Quantification of soil testing versus EM38 & y-ray spectrometry data for the Geraldton Port Zone – Participants Required!

Wes Lefroy – Precision SoilTech

A drying climate and the declining price of real commodities has forced farmers to look for new and innovative approaches on how to best manage inputs according to soil variation. Proximal sensing to map soil properties for rain fed cereal production is part of an increased use of technology to improve crop management through precision agriculture. Gamma-ray (γ-ray) spectrometry and electromagnetic induction (EMI or EM38) are proximal sensing techniques that provide high resolution, non-invasive and relatively cheap information about soil variation. Other data, such as soil tests, yield and biomass data can then be combined into the precision agriculture system to determine the best use of inputs.

Direct correlations have been found to exist between physical soil properties like clay, electronic conductivity (ie. salinity) and gravel content. Relationships between the key soil chemical properties like pH, phosphorus and potassium requires a high level of calibration with direct soil sampling and sometimes are not related to the response of the proximal survey.

For the proximal sensing activity to be useable to the fertiliser and soil ameliorant input decision process, it needs to have a strong relationship with the key input drivers.

Precision SoilTech has been awarded a GRDC Fast Track Project to quantify soil testing versus EM38 & y-ray spectrometry in the Geraldton Port Zone. The first activity of the project is an opportunity to build on the limited knowledge about the performance of EM38 and γ-ray spectrometry data for the Geraldton zone. These five test sites will then be intensive soil tested (one site per ha, sampled to 50 cm – 10cm intervals) and the relationship between the survey and soil testing data sets quantified.

These results will be used determine how many soil sample sites need to be collected to accurately calculate inputs and will contribute towards activity two. The second activity aims to extend on activity one by including additional layers and providing a scientific and economic evaluation of their ability to map soil variation and improve calculations about a particular soil types yield potential. At each of the intensive sites, biomass (supplied by project) and yield data (in kind from farmer) will be analysed for the relationship between soil properties and the proximal layers.

The project will encompass growers from the Mingenew Irwin Group, Northern Agri Group, Mullewa Dryland Farmers and Yuna Farm Improvement Group covering the entire Geraldton Port Zone.

If you have had EM and Gamma surveys previously conducted, and are interested in participating in the project, please contact me via details below.

For more information please contact Wes Lefroy – wes@precisionsoiltech.com.au or 0427 549 042

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