

Finding the dollar return from PA

SPAA the Southern Precision Agriculture Association was formed in 2002, with the objective of promoting the development and adoption of Precision Agriculture (PA) technologies to enhance the profitability and sustainability of crop production systems. Since its inception the price of many PA technologies has been slashed making adoption more attractive. Despite this growers continue to seek information on if there is a dollar return from investing in PA. Providing information on this remains SPAA's top priority.

Right from the start SPAA, with support from SAGIT, established a research program to help provide evidence and information on the returns, savings and benefits that adopting PA can bring. This program started with six core trial sites where up to seven years of yield data had already been collected. The yield maps created from the yield monitor data provided a means of visually assessing the degree of yield variation within a paddock over a number of different crops and seasons.

Yield mapping is considered to be an important first step in the adoption of PA technology. However, the use of guidance to reduce overlap is another important starting point as experience has shown a reduction in inputs of up 15 per cent with 2cm accuracy autosteer.

"Experience from SA suggests that where different areas of the paddock produce yield differences of at least 1.5t/ha of wheat then variability is worth managing but this variability needs to be stable from season to season," explained Rohan Rainbow, Executive Officer for SPAA.

The initial mapping exercise indicated the six sites had suitable variation to warrant further investigation. Dr Brett Whelan of the Australian Centre for Precision Agriculture at the University of Sydney was secured to oversee the research program, which aims to determine how or if this variability can be managed and what the production and economic outcomes of such management might be.

The first step was to identify management zones within each of the six trial paddocks. Management zones can be thought of as fenceless areas that have a relatively uniform agronomic environment.

To define these zones the following information was collected from each paddock: yield, elevation (derived from the yield monitor data) and electrical conductivity information of the soil profile produced from an EM38 survey; the latter gives information on soil moisture and salinity.

These three sets of information were overlaid to produce two or three management zones within each paddock.

These six sites continue to be investigated and a further two sites (YP and lower EP) were added in 2004 with funding from GRDC. At all these sites the impact of varying nitrogen, phosphorus or disease management regimes based on the management zones is being investigated.

In 2004 four additional low rainfall sites were established, funded by a National Landcare Program Natural Resource Innovation grant. In 2005 further work was carried out at these sites funded by the GRDC. At the upper EP site varying gypsum and deep ripping treatments by management zone are being investigated. In the Mallee the matching of cereal variety and phosphorus inputs to management zone are being investigated. Whilst in the Wimmera varying nutrients is being assessed at one site and varying the rate of herbicide and seeding rate are being assessed as a method of controlling ryegrass.

A further 15 sites across SA and Victoria have been established as part of a GRDC funded project to establish if an on-the-go nitrogen sensor is suited to determining variable nitrogen rate for in-crop applications in Australian conditions.

In preliminary trials in 2004 varying nitrogen rate, compared to a constant rate, result in yield increases in wheat of 0 to 4%. These trials are continuing.

Much of the information from these trials is regularly communicated through the SPAA magazine PrecisionAgNews or website and at training activities. SPAA is actively involved in helping to train growers in the use of PA equipment. Details of current training activities across SA can be found on the SPAA website (www.spaa.com.au).