



EM SURVEYING



WHAT IS AN ELECTROMAGNETIC (EM) SURVEY?

An EM conductivity survey maps soil characteristics within the soil profile, and is composed of the following properties:

- Soil texture
- Soil temperature
- Salinity
- Soil moisture
- Bulk density
- Cation exchange capacity

EM surveying is carried out by towing the EM machine on a wheeled frame 15cm off the ground across the soil surface using our light-weight Polaris, usually at a swath width of 12m, although this can be varied to suit. The EM (soil electro-magnetic conductivity) readings are then logged five times every second, using RTK GPS to 2cm accuracy, with two depths recorded at the same time.

This provides comprehensive data on your soil characteristics at 0 - 50cm and 0 - 125cm depths. The RTK GPS also collects elevation, slope angles and other topography details so a 3D surface map can be built if required.

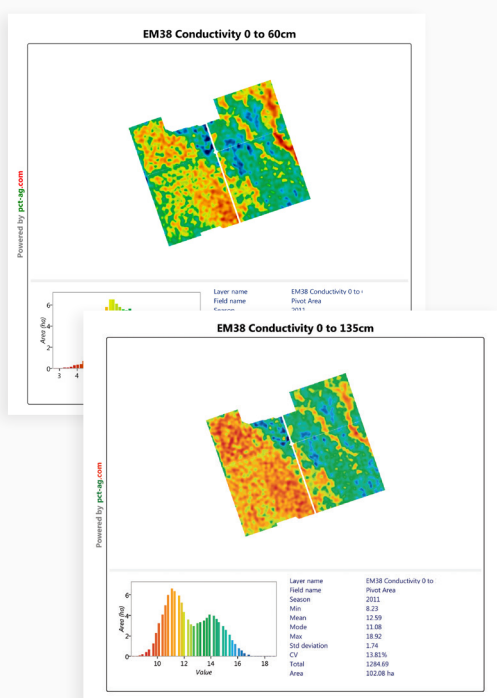


WHAT YOU GET FROM IT

When Agri Optics NZ Ltd conducts an EM survey of your requested area, you get back two highly detailed maps of your soil variability. The first is of the 0 - 50cm soil profile and the second is of the 0 - 125cm soil profile, as shown in the examples.

- Areas in red on these maps are low EM areas with low available water at the time of surveying.
- Areas in blue are areas of high EM with comparatively higher available water at the time of surveying.

In addition to a hard copy report, we provide computer software so you easily can access your data for future use. These maps can then be further ground-truthed depending on their target application and used for zone management.



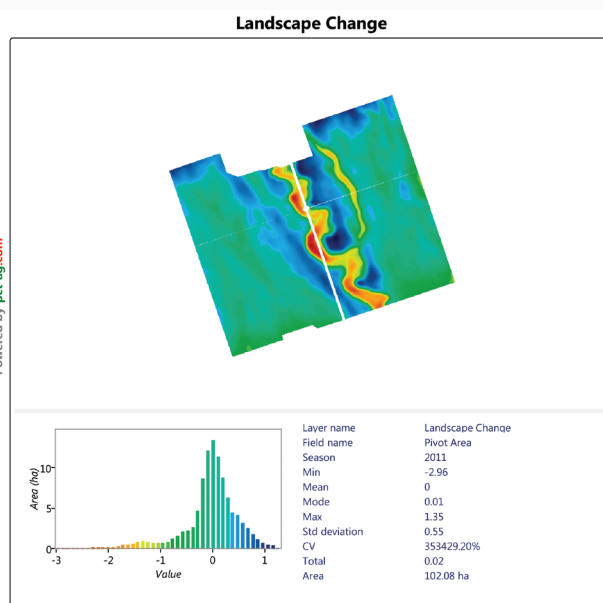
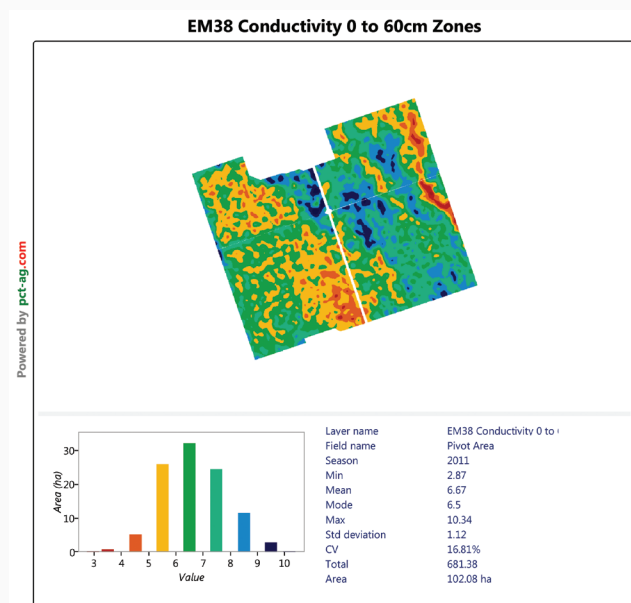
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MULTIPLE USES

The maps can be used for selecting soil grid sampling positions (for mapping nutrient variations), as well as for identifying fertility and/or available water-holding properties, and for moisture probe placement.

They can also be used to develop prescription maps, for example for variable rate irrigation, fertiliser and lime spreading, spraying and planting.

Additional maps of slope, aspect, elevation etc. can also be produced using the data collected during the EM Survey. These have many uses, including illustrating where water would move from a rain or irrigation event. This can be a useful tool in its own right when dealing with nutrient management and water quality issues.



SUMMARY

- Two EM layers are used to determine zones to be used for differential application or management of inputs.
- The additional topography related layers (e.g. Landscape Change, Slope & Aspect) can be very useful in determining avoidance zones or other areas that might need to be managed in a different way, rather than only in accordance with soil type and soil water holding capacity.
- A sound picture can be built up about how prone an area is to water ponding/water shedding when looking at layers such as Landscape Change or Slope.
- The more information you have available, the more targeted the recommendations and applications can be.
- Our full survey is a powerful tool to aid in the management of water placement, water volume efficiency and water quality issues relating to nutrient use.
- Any information gathered is an important tool for sustainable management with regard to the RMA's goals, integrated management plans for pesticide use and nutrient application in relation to the National Policy Statement for Freshwater Management 2011.
- The software allows you to revisit your data and focus on specific areas of your farm.
- With GPS logged coordinates we can process other data, such as yield maps, and add these to your data set.
- Accountability and traceability are now essential requisites for best farming practice in all areas.

For more information or to schedule an EM Survey, contact:

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'the future of farming'