

6 step guide to implementing on farm trials

Why set up your own on-farm trial? Well, a simple well-designed trial can help you determine the best step forward in solving an agronomic problem in your farming system and with today's technologies i.e., guidance, variable rate (VR), and yield mapping (maybe even protein) it has never been easier.

A how to guide for implementing on-farm trials has been designed below to give growers the basics to be able to set up on-farm trials and evaluate the results using the technology they have available to them.

1

Determine your aim. The key to trialling anything is to have a clear aim. What exactly is it that you would like to test? For example, does treatment X increase crop yields in comparison to current best practice.



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2

Trial design. Use the KISS approach and do not over complicate the treatments. The fewer treatments the better. One to two treatments are ideal as it makes it relatively simple to analyse and prevents the trial being impacted by too much in paddock variation.

Have a control strip (either nil or your current best practice) so that you have something to compare your treatments to. Repeat or replicate the trial. The more the treatments are repeated (3 or more) that more confidence you can have with your result. Use large increment changes when making your treatments. For example, double or nothing.

Your trial strips can go the full length of the paddock (either across the same or different zones) (figure 1) or you can create trial strips that are in blocks (figure 1) that are repeated throughout the paddock. Make your trial strips wide enough for 3 header runs for yield data collection. This will ensure that one strip is true to the treatment as the outside header passes can sometimes get product overlap i.e., spreading different urea rates some overlap can occur. If using the block approach, make sure your strips are long enough so that there is sufficient size for data collect (i.e., yield) to be able to compare the treatments. As a rough guide 150m is ideal in most scenarios (don't have strips any shorter than 75m).

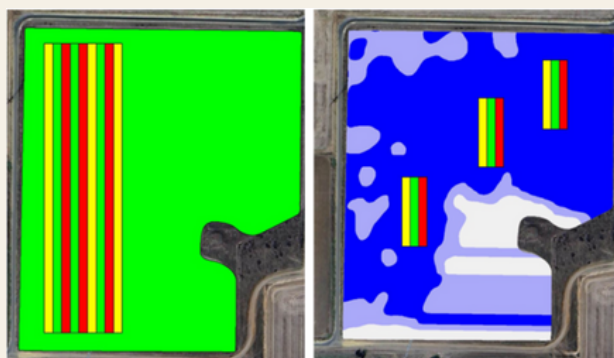


Figure 1: Strip trial full length of paddock (left) and block trial repeated in same zone across different parts of the paddock right).

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Location: When it comes to selecting the location for your trial make sure you consult your aim and what you are trialing to help determine the location. i.e., is it soil type specific/do you want the trial to go across multiple soil types.

When physically selecting the site try the best as you can to pick an area that is fairly even and representative. For example, if you want a sandy part of the paddock make sure the area is big enough for the trial to fit. You don't want some treatments on a deep sand and others on a shallow sand over clay as this will confound the trial results. There are historical data sets that can help with this including: NDVI, yield, protein, EM38 maps.

Avoid positioning your trial in headlands, near fence lines or trees as these can also effect the results.

4

Record Keeping: Make sure you log the run no. or GPS coordinates of your trial area/start and end of the different treatments. If the trial has been implemented using VR technology the location will have already been logged but in other instances you might have to do this manually (i.e. with a mobile).

Also make sure you make notes of anything if it goes wrong in the trial area at seeding, during the season and at harvest as if there are inconsistencies in the data these notes may just help explain some of it.

If you observe anything throughout the growing season also note it down or take pictures. It can be something as simple as treatment x is looking like its growing more biomass.

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5

Data Collection: To obtain the best data set as possible at harvest time do the following:

- Calibrate your yield monitor (this should be done regardless of where you are harvesting a trial or not)
- Use the same header to harvest the trial (avoid side-by-side runs with different headers as even if they are the same make and model there are variations in yield monitor calibrations which will have an impact on the yield results)
- It might not always be practical but if possible, harvest the entire trial in the same direction as there can be differences in yield caused by the direction of travel
- Keep a constant speed and if possible, avoid stopping for example to off load into a chaser bin and this can impact yield data recording and thus can also make it difficult to interpret the trial results.

6

Data Analysis: Depending on your level of interest, skill and knowledge there are a range of software packages out there that can help with data cleaning and analysis from harvest data. With the advancements in PA most of the main harvester manufacturers have their own software for viewing and basic interpretation of in paddock trial results.

If this is not for you consider working closely with your local agronomist or a PA consultant who will be able to help analyse and interpret your results. If you want to have a go yourself with your own PA software, make sure you work with the raw harvest data as this will allow you to control the removal of data that may have been impacted by overlap, stoppages etc.