

Setting-up PA paddock trials

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In 2007 over 50 on-farm trials were run as part of the PA Groups project, funded by the Department of Agriculture, Fisheries & Forestry National Landcare Program and the South Australian Grains Industry Trust (SAGIT).

The following information has been put together to help growers establish broadacre PA trials. Two trial designs described are suitable for rates for fertiliser or other products. The simpler split paddock design is suitable for comparing different varieties or large block paddock treatments.

The trials aim to test your current management practice, against a new practice, so one treatment should represent current practice. This treatment needs to be located in each zone, if the paddock is divided into management zones.

Marking the exact location of trials is very important. Corners of trials can be marked with droppers with drums on top, by logging the coordinates of corners with a GPS or by creating an application map; all of these methods worked well in 2007.

Ideally treatments should be three harvester widths wide, allowing an up and back pass to be harvested in each treatment. The minimum treatment size is two harvester widths; this will ensure that at least one full harvester comb width will fall within the trial without the need for harvesting trials separately.

Treatment areas should be at least 100m long to allow grain yield differences between treatments to be identified from a yield map.

Rate response trials

To establish rate response trials select rates that are higher and lower than current practice. Do not be afraid to push the system by trying a zero rate to see if there is any response to the input.

Where zero rates are used a block design (Figure 1) may be more appropriate as less of the paddock is at risk. However, if a strip design (Figure 2) is used and the strips take up a large area of the paddock, the size of the zero strip could be reduced if it is considered that this treatment may result in a costly yield loss.

Try to avoid varying two inputs at the same time, e.g. seed and fertiliser rate. This is difficult when using fertiliser blends, as responses could be attributed to either the nitrogen (N) or phosphorous (P). In season testing of nutrient uptake may help to explain which nutrients are causing a response. Record where the tests are taken as responses may be site specific.

Soil tests taken before sowing can also help to explain why responses may be observed in some years and locations but not others. The location of soil tests should also be recorded for use in future years.

Site selection is important. Avoid placing treatments where affects of old headlands, old fence lines and sheep camps may influence results.

Block design

Replicating (or repeating) the same treatments in two or more locations in the same paddock will provide a more accurate measure of treatment differences.

Block designs are more easily managed with equipment capable of on-the-go rate changes.

Where treatment responses are expected to vary with soil type, make sure that a representative area of each soil type is covered by each treatment.

Where management zones have been created in a paddock all treatments need to be replicated in each zone (Figure 1).

Treatment strips

Strips across entire paddocks worked well in 2007, allowing a range of

soil types to be covered by each treatment.

Strip designs are more easily managed than a block design if rates have to be changed manually.

Apply the treatment strips alternately with the standard paddock treatment to give a better comparison (Figure 2).

Replicating these treatments will improve the reliability of the results. Replication of treatments may also be required to give good coverage of treatments across all soil types depending on how many zones or soil types exist in a paddock and the layout of those soil types.

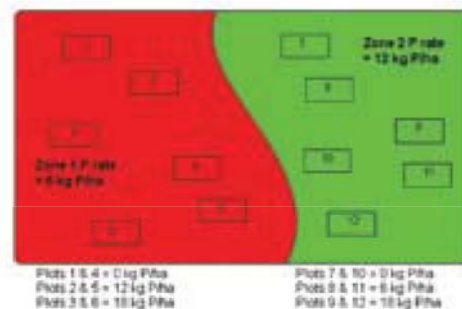


Figure 1. Rate response trial block design.



Figure 2. Rate response trial strip design.

Product comparisons

For product comparisons the paddock can be divided into two areas so that each includes the major soil types. One variety or product is applied on each.

Examples of these trials are two crop varieties, or different fertiliser timings, (e.g. applying nitrogen at seeding compared with spreading post emergence), or comparing two different seeding systems (Figure 3).

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Product comparisons

Figure 3. Product comparison trial layout

More detailed information on PA trials is available in 'Designing your own on-farm experiments' from Ground Cover Direct (www.grdc.com.au). This is also available as part

of the GRDC Precision Agriculture Manual which can be accessed via the SPAA website.

For more information

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Industry News

On-line forums

Ed Cay has provided details of some useful on-line forums on PA equipment. He reports, while rather 'Americanised' there is valuable discussion on compatibility issues. Apparently, all the major manufacturers of PA equipment watch these sites carefully.

Agriculture Online
www.agriculture.com/ag

AgTalk
www.newagtalk.com

Precision Ag
www.precisionag.com

AgWeb
www.agweb.com

Links to all these can also be found on the SPAA website at www.spaa.com.au

Raising PA's profile

Malcolm Sargent draws grain growers' attention to the GRDC farming practices database. After entering your data, a report is received that shows productivity and sustainability information for your farm. The report will benchmark an individual farm against district, regional, state and national farming practices.

The report is a useful tool for growers to evaluate their

productivity, farm management, natural resources management and helps in pinpointing parts of their system where adjustments may be useful.

Malcolm suggests completing this survey to help raise the profile of PA in the grains industry.

For more information visit
[www.grdc.com.au/director/
events/grdcpublications/
farmingpractices](http://www.grdc.com.au/director/events/grdcpublications/farmingpractices)

Updated yield mapping protocol

CSIRO has recently updated its winegrape yield mapping protocol. Supplement #2 is available at [www.cse.csiro.au/client_serv/
resources/protocol_supp2.pdf](http://www.cse.csiro.au/client_serv/resources/protocol_supp2.pdf) or via the SPAA website

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