

Precision Agriculture on Farm and SPAA

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BACKGROUND

Property is 1800 ha west of Crystal Brook in the Mid North of South Australia. 400mm annual rainfall. Half the farm is loamy soil with the remainder mainly dune/swale with sandy loam and some rising country contoured with sandy loam. Continuous cropping with wheat, barley, field peas, faba beans and canola. Sheep are purchased to graze on the stubbles over summer.

DIRECT DRILL

After the 1997 season where half our wheat couldn't be sown until the middle of August we decided to change to direct drilling. We suffered a 1.2 t/ha penalty. Since 1999 we have sown almost all of our crop with a Concord bar with Anderson points deep banding the extra fertiliser that we would have incorporated earlier. The airseeder was set up with electric drives to enable VRT.

PRECISION AGRICULTURE

Over the years we had noticed that our crops were not even. In 1999 we purchased an Agleader yield monitor and began yield mapping. Over the following years we conducted EM surveys to try and establish a reason for the yield variation. At seeding we discovered that the seeder monitor would not talk to the controller.

Issues such as problems interpreting the yield maps, what sort of software to use and other compatibility problems. With others experiencing similar issues this led to the formation of the Southern Precision Agriculture Association (SPAA) in April 2002. It is a group comprising farmers, advisors, researchers and industry interested in promoting the adoption of PA. Its membership is across southern Australia.

SPAA after receiving initial funding from the South Australian Grains Industry Trust Fund (SAGIT) has been involved with the GRDC's SIP09 Precision Agriculture initiative and is running trials across South Australia and Victoria.

INTER-ROW SOWING

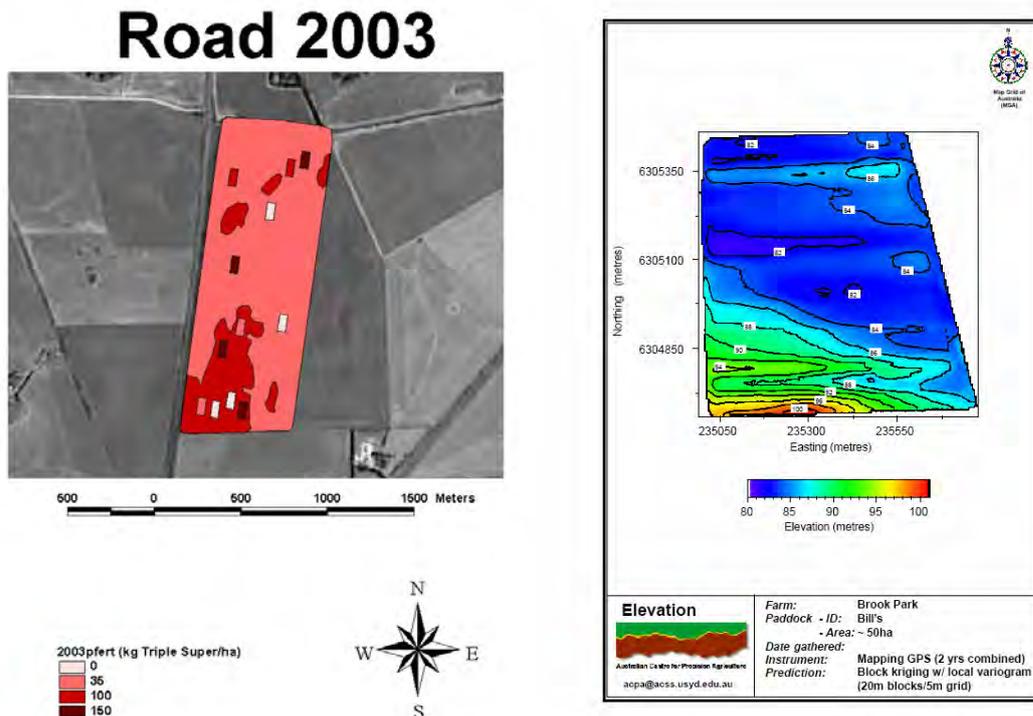
Having purchased a light bar in 2002 we could see the advantages of guidance in improving spraying efficiency we decided to get into auto-steering in 2004. The light bar with beacon correction had enabled us to spray accurately at times of poor visibility (dust, stubble and night) without the problems of a foam marker.

Moving to our Auto-Farm steering system straight away reduced the overlap associated with seeding. It also enabled us to start inter-row seeding. The initial benefit is that sowing between the rows avoids some of the problems with stubble clearance and the seed is sown into a trash free seedbed. The other benefit was avoiding the root diseases in the stubble row. Our whole system seems to have reduced the problems of root diseases. There still is a small problem of Rhizoctonia.

Currently we sow with a 14.4m bar, spray with a 36m boom and reap with 11.9m front at right angles (to reduce the impact of chaff windrows). By default we now have a quasi controlled traffic system based on the AB lines based on the seeder, sprayer and header runs.

ZONE MANAGEMENT

SPAA has been conducting trials in two of our paddocks. As well as the yield maps and elevation data collected since we started in 1999 extra data such as gamma-radiometric surveys were conducted. “Bill’s” paddock has been a variable nitrogen trial. The results have varied with the season. The “Road” paddock has been a phosphorus trial and has generated positive returns in varying the amount of fertiliser applied to the paddock. The “Road” paddock is loamy soil and the initial phosphorus levels were 27ppm in the high yielding area and 57ppm in the low yielding area.



The trial has been based on applying one third of the fertiliser on the poorer area saving \$40/ha and increasing the yield on both areas. We have extended the results to the rest of our farm using the gamma-radiometric survey as the basis for varying the amount of fertiliser applied. Many of the benefits of Precision Agriculture are difficult to quantify. I am much more conscious of the topography of our paddocks and how that might affect crop yield and disease/weed population.

FUTURE ISSUES

Q A – It could be an easy extension after PA.

Canopy management – difficult to see how it can work given our problems with ryegrass.

Controlled Traffic - by default. We need to quantify the losses from wheeltracks vs the extra costs.

Climate/ Weather – using “Yield Prophet” to monitor crops, but at present sceptical of forecasts.