



Precision Ag Trials

**Overcoming the obstacles in setting up Variable Rate:
a 1st time user with a shared learning experience**
Forbes, NSW

Although PA tools have been available to Australian grain growers for many years, and the benefits have been well documented, it is estimated that less than 1-% of grain growers utilise PA 'beyond guidance' in any form.

The objective of this GRDC / SPAA funded project is to increase the level of adoption of PA 'beyond guidance' by broadacre farmers. The project specifically aims to increase the level of adoption of variable rate (VR) by growers in the project to 30% by 2013. This goal will be achieved by demonstrating how to use PA tools to growers at a regional level and by increasing the skills of growers and industry in PA to a level where they can then use PA tools in their farming systems to achieve economic, environmental and social benefits.

Trials and demonstrations are conducted on growers' properties and are visited throughout the season using farm walks and workshops to discuss the advantages and disadvantages of PA techniques with the involvement of other regional growers.

This information sheet presents the outcomes of the SPAA demonstration to highlight some factors in setting up variable rate application from season 2010.

Aims:

- To overcome the challenges in setting up variable rate controllers

Background:

For the Duff family, the intentions have been to utilise the Variable Rate equipment which they already owned. Unfortunately, they were unfamiliar with how to use it, and as such, didn't. This is a common story for many farmers in the district who own VR ready air seeders and have 2cm auto steer.

About the trial:

The focus paddock was sown to Ellision wheat in the first week of May 2010. And a variable rate application of MAP was used based on historical NDVI and soil testing. Rates for the three zones determined were set at 20, 40 and 50kg/HA.

Assessments:

- Historical NDVI
- Soil testing
- EM mapping
- (In-cabin) yield assessment

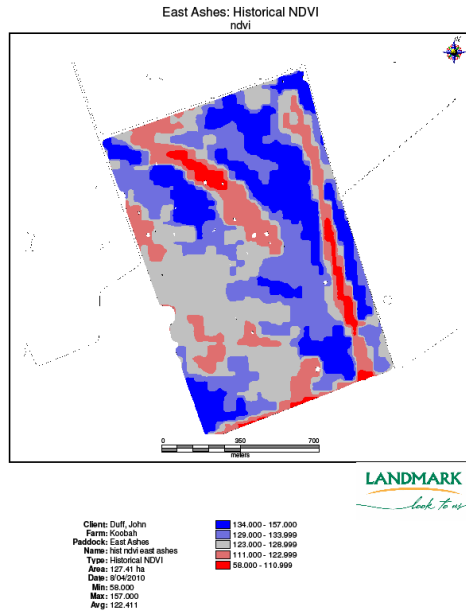


Figure 1. Historical NDVI map

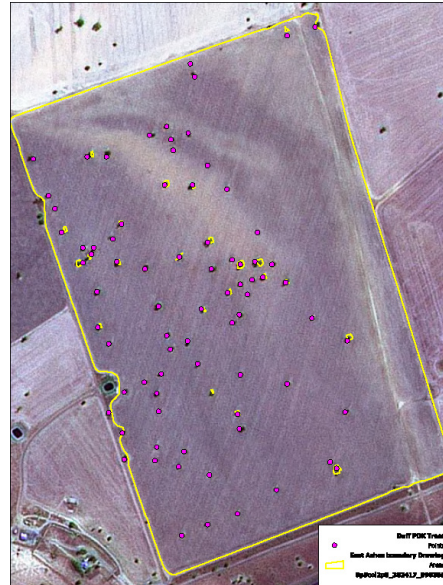


Figure 2: Location of soil testing cores

Results:

The following points should be fully answered before doing any VR applications. These are essential which new users should consider to make a smooth transition into VR application.

1. Fully understand what is driving the low yielding areas.
2. Identify and locate lower yielding areas.
3. Putting on more fertilizer on low yield areas may not be the answer.
4. Understand your soils how they were formed and dig soil pits up to 2meters deep and study what is going on below 10cm.
5. Soils test each of the zones across the paddock.
6. Do nil strips for comparison.
7. Understand how much plant available water can be stored in your soil.
8. Understand why in dry years some zones will do better than others and vice versa.
9. Make sure your data collecting (yield mapping) is working.
10. What is happening in other areas will probably not apply to you, every farm /paddock can be unique to each other.

NDVI Zone	No	pH water	NO3 N mg/kg	Phosphorus Colwell	EC dS/m	Cl mg/kg	CEC meq/100g	Ca %	Mg %	K %	Na % of Cations	Ca/Mg ratio	K/Mg ratio	Sodicity rating	Sodicity with Magnesium
H	3	5.8	20	62	0.09	21	11.3	49	35	11	4.2	1.4	0.3	0.02	11.2
H	8	7.1	18	78	0.14	9	24.9	72	18	9.6	0.48	4.1	0.6	0.29	4.08
H	9	5.4	15	51	0.27	9	12.9	54	31	10	4	1.8	0.6	0.07	10.2
M	4	6.3	15	91	0.09	9	16.5	45	39	7.3	7.3	1.2	0.2	0.01	15.1
M	5	6.4	13	37	0.06	9	14.9	57	30	11	1.9	1.9	1.9	0.03	7.9
M	7	7.3	13	35	0.09	9	24.3	66	25	8.6	0.91	2.7	0.4	0.10	5.91
L	1	5.8	12	55	0.09	45	10.3	49	34	8.9	7.6	1.4	0.3	0.01	14.4
L	2	5.1	23	56	0.08	13	5.36	47	22	21	1.5	2.1	0.9	0.05	5.9
L	6	6.5	14	56	0.08	9	18.6	59	27	13	0.7	2.2	0.5	0.11	6.1

Our soil test results indicate that we should have done more soil pits prior to sowing; this would have meant we would have made some better decisions. In July during our spring paddock walks we had a soil pit dug in a low NDVI area and on EM map had very high readings of sodicity. This soil pit explained the low NDVI reading due to a highly saline clay layer at 80cm depth. This saline clay layer means the plant available water is much less as a result less yield. You cannot change your sub soil but you can better manage these areas by not applying as much seed and fertilizer.

Unfortunately errors with our yield mapping, resulted in these not being produced, and will be overcome for next season.

Who was involved?

Matt and John Duff (property owners)
Neil McMillan CWFS
Leighton Wilksch (SPAA group facilitator)
Ian Packer – Lachlan CMA

Grower/ Regional feedback:

Matthew and John see the potential of Variable Rate, and plan to look closely at a P replacement program for 2011.

Although year one of the SPAA project we have made a number of errors it has been a good learning curve and a good demonstration for others. This demonstrated the value of having a three year on farm project focus paddock it highlights the issues that occur.

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For more information

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