

# Grid soil mapping helps farmers manage variability across multiple soil properties

New research on grid mapping of soil

The benefits of grid soil mapping in developing targeted strategies to address individual soil properties have been highlighted by a recent research project, conducted by Precision Agriculture Pty Ltd.

The project investigated the use of grid soil mapping to measure a variety of surface soil chemical properties, and also explored the relationships between different soil characteristics observed in the grid mapped data.

Over a 12-month period in 2018, Precision Agriculture tested and mapped approximately 100,000 hectares of agricultural land across New South Wales, Victoria, South Australia, and Tasmania.

Principal Scientist with Precision Agriculture, Dr Kirsten Barlow, said results from 289 paddocks – almost 10,000 grid soil samples -where multiple soil properties were measured, were used in this project.

“The grid soil sampling divides each paddock into small grids, generally a two-hectare grid, although this varies across industries,” Dr Barlow said.

“We collected 0-10cm soil cores within each grid on a diagonal transect that zig-zagged through the paddock, with the samples then sent to a commercial, accredited laboratory for analysis.

“The soil tests varied notably between and within each paddock.”

Soil pH – the acidity or alkalinity of the soil – generally had the lowest variation, while Cation Exchange Capacity (CEC), which influences the ability of the soil to supply plant nutrients (calcium, magnesium and potassium) and Exchangeable Sodium Percentage (ESP) had the greatest variability within a paddock.

The investigation into the relationships between the different soil tests also revealed wide variations. While some soil characteristics such as pH and CEC were well correlated in some paddocks, for most other characteristics up to 75% of paddocks had no consistent trends between the soil test data.

Dr Barlow said soil acidity and sodicity are common constraints limiting crop performance, which can be addressed through variable rate applications of lime and gypsum, while nutrients such as phosphorus can be more strategically targeted through variable rate fertiliser applications.

“Grid soil mapping provides a comprehensive measure of the variation in soil properties across the paddock,” Dr Barlow said. “Where multiple soil properties are measured, separate, more targeted, variable rate strategies can be developed for each soil constraint to ameliorate individual soil properties.”

Further details on the results of the study can be found at:

<https://precisionagriculture.com.au/grid-soil-mapping-defines-the-variability-in-multiple-soil-properties/>

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