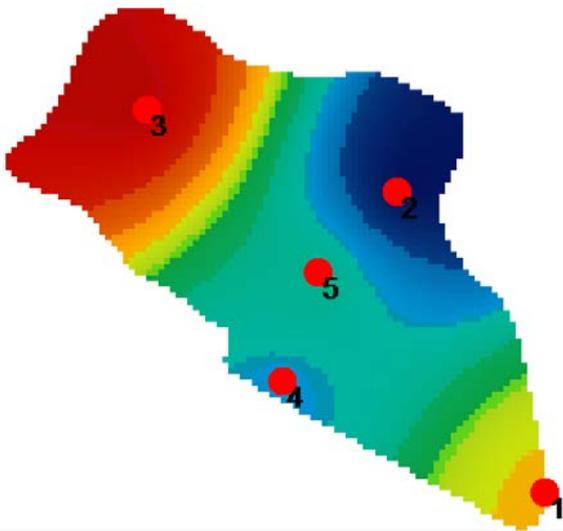




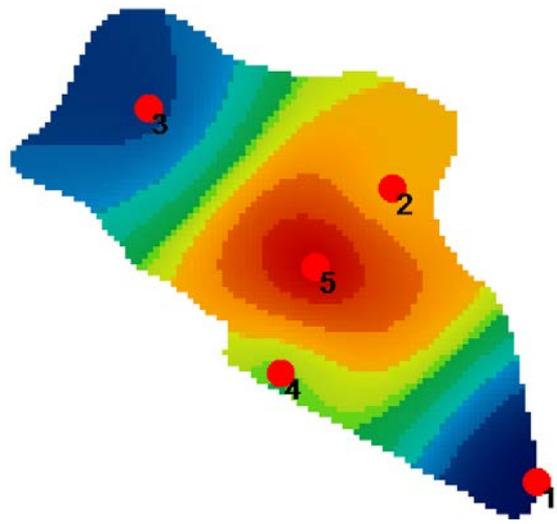
EM38 shallow



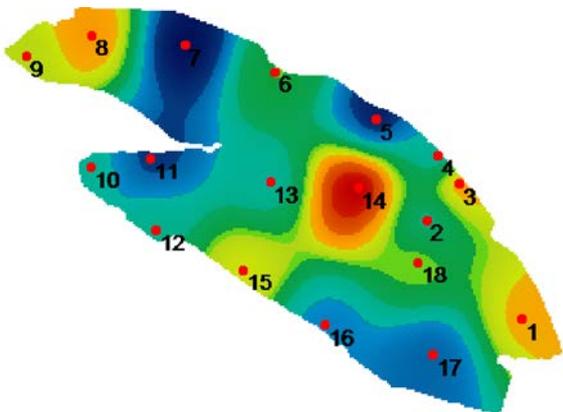
EM38 deep



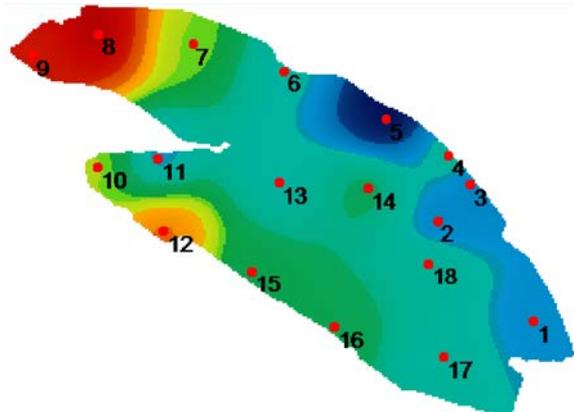
Grade yield (t/ha) – Atlantic



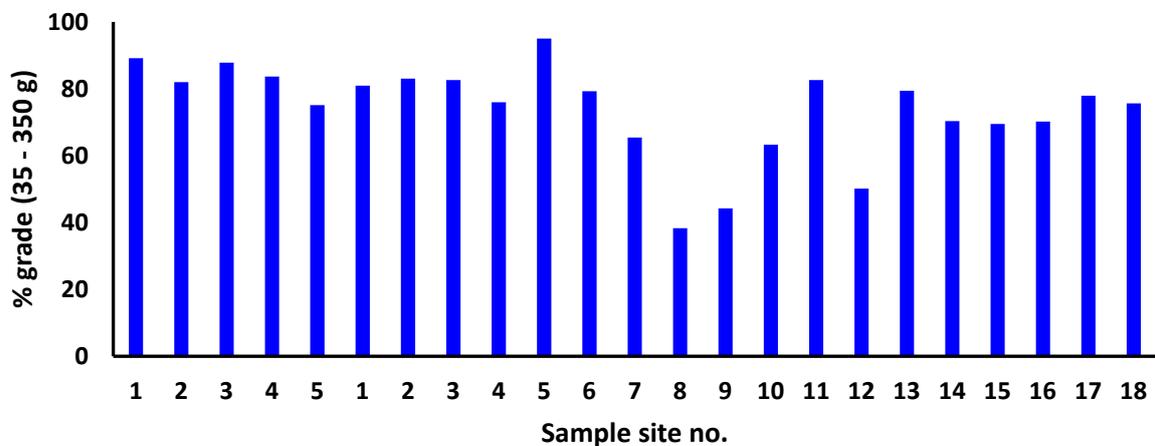
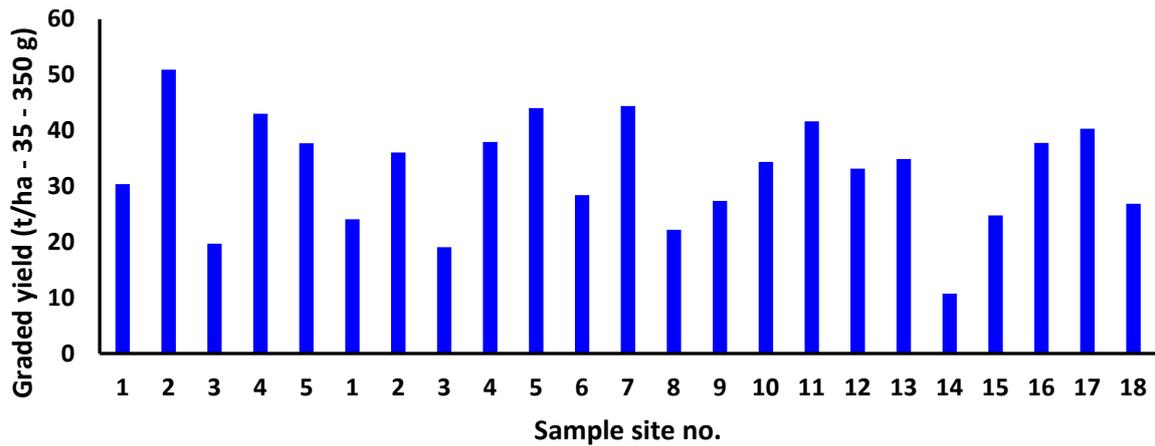
% grade – Atlantic



Grade yield (t/ha) – Ranger Russet



% grade – Ranger Russet



**Comments:**

In the Atlantic, the area with the highest % making grade was the area with the lowest yield. In the Russet Burbank, there were some light soil areas which yielded poorly (points 1, 3, 8, 9 and 14). Points 8, 9 and 12 were also poor grade samples.

**Considerations from this season for following crop:**

- Some drainage refinements were done in the area used for the Russets. This is a necessary risk management in this landscape.
- The next season the pivot will be sown to pasture