Precision Agriculture Project

Increasing on-farm productivity & sustainability

This is the first newsletter of the Precision Agriculture Project, which is an on-farm research, demonstration and extension project funded by the Tasmanian Department of Primary Industries, Parks, Water and Environment under the *Cultivating Prosperity: A 2050 Vision for Agriculture* grant program.

The Tasmanian Agricultural Productivity Group (TAPG), in conjunction with the Tasmanian Institute of Agriculture (TIA) and Serve-Ag, is undertaking this project, which aims to help boost farm productivity across the state by using precision agriculture technologies to enable better crop management and yield prediction.

Using mapped data to inform decisions about vari-rate nutrition and vari-rate irrigation techniques, the Precision Agriculture project aims to not only help boost crop yields, but also reduce fertiliser costs, improve irrigation techniques and provide information to make better farm management decisions.

This project had its beginnings at an industry meeting in 2014 involving a number of private sector interests including Premium Fresh, Simplot Australia, GlaxoSmithKline, Serve-Ag, farmers and contractors. It is through industry vision and drive that this project has come to fruition.

We welcome your feedback and suggestions on content for future newsletters.

Regards,

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EO TAPG, Project Manager	TIA, Project Research Coordinator	Serve-Ag, Project Technical Consultant

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Farm demonstration sites

The project has six established commercial-scale, on-farm irrigated cropping case study sites on properties in the Meander Valley, Northern Midlands, North-East, Tunbridge and on the North-West Coast. Most farms are growing vegetables in most years.

Each site was chosen as it broadly represents the soils, farm management practices and rotational cropping enterprises relevant to the local area. Crops being grown include potatoes, seed potatoes, onions, peas, broccoli, poppies, cereals, grass seed and forage.
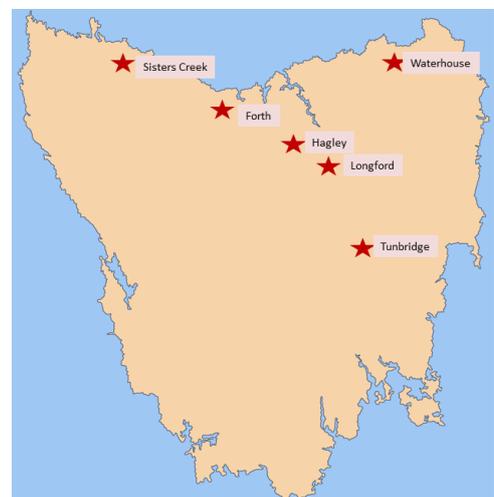
What information will we collect?

Technology is increasingly important when it comes to making smart decisions about crop management, and precision agriculture techniques are a game-changer for producers. We will be employing a number of precision agriculture technologies on the demonstration farms to gather data on soil, water drainage, pH, fertility, and crop health and yield. Data will be collected using a range of platforms, including, aircraft, UAVs and ground-based equipment. Collating data will help inform producers when and how to irrigate or fertilise crops. The precision agriculture systems of most interest in this project are briefly described below:

EM38 soil mapping

EM38 soil mapping is a fast and cost effective way of measuring soil moisture content, salt levels, and soil texture. A geo-referenced site soil survey to identify zones of variable characteristics enables variable treatment such as variable rate irrigation.
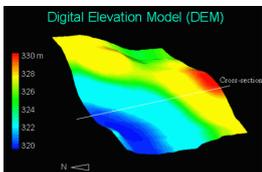
Water shed analysis

Digital Elevation Modelling (DEM) shows the contours of the ground surface and is used for watershed analysis, mapping land suitability for surface irrigation, drainage planning and setting-up variable rate irrigation.
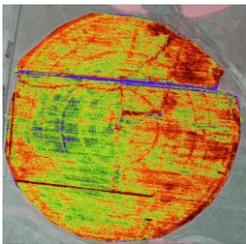
Identifying plant vigour

Normalised Difference Vegetation Index (NDVI) is used to monitor plant vigour. NDVI highlights relative variability within a crop. It can guide targeted assessment of crop performance and actions to remediate problems. NDVI images can be sourced using satellite, fixed wing aircraft and UAV's.
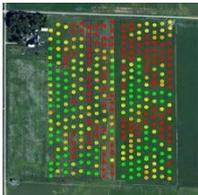
pH mapping

Site-specific management of soil pH is a precision agriculture practice that can provide positive economic and environmental impacts on crop production. Geo-referenced grid analysis identifies pH variability and guides identification of management zones within a paddock/farm.
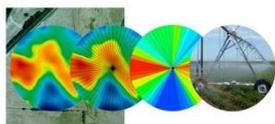
Variable rate technologies

VR application technologies include irrigation (pivot or linear), nutrition and seeding rates.

Yield mapping

Yield monitoring technology allows preparation of yield maps which illustrate crop variability, and the influence of other variable factors (e.g. EM38, NDVI) on final crop yield. Crop harvest data will be assessed in the project. Yield data is a powerful commercial driver for PA investment.

Tasmanian Institute of Agriculture

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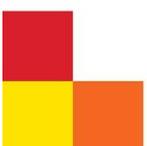
Tasmanian Agriculture Productivity Group

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