

## Technology set to revolutionise farming

### Smart phones and UAVs just the start

#### UAVs

COGGO has funded three projects that directly involve Unmanned Aerial Vehicles (UAVs).

#### **Mingenew Irwin Group**

Farmer members of the Mingenew Irwin Group (MIG) received funding from COGGO to help understand the potential of a new technology – unmanned aerial vehicles – to maximise benefits for WA grain growers.

The project's aim was three-phased - to fly UAVs, to capture data using the Crop Manager decision support software, and then provide this research to grain growers.

To test the effectiveness of UAVs, MIG chose to target weed identification in grain crops.

The program provided a number of outcomes, such as proving that UAVs can successfully collect imagery - identify weeds by air - and importantly, transpose this information as useful data by feeding it through "*Crop Manager*" software which allows the weeds to be identified.

This data was able to inform the farmers who could then use it to program farm machinery software and be far more targeted in their application of spray rather than blanket spraying a whole crop.

Information for daily paddock activity was also able to be provided to the farmers on their computers, phones and tablets.

#### **UWA & DAFWA**

Funding from COGGO to a joint initiative by the University of Western Australia (UWA) and the Department of Agriculture and Food WA (DAFWA) has delivered a ground-breaking mobile phone/tablet app that optimises pesticide application in crops.

"SnapCard" has been enthusiastically taken up by farmers across WA who can see real productivity bonuses and reduction in their direct cropping costs. But its popularity has not been held by borders with interest coming from across Australia and grain growing areas around the world.

"Up to May 2015, over 1,000 growers across Australia and internationally have taken to downloading and using the free app," according to UWA project supervisor Christian Nansen.

"SnapCard, a user friendly application and website available from the iOS and Android App stores, provides greater application certainty when applying pesticides to those crop areas needing to be sprayed, while minimising application to non-affected areas," he said.

SnapCard is expected to help overcome the often excessive use and inefficient application of pesticides that up until now have been applied in a general broadcast fashion.

With growing global food demand, agricultural experts have predicted that left unchecked, there would be an increasing use of pesticides. SnapCard is using research and technology to overturn this trend. Further information is available from <http://agspsrap31.agric.wa.gov.au/snapcard/#&ui-state=dialog>

## **Murdoch University**

Murdoch University's School of Veterinary and Life Sciences (VLS) has received funding from COGGO to provide proof of concept for using remote sensing to help address nitrogen levels in crops.

Applying nitrogen to crops is often essential for their health and yields but can be highly expensive, often wasteful and imprecise.

Up until now, nitrogen levels in crops were only reliably estimated using expensive and slow laboratory analysis techniques. Other commercial applications use sensors to gauge the greenness of crops but often get mixed signals from biomass and chlorophyll and do not deliver the accuracy required.

The VLS project team led by Halina Kobryn is testing breakthrough studies of one of its PhD students, Felipe Burgos, to use highly sensitive – hyperspectral - sensors to obtain only the data associated with the percentage of nitrogen in the crop.

This technology could provide a breakthrough system where miniaturised sensors are mounted onto unmanned UAVs for crop flyovers and yield critical and cost effective data to growers on a 0.25 square metre grid.

The data would be fed to spray applications and nozzles automatically adjusted to reduce or increase nitrogen application according to crop needs.

**COGGO is a public company formed by West Australian grain growers concerned about the level of resources being allocated to research in the state. It is a general R&D funder providing grants to applicants who can demonstrate innovative ideas that will boost grain farm productivity or benefit grain growers' profitability through projects for geographic, crop specific sectors or the general grains industry. Grain grower members contribute annually to this fund.**