



SPAA in the USA

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A recent trip to the USA by two SPAA committee members provided a valuable platform for two-way dialogue to share and learn about PA in both countries.

Malcolm Sargent (L) and Ashley Wakefield (C) with Nebraskan farmer Arnie Hinkson, who is showing them his liquid fertilise system that has variable rate control. In the background are some of the thousands of hectares of irrigated corn they saw on their trip through Wisconsin, Nebraska, Kansas and Colorado.

It is always valuable to look over the fence and take the time to share information. This was very much the objective of Malcolm Sargent and Ashley Wakefield's trip to the USA in July 2008. In addition to presenting the results from the SPAA research on the 'Economics of Adopting PA on Australian Farms', they took the opportunity to talk to farmers, agronomists, service providers and researchers using or developing PA technologies. They also took the opportunity to present the Australian perspective to a few of the machinery manufacturers.

"The objectives of the trip were four fold," explained Malcolm Sargent. "Presenting the paper was the catalyst but we wanted to gain a better perspective and understanding of the adoption of PA in North America; to understand how barriers to PA adoption have been overcome in the USA; and to identify opportunities to extend PA adoption in Australia".

Attending the 9th International Conference on Precision Agriculture provided an excellent platform to learn about new and emerging PA technologies and their application.

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The conference, in Denver, Colorado, was attended by over 450 participants from 43 countries and 250 papers on Precision Agriculture were presented.

As Ashley points out, "over the two and half days there were four rooms running concurrent 20 minute sessions, so at best you could only attend 25 per cent of the presentations."

From the conference Ashley reports the following observations:

- There was an emphasis on crop scanning research using real time scanning, airborne imagery and satellite imagery to target variable rate application of nitrogen fertilisers.
- There were several presentations on real time protein measurements, including using this technology to predict test weight in cereals.

- Research is being carried out using crop scanning (NDVI) to determine whether crops are suffering from water stress or lack of nitrogen, before applying in-crop nitrogen.
- Various on-the-go soil sampling techniques for a range of soil properties are being developed. For example a group in Korea are developing a mobile motorised digital cone penetrometer for measuring soil strength and compaction.
- Weed recognition to guide precision weeding robots is being developed.

Prior to the conference Malcolm and Ashley visited Case IH and John Deere, major manufacturers of farm equipment with PA systems and met with organisers and members of organisations that are similar to SPAA in Nebraska and Kansas.

They emphasised to the manufacturers the need for equipment compatibility and for calibrations etc that are suitable for use in Australia.

Malcolm reports that, "achieving this will be an on-going challenge

because their questions to us suggested that many of the people we met in the USA had little or no concept of how we farm in Australia."

These visits and attending the conference highlighted that the adoption of PA in the USA is at a similar stage to that in Australia. Some farmers have fully integrated PA into their operation, while others are still using a summer fallow/wheat rotation and little new technology.

However, at the University of Nebraska, every agricultural course offered contains a PA component. Education is considered an important part in achieving the adoption of PA technology.

Groups such as the Nebraska Agricultural Technology Association (NeATA) and the Kansas Agricultural Research Association (KARA) have been formed by innovative people (growers, researchers and industry) to make agriculture more productive. It is hoped that SPAA can maintain and build on the contacts made with these groups.

This trip was partly funded by a travel grant from the GRDC and by SPAA. More information about the International Conference on Precision Agriculture is located at www.icpaonline.org and the next conference will be held in the USA in 2010.



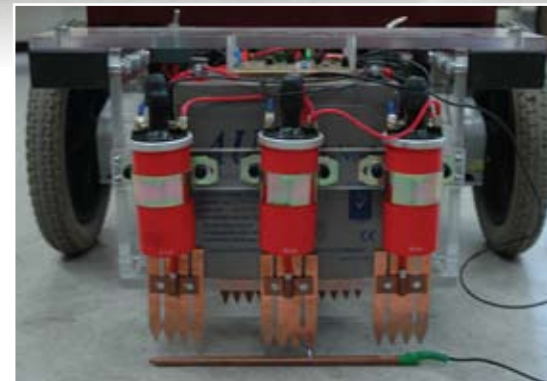
A shock for weeds

First there was Greenseeker® now there is GreenWeeder an autonomous system designed to detect and destroy weeds without the use of herbicides.

Still in development, this lightweight robot is equipped with a GPS and a laser scanner with a 240 degree rotation for in row guidance, stereo imaging cameras to assess distance and a long range communication system.

Under the supervision of Dr Jay Katupitiya, University of New South Wales student Kim Son Dang has developed the software for the GreenWeeder and is currently experimenting with the use of electric shock treatment to kill weeds.

Basically any material that closes the circuit will receive an electric shock. This way the GreenWeeder does not have to be fitted



with sensors that identify weeds or their location. Electric shock treatment is most successful on weeds with a single tap root.

In future the team may mount other non-chemical weed control tools on the robot and assess their performance.

The GreenWeeder was just one of the autonomous agricultural tools demonstrated during the post Symposium tour to the Centre for Autonomous Systems at the University of NSW.

Malcolm's list of interesting web sites.

- www.mapshots.com
- www.agmanager.info – search for Terry Kastens
- www.notilltalk.org
- www.talk.newagtalk.com
- www.unibots.com
- www.futurefarm.com – precision irrigation
- www.precisioncropmanagement.com
- www.rapideye.de
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