

FARM BUSINESS UPDATE

STRATEGIC STEPS – ENDURING PROFIT



Maitland

Thursday 21st June

9.00am to 1.00pm

Maitland Town Hall,

7 Robert Street, Maitland

#GRDCUpdates



2018 MAITLAND GRDC FARM BUSINESS UPDATE



**Maitland GRDC Farm Business Update
convened by ORM Pty Ltd.**

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Program

9.00 am	Announcements	ORM
9.05 am	GRDC welcome	GRDC
9.10 am	Marketing grain – what, where, how & who of maximising profit	Chris Heinjus, <i>Rural Directions Pty Ltd</i>
9.55 am	Succession – why viability (profitability) is critical to the process	Judy Wilkinson, <i>Maro Creek & Wilkinson</i>
10.40 am	Morning tea	
11.10 am	How to stay on the right side of the line; efficiency versus over investment in plant and equipment	David Smith, <i>ORM Pty Ltd</i>
11.55 am	Can climate science improve grain farmer profit?	Peter Hayman, <i>SARDI</i>
12.40 pm	Close and evaluation	
12.45 pm	Lunch	



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Who are we?

Yorke Peninsula Alkaline Soils Group (YPASG) was formed in 1999 by a group of farmers with an interest in tackling snail management and control in the local area.

We have evolved a lot since then, both in research and size, and now have around 150 members. Our focus is still on initiating and directing research with the aim of developing robust, sustainable and profitable farming systems. We provide motivation and support required to best match the rapid rate of change and encourage sharing of information and resources tailored to local farmers and local growing and soil conditions.

YPASG aims to utilise community/ land holder driven research to disseminate information and promote adoption of successful, sustainable technologies and practices. Our group is run by a committee of volunteers who coordinate regular workshops, crop walks, field days and events to encourage an inclusive community including business, students, women, and landholders.

Since inception, YPASG has managed over 100 projects, funded by industry stakeholders including NRM, Australian Government, CSIRO, University of South Australia, Livestock industry funds, Caring for our Country and South Australian Grains Industry Trust.

We have strong industry links and a panel of qualified agronomists and associated experts to draw upon for technical expertise. With all projects, a strong methodology is in place and communication and collaboration ensure strong work relationships. Methods and processes are defined to develop and deliver successful project outcomes for the benefit of our members and the greater agricultural community.

MEMBERSHIPS

Membership to YPASG offers great value and, in most cases, is tax deductible.

Advantages of membership include regular newsletters, updates of current locally based research projects and copies of trial data and results. Members also get free entry into YPASG events including seasonal crop walks, YP Grower Update and the annual Pre Harvest Dinner.

We are grateful to our six corporate sponsors whose support helps us continue our work for local farmers.

Not a member? Please consider joining us.

Membership is an annual fee of \$99. Please contact us for details.



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Farming the Business

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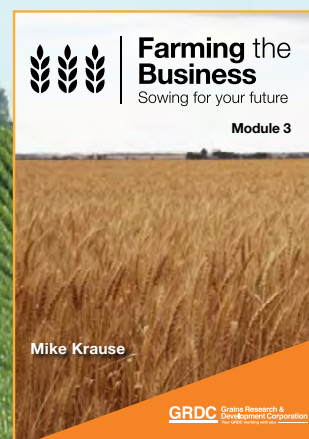
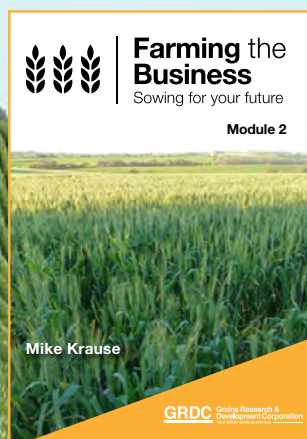
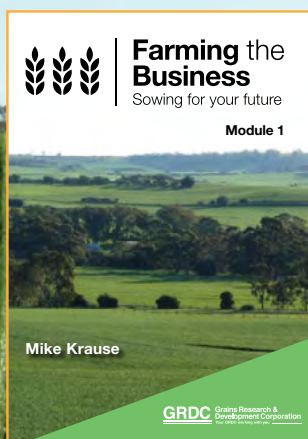
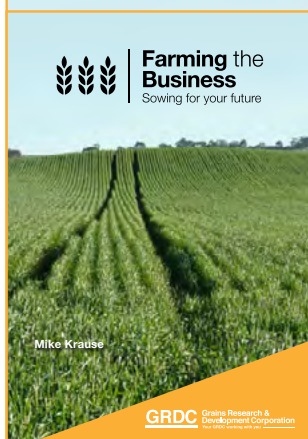
The GRDC's **Farming the Business** manual is for farmers and advisers to improve their farm business management skills.

It is segmented into three modules to address the following critical questions:

-  **Module 1:** What do I need to know about business to manage my farm business successfully?
-  **Module 2:** Where is my business now and where do I want it to be?
-  **Module 3:** How do I take my business to the next level?

The **Farming the Business** manual is available as:

- **Hard copy** – Freephone **1800 11 00 44** and quote Order Code: GRDC873
There is a postage and handling charge of \$10.00. Limited copies available.
- **PDF** – Downloadable from the GRDC website – www.grdc.com.au/FarmingTheBusiness or
- **eBook** – Go to www.grdc.com.au/FarmingTheBusinessBook for the Apple iTunes bookstore, and download the three modules and sync the eBooks to your iPad.

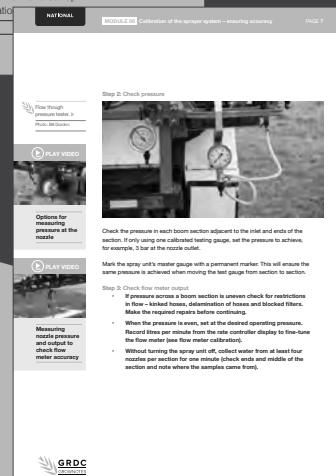
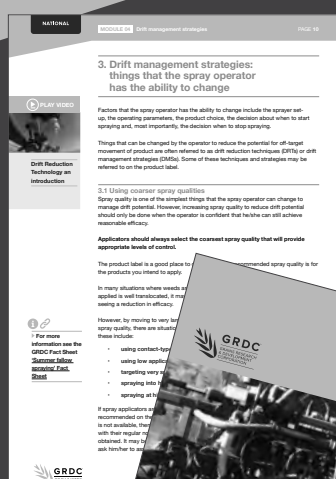




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SPRAY APPLICATION MANUAL FOR GRAIN GROWERS

The Spray Application GrowNotes™ Manual is a comprehensive digital publication containing all the information a spray operator needs to know when it comes to using spray application technology.

It explains how various spraying systems and components work, along with those factors that the operator should consider to ensure the sprayer is operating to its full potential.

This new manual focuses on issues that will assist in maintaining the accuracy of the sprayer output while improving the efficiency and safety of spraying operations. It contains many useful tips for growers and spray operators and includes practical information – backed by science – on sprayer set-up, including self-

propelled sprayers, new tools for determining sprayer outputs, advice for assessing spray coverage in the field, improving droplet capture by the target, drift-reducing equipment and techniques, the effects of adjuvant and nozzle type on drift potential, and surface temperature inversion research.

It comprises 23 modules accompanied by a series of videos which deliver ‘how-to’ advice to growers and spray operators in a visual easy-to-digest manner. Lead author and editor is Bill Gordon and other contributors include key industry players from Australia and overseas.

Spray Application GrowNotes™ Manual – go to:
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Also go to **<https://grdc.com.au/Resources/GrowNotes>**
and check out the latest versions of the Regional Agronomy Crop GrowNotes™ titles.



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Marketing grain – what, where, how and who of maximising profit

Chris Heinjus.

Rural Direction Pty Ltd.

Keywords

- grain marketing, grain storage, return on investment, farm business, risk management.

Take home messages

- There is no single grain marketing magical formula:
 - Each business is different (finances, location, risk profile, education, stage of life).
 - Each commodity is different.
- Complexity in markets will continue to evolve.
- Farmers' love affair with shiny paint is a key business profit inhibitor (GRDC opportunity for profit RDP00013 (<https://grdc.com.au/opportunity-for-profit-management-guideline>):
 - Investment in storage needs to be:
 - Long term
 - Considered
 - Leveraged owned assets
 - Leveraged human resources
- Beginning with the end in mind is critical:
 - Blending
 - Harvest flexibility
 - Storage
 - Marketing enabler
- Market first, infrastructure second.
- Capital expenditure on storage is a long-term return on investment business model.
- Global traders are a short term trade focus:
 - Performance targets linked to benchmarked 'Inventory turns - per annum'.



The grain marketing con

For most people, the term 'grain marketing' conjures up images of individuals diligently embracing the whole supply chain and marketing of their product.

There are volumes of texts, tertiary courses and advisers on marketing.

The four Ps of marketing:

- Product – refers to the good or service being offered by a company.
- Price – the amount consumers pay for a product. A marketer must link the price to the real and perceived value of the product.
- Place – where the product is sold and how it is delivered to market.
- Promotion – including advertising, public relations and promotional strategy. All of which tie into the other three Ps of the market mix.

Given that most producers are not following marketing theory, then we raise the question of what is grain marketing?

99.99% of growers do not market what they produce but instead they make critical commercial decisions as to when and how to sell a commodity.

This process may include different forms of selling, including:

- Forward contract for cash or pool
- Harvest
 - o Spot selling for cash or track
 - o End user
 - o Spot selling pool
- Post-Harvest
 - o Ex farm
 - o System
 - o Spot contracts
 - o Supply agreements
- Pools
- Hedging tools such as derivatives.

With agricultural produce, growers rarely identify the buyer as a customer.

There is only one magic formula

The only magic formula is the ability of the producer to generate a profit.

You simply cannot manage what you cannot measure (Drucker, <https://www.processexcellencenetwork.com/innovation/columns/peter-drucker-on-sales-and-marketing>).

So, if you want to maximise your profit your first and most important step is to know what is profitable. Cost of production is therefore key.

If you are selling grain at a profitable price then your business will be profitable.

Universal strategy does not account for an individual business's risk profile.

The **what where, how and who** contributes to the individual business's risk.

Significant variations exist between businesses, including:

- Risk profile – age, gender, education, stage of life, seasonal
- Finances
- Current infrastructure
- Location
- Commodity

Selling decisions are based on different emotions.

The emotions are not a constant, however change is a constant reality.

Complexity in commodity markets

Grain marketing is becoming increasingly more complex. Factors include:

- Site based pricing
- Intraday volatility
- Pulses based on a different port zone to cereals
- Contract and legal
- Derivatives and basis
- Dealing with industry characters and the importance of due diligence

The producer, unconsciously and consciously, is seeking complexity while at the same time craving for simplicity.

Current considerations include:

- Site based pricing
- Port based - less locational differential (LD) for upcountry (Export Bulk)
- Commercial bulk handler (Viterra, Cargill (grainflow) through to private storage)



- Published bids, private bids, special bid
- End user:
 - o Consumer
 - o Processor
 - o Delivered packer
 - o Delivered bulk exporter
 - o Delivered Container Terminal (DCT)
 - o Cost and Freight (CFR)

Each commodity is different, so do not treat them all the same.

The Nipper[®] lentil case study:

- Ex farm – can access ‘Buyers Call’ delivered packer markets
- Vittera storage – Typically Centre State Exporters &/or Glencore
- Delivered Bowmans – AGT
- Delivered Dublin – AGE
- Cleaning facility

Buyer due diligence

- Bulk – tends to be larger more financially robust buyers
- DCT – can attract more exciting buyers
- Truckie traders

Grain storage

Investment in storage needs to be

- Considered
- Long term
- Generate a commercial return on investment each year for the next twenty years
- Add value not added cost
- Leverage other commercial infrastructure already owned, like transport
- Leveraged underutilised human resources

There is also a variable cost associated with storage of grain which are generally overlooked at time of purchase. To run a storage and handling business you will incur variable costs including

- Electricity / power costs
- Labor
- Repairs and maintenance
- Fumigation

- Administration and marketing
- Compliance
- Testing and weighing

Beginning with the end in mind

Begin with the end in mind means to begin each day, task, or project with a clear vision of your desired direction and destination, and then continue by flexing your proactive muscles to make things happen (Covey, 1989).

If you are considering a grain storage project, then it is critical to clearly define the scope of the project.

The purpose of the storage will define what type of storage that will attract your investment dollars.

GRDC Grain Storage GrowNotes National - June 2017 (<https://grdc.com.au/grain-storage-grownotes>) is an 86-page document on grain storage. There is much to consider.

With grain storage, the cost of the capital investment is spread over the capacity of the facility. You simply do not earn a financial return on air space. To generate an acceptable return on investment the total capacity of the storage must be utilised. A facility that is half full must then generate double the return.

Another key benchmark for commercial bulk handlers is the number of turns of inventory per year that can be achieved. If you are storing lentils for greater than 12 months then you obviously need to generate double the return.

Blending Facility

- Requires more segregation
- Smaller silos - cost more per tonne of storage capacity
- Quality testing
- Ease of receipt and outturn
- Short term
- Focus on inventory turns to generate revenue
- Can be the simplest highest return with a storage facility

Harvest Flexibility

- Distance from header to storage a key factor
- Suits an in paddock / chaser bin alternative, silo bag or silo ring
- Keep a header moving



- Can leverage owned freight assets on farm to silo
- Generally, not a longer-term solution
- Extends harvest – harvest is complete when the grain is in the bin not when the header is finished

Storage

- Provision of a customer driven service
- Very difficult to compete with a commercial bulk handling organisation on price.

So, if not competing on price what is your point of differentiation.

- If you are busy seeding or harvesting then you still have to service your customer
- Large volume shed or silo

Marketing enabler

- Involving just in time logistics.
- Delivered packer.
- Ex farm to Semaphore, Berth 29 (Cargill), T-Ports Wallaroo
- DCT
- Brand and marketing.
- This style of selling will continue to expand past incumbent bulk handling organisations.
- Provision of storage and handling services is a key marketing enabler for larger organization.

Market first - Infrastructure second

Remember, building storage, like most infrastructure, is a long-term investment strategy.

This type of investment in infrastructure development typically suits a super fund type of investment or investor. You are looking at a project with a greater than 15 years lifespan.

The emotional decision triggers are generally short term and measured in months. When the emotion wanes then the real work begins.

So, before committing to infrastructure ask:

- What is your core business?
- Who is your target customer?
- What does your customer require – execution risks?
- What is the longevity of that market –are they going to be around in five years?

- Can they pay?
- Is there a honeymoon compliance period?
- What about the curve ball? For example:
 - Within the next three years will T-Ports load a vessel for an exporter out of Wallaroo with grain sourced directly ex farm from Yorke Peninsula growers?

If your answer is yes then:

- o Will they do it again consistently for the next five years?
- o What infrastructure do you require to supply this market?
- o What is your likely return on investment?

Conclusion

- There are times when the keep it simple, stupid (KISS) approach will generate the maximum profit.
- If it was easy then everyone would be doing it.
- Simply hating a bulk handler is an emotion. It is not a business case.
- Prophets can impact on profits.
- Sadly, other than cost of production, there is no **what, where, how and who** formula of maximising profit, and yes everyone is different.
- Each commodity is different.
- There are opportunities to explore and commercially benefit from grain marketing by embracing the supply chain. There are also opportunities for 'learning' which is code for losing money.
- If it sounds too good to be true then it probably is.
- Yes, east coast Australian grain growers have different markets and their structure of markets is different.

References

Covey, Stephen (1989). 7 Habits of Highly Effective People

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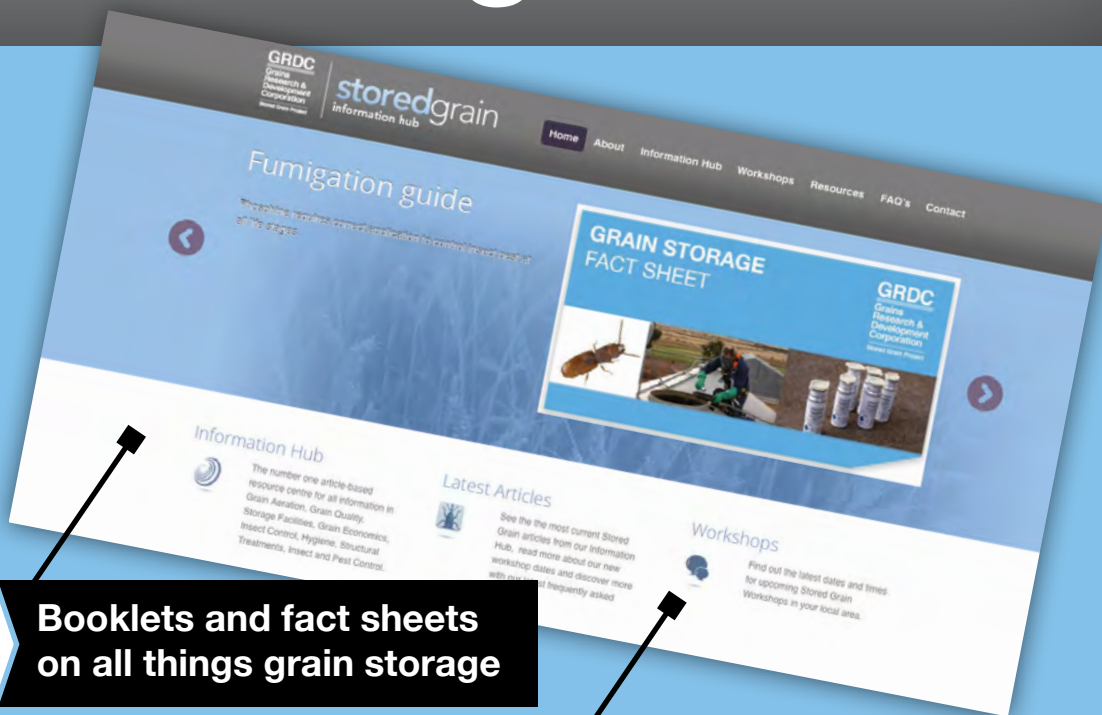




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STORED GRAIN PROJECT

Succession – why viability (profitability) is critical to the process

Judy Wilkinson.

Maro Creek & Wilkinson.

Keywords

- Succession, family business, profitability, viability.

Take home messages

- Business capability to include multiple generations.
- Financial sustainability – can it pay for what is expected from it.
- Be business like.
- Communication is a key tool for success.

Background

Many Australian family farms have come from pioneers, hard work, tradition and inheritance.

70% of family businesses fail or sell before the second generation takes over.

90% of family businesses fail or sell before the third generation takes over.

This does not imply your business will fail - it is not a number game it is a planning game.

Today agricultural businesses operate in a highly competitive global market place.

Plan - treat succession like it is urgent; it is a process not an event

Planning can be as simple as documenting what everyone in the family and business expect from the business in the future. It helps to be brutally honest about what is required and have a clear understanding of how the money is made, how it is spent and the expectations of everyone in the future.

Financially a farming business is often responsible for the money that is used operationally on the farm and by family members to have a life. The latter can include:

- Housing
- Education expenses
- Off farm assets or investment
- Picking up the pieces when things do not go as planned. For example; illness, accident, sibling ending up in financial stress, etc.

I often see situations where the bank accounts or financial resources in a farming business are treated like a Mum and Dad bank account. This is an easy thing to happen over time where a business starts as a partnership involving the husband and wife and continues even when children are included in the working part of the business.

I also hear young people say they are being paid a drawing which amounts to less than the minimum wage. However, they also don't consider they are living a reasonable lifestyle, driving a modern car, children in private schools, living in a renovated farm house, etc?



Documenting and recording a business's financial activities and recognising what financial position a business is in, contributes to everyone's understanding of what the business is capable of.

This will provide clarity around supporting ageing parents who need to be independent, supporting the next generation to farm, how the business will be passed onto the next generation and how the business will include off-farm siblings.

It will also provide an understanding of requirements of the older generation if they intend to stop work and live off farm for any reasonable length of time into their old age.

Things to consider

If there are family members working on-farm their salary package should be documented. An example is provided in Table 1.

Table 1: Twelve-month salary package for an on-farm family member.	
Cash drawing	\$50,000
Car (bought and maintained by the business including fuel)	\$20,000
House (minimum rent per week for fringe benefit tax (FBT) of \$25.00)	\$1,300
House maintenance	\$5,000
Electricity	\$4,000
Insurance	\$800
Medical cover	\$3,000
Superannuation contributions	\$1000
School fees, holidays ???	\$900
TOTAL	\$86,000

Consider If this a reasonable level of remuneration for the level of responsibility and skill that is expected and discuss how you deal with the shortfall or excess?

Once this exercise is done and there is a realisation that the business cannot afford to pay those who are working in it a reasonable return for their effort – what should be done?!

For the generation that want to exit the business, are there:

- Off farm investments that could be used
- Independent housing which has been paid for
- Independent income – so as not to be totally reliant on farm profit
- Is there something for the retiring people to do besides return to farm to work occasionally

Do a budget for how they will live; how much things will cost and can it be afforded.

This exercise is important to do if previously the business has taken care of many personal costs.

Clarifying aspirations and expectation of family members is an important part of the planning process and can help build understanding and balance to family and work life.

It is essential to involve legal and accounting professionals in the process when considering changes to farm business structure.

Triggers for planning include; school leavers joining the business, marriage, children, illness, retirement, high levels of conflict, communication breakdown, unhappy or discontented family member. etc.

Be business-like in your approach - agreements, meetings, discussion, keeping people informed

Creating boundaries between family life and farm business is an important aspect to your rural lifestyle.

A practice of recording or writing things down can certainly help in this area.

Know the business structures and understand why they were chosen.

Formalising arrangements can be done by:

- Meetings – formal times to discuss what is going on in your business, at an agreed time, agenda, recoding process.
- Agreements – employment, financial, machinery purchase, land ownership.
- Reporting – so all stake holders are included in information share, a form of educating everyone in the business and family.

Communicate - educate your family, understand generational difference, decide how to manage differing opinions

Effective communication is a skill that we learn and the more we do it the better we will get at it.

Body language and listening are a large part of conversation.

Understand generational differences:

- Veterans (pre-1946)
- Baby Boomers (1946-1964)
- Gen X (1965 to 1977)
- Gen Y (1978 -1994)



- Millennials (1995 – present)

We are not only a product of our genes we are also very much influenced by the generation that we grew up in and this can have an impact on how we approach life, manage risk and communicate our thoughts, needs and wants. It will have impacted on our education and qualifications, business role, careers, lifestyles and attitude to work. When we work in a business that includes several generations in the mix, we must consider the impact that this will have on relationships, attitude to change and how decisions may be made.

If you reach a stalemate or cannot move forward, bring someone in to act as the mediator or facilitator.

Deal with 'crucial conversations' early; they often do not go away and only get more difficult if ignored.

Always remember:

- Opinions differ
- Everyone has something at stake
- Emotions are high
- A resolution must be found

Provide communication opportunities in your business by allowing time for meetings in your busy work life.

Conclusion

- Plan; create a map for moving forward and have a 'safety net' if things go bad and revisit.
- Be business-like; preserve your family and business.
- Communication is a key tool for success; don't be afraid to ask for help.

References and useful resources

Succession Planning (<https://grdc.com.au/Resources/Factsheets/2010/10/Succession-Planning-Fact-Sheet>)

Managing people in the farm business (<https://grdc.com.au/Resources/Factsheets/2014/12/Managing-people-in-the-farm-business>)

Are you a good labour manager? (<https://grdc.com.au/Resources/Factsheets/2013/01/Are-you-a-good-labour-manager-fact-sheet>)

Machinery purchases (<https://grdc.com.au/Resources/Factsheets/2016/01/Machinery-purchase>)

Your farm business management checklist (<https://grdc.com.au/Resources/Factsheets/2014/05/Your-farm-business-management-checklist-fact-sheet>)

Business structures explained (<https://grdc.com.au/Resources/Factsheets/2016/10/Business-structures-explained>)

A guide to Succession – sustaining families in farms (<https://grdc.com.au/Resources/Bookshop/2007/03/A-Guide-to-Succession>)

A guide to Communication for Farm Families (<https://grdc.com.au/Resources/Bookshop/2011/01/A-Guide-to-Communication-for-Farm-Families>)

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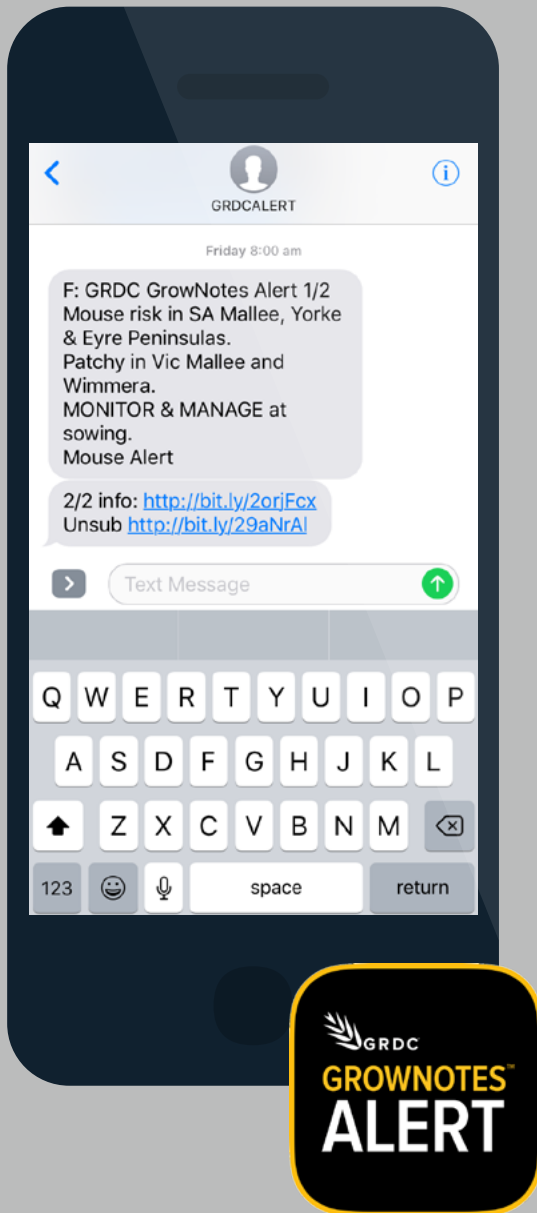
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Efficiency versus over investment in plant and equipment – guidelines to help with machinery investment decisions

David Smith.

ORM Pty Ltd.

Keywords

- decision making, machinery, boomspray, harvester, efficiency targets, contractors.

Take home messages

- There are many variables to consider when investing in machinery and each will be weighted differently from business to business depending on the farming model utilised, (enterprise mix, farming system, typical rotation, spread of farming operations, etc.), the need or want to optimise efficiency and the availability of suitable contractors, labour and lifestyle decisions.
- Before upgrading machinery, it is worth determining whether there may be options to increase overall efficiency of existing plant.
- The capital invested in plant and equipment is significant and a thorough assessment of investment returns should be undertaken prior to major machinery purchases. In some instances, the best economic decision may be to utilise contractors rather than own a machine.
- Alternative uses for equipment and the number of hours likely to be generated per annum, can be key determinants in the type of machine and cost of ownership.

Introduction

Choosing the right machine and justifying its ownership cost can be a challenging task. There are many variables and trade-offs to consider when making the decision, and the importance of each varies from business to business. Harvesters and boomsprays are critical implements on a broadacre cropping farm and this paper will focus on these two key pieces of machinery. However, the principles for making decisions discussed in this paper can be carried across all major plant purchases. It is important to get the decision right and taking a structured approach to decision making can help reduce the stress and uncertainty of making this choice.

Structured decision-making approach

Step 1. What tasks and timelines do I need to achieve?

The targets around getting the respective tasks completed on time can vary considerably from business to business. While often not written down, each business usually has objectives they aim for to ensure timeliness of operations.

Examples of some spraying objectives include:

- Complete post-emergent grass selective herbicide application before weeds begin tillering.
- The ability to spray a cereal crop variety in three days. (rust or disease control).



- The ability to get chemical out within a short 'window of opportunity' during winter.
- The ability to apply herbicides during late stages of crop development (crop-top).

Examples of some harvesting objectives include:

- Being able to complete harvest within 30 days.
- Harvest all lentils within five days.
- Ability to manage grain as it is harvested. (logistics of trucks and bins).
- The ability to be able to cut stubble short enough to allow sowing into stubble.

Step 2. What will affect these timelines?

Besides physical limitations such as a sprayer's clearance height and a harvester's comb width, the ability for your outfit to meet your objectives in a timely manner will be influenced by the 'work rate' of your machine in the field and efficiencies impacting on timeliness outside the paddock or crop.

In the field

Work Rate (Effective field capacity)

The theoretical capacity (ha/hr) of a machine to perform its work while in the paddock is defined as

$$\text{'Theoretical Field Capacity'} = \frac{\text{width of machine (m)} \times \text{speed of travel (km/hr)}}{10}$$

However, we know that there are factors that affect the ability for a machine to operate at its maximum width or speed at all times while in the paddock. Hence the theoretical field capacity of a machine is adjusted down by a factor known as the Field Efficiency Percentage (FE %), which is the percentage of time the machine operates at its fully rated speed and width while in the paddock. The result is the Effective Field Capacity, or true 'Work Rate' that can be used to assess true productivity in the paddock.

$$\text{'Work Rate' (Effective field capacity)} = \frac{\text{width of machine (m)} \times \text{speed of travel (km/hr)}}{10} \times \text{FE \%}$$

An example is provided in Table 1.

Examples of factors that affect the width or average speed of the **spraying** unit while in the paddock include:

- Water rate limitations (inadequate pump capacity, or nozzle size or number).
- Spray efficacy limitations
 - o Wind
 - o Dust
 - o Technology to allow correct droplet size at increased speed (e.g. AIM Command®, Three Tier System (3TS)®).
- Paddock landform and topographic feature limitations
 - o Soil type and steepness can affect trafficability.
 - o Paddock shape, undulation, obstacles (trees, dams, channels, swamps, etc.) and terrain (rocks, corrugations) can limit speed and width (overlap).
- Overall power, gearing, weight and balance
 - o an underpowered machine will restrict speed
 - o inadequate gearing range can affect speed
 - o is the machine too heavy for the rainfall zone and soil type, hence may sink?
 - o an unbalanced machine may have a restricted speed
- Downtime
 - o Breakdowns, blocked nozzles; could these be eliminated with better preventative maintenance?

Table 1: Calculation of Work Rate for boomsprays (spray example) and harvesters (harvest example).

	Units	Spray example	Harvest example
Machine width	Metres	36m	13m
Working speed	Kilometres/hour	25km/hr	16km/hr
Theoretical field capacity	Hectares/hour	90ha/hr	20.8ha/hr
Field efficiency	Percentage	80%	70%
Work Rate (Eff. field capacity)	Hectares/hour	72ha/hr	14.6ha/hr



Examples of factors that affect the average speed of the **harvester** unit while in the crop include:

- Type of crop- canola and legumes are usually slower to harvest.
- Weather conditions, fire danger, total fire bans, rain and cold, damp days.
- The condition of the paddock (was it rolled, are there clumps of old straw).
- The shape of the paddock, longer runs are more economic.
- Lentils need to be harvested with the comb on the ground so speed is limited.
- Stubble height suitable to sow into next year often requires higher volumes of material passing through the machine.
- Lodged crops require slower speed as the amount of straw taken in is far greater.
- Stripper fronts minimise the straw intake and hence increase machine capacity.
- Breakdowns (lack of preventative maintenance).

*Efficiencies impacting on **spray** timeliness outside the paddock*

With a spraying outfit, there are significant factors outside the paddock that also impact on the overall timeliness of the spraying operation. These factors can often be improved, sometimes at low cost regardless of which spraying outfit is used.

Examples of efficiencies outside the paddock and what influences them, include:

- Fill time
 - o Pump and hose size (e.g. 1.5" connection to chemical shuttle =60L chemical/min; 4" water hose faster than 3" > 2", etc.).
 - o Induction technology.
 - o Batching plant (often requires additional labour).
 - o Mounted pump.
 - o Quick fill systems (for example, overhead water loading, nose connector).
- Travel time
 - o Spread of farming operations and/or distance between paddocks.
 - o Road speed (empty and loaded).
 - o Block cropping (less clean-outs).

- o Distance to fill points (versus a 'nurse tank' could be used to take water to the sprayer instead, however this may require extra labour which will be need to be accounted for).
- Clean out time
 - o Flush technology.
 - o Block-cropping.
- Tank size – if tank size is matched to paddock size (subject to weight considerations) this can mean less time spent travelling and filling.
- Breakdowns (lack of preventative maintenance?).

*Efficiencies impacting **harvest** timeliness outside the crop*

When harvesting, there are significant factors outside the crop that also impact on the overall timeliness of the harvest operation. These factors can often be improved, sometimes at low cost regardless of which harvester is used.

Examples of harvest efficiencies outside the crop and what influences them, include:

- Travel time
 - o Minimise travel time to bins.
 - o Block cropping (less shifts, no need to remove comb, etc.).
 - o Distance between paddocks; travel time and organisation to travel on main roads is a major factor.
- Empty on the go
 - o Chaser bins increase efficiency by up to 33%, but require more labour.
- Keeping grain away
 - o Having capacity to keep grain away and not having to wait for a truck or bin to store/ remove grain.
- Reduced variety and crop types, minimise cleanout time.
- Minimal breakdowns (good preventative maintenance).

Efficiency factors both inside and outside the paddock can be highly variable between farms. Growers should continually ask themselves what could I be doing differently to improve current efficiencies, and therefore, overall timeliness of the operation.



Step 3. What options do I have to achieve my timelines?

The main options as with most plant and machinery is self-ownership, use of contractors or a combination of the two. The key questions to ask with respect to each include:-

Self ownership

- Do you need:
 - o Alternative uses – am I looking for a dedicated spraying outfit or do I also need a ‘third’ tractor (for example, front end loader (FEL), spreader or chaser tractor), or self-propel (SP) that can be used for windrowing also? An alternative use can effectively subsidise the cost of ownership of a machine. Harvesters are dedicated, single use machines.
 - o Clearance height – what’s the likelihood of needing to spray where higher clearance is required (for example, taller crop types (e.g. canola, sorghum/corn) or late season applications (e.g. fungicides/insecticides/desiccation/crop-topping, late season liquid N)). If likely, are contractors available if you haven’t got the clearance?
 - o Specialist fronts – what percentage of use requires specialist fronts? Flex-draper for lentils, pick-up for canola, stripper-fronts to maximise cereal efficiency.
- What can I afford? (refer Step 4 section)

Contractor

Contractors usually come with the latest and greatest machines and have many options for different crop types. They can usually handle all applications and are modern, economically justified machines due to the area that they cover which increases the utilisation of the equipment. However, growers need to determine whether they are confident that they can get them in a timely manner and not compromise productivity? Is it cost effective compared with owning own machine? (refer Step 4 section).

Combination

For example, by owning a smaller capacity machine a start to spraying or harvest can be achieved and a contractor can be engaged for the specialist areas (high clearance spraying, canola or legume harvesting). The consideration for operations is; can you get the contractor when needed?

Step 4. Ownership and costs – what can I justify?

Justifying an investment in a machine is a balance of financial and non-financial considerations.

The primary financial consideration is cost of ownership, which will be influenced by:

- Capital cost (i.e. the loss in value of the machine each year, plus the appreciation in value of its replacement and an allowance for the opportunity cost of the money invested into purchasing the machine which could have been invested via another means). Once a machine is purchased the amount needed to changeover (perhaps every 5 years) can be 35-40% of the total cost, so keeping it to a minimum has a big influence on overall ownership cost. Factors that affect changeover cost include:
 - o Engine hours on trade.
 - o Age of trade
 - Obsolete model or technology.
 - Access to parts.
 - Poor condition.
 - o New technology – the sky’s the limit so be critical on what you really need. For example, do I need auto-height, auto-greaser, etc.?
 - o Factory incentives and dealer support.
 - o Brand reputation.

Some growers have a defined policy around changeover time based on engine hours (for example, 2000 hours), age (for example, 5 years old) or model (for example, within one model of current model). Whereas others will keep an active eye on the market and buy whenever the price is right (for example, grower will upgrade whenever changeover is < \$100/eng.hr).

The full scale of financial benefits of ownership needs to be evaluated as an offset to the costs. These benefits will be driven by the following factors:

- Field capacity and field and non-field efficiencies, as outlined in Step 1.
- Alternative uses for spray machinery - can ‘subsidise’ the sprayer costs.
- The percentage of specialist work needed to be done by contractors. (canola pickup, flex front for lentil harvesting, desiccating canola, etc.)



Table 2a: Example of hours worked by a harvester and boomspray.

Harvest			
350 hp.	JD 9760 or similar		
	t/hr	Capacity at 30 cm stubble	t/hr
Cereals	32		28
Canola	13		13
Pulses	13		13
	Ha/Hr at yield and efficiency below		
		Cereal	90%
	Area	Other	75%
	Ha	Yield	Ha/hr
Cereals	1,500	3.0	8.5
Canola	500	1.5	6.3
Pulses	500	1.5	6.3
	2,500		
Rotor Hours p.a.			335

Boomspray				
	Area			
	Ha	No of passes	Ha/spray hr	Hectares p.a
Cereals	1,500	5	70	7,500
Canola	500	5	70	2,500
Pulses	500	6	70	3,000
Fallow	280	3	70	840
Total	2,780			13,840
Spray hours p.a.				198
Engine hours p.a. @ 60% efficiency				330

- Other fixed costs (interest, rego/insurance) – can be up to 25% of total costs which is a big contributor.
- Labour cost – dependent on machine hours.
- Scale – spread of costs (particularly the fixed costs) over area per annum (\$/ha).

An illustration of hours worked and cost of owning a harvester and boomspray is shown in Table 2a and b.

When assessing cost of ownership, it is advisable to compare it to the cost of using a contractor. Once this comparison has been made an informed assessment can be made as to whether ownership is cost-effective. The final decision will however also be impacted by non-financial considerations and the timing of the planned upgrade.

Non-financial considerations include:

- Job satisfaction – operator comfort, health considerations (e.g. bad back) should be considered.
- Interest and/or expertise in machinery – sometimes it's easier to let the contractor worry about ownership issues and access to labour, and get the latest and greatest technology turn up each year.
- Attracting and retaining employees – varies between regions.
- No financial pressure.
- Family time.
- Stress – being able to get the contractors when you want them.
- OHS

Non-financial considerations are harder to quantify than financial considerations. Each grower has to put their own weighting and dollars on these variables depending on their personal preferences.

In regards to timing, sometimes a decision to upgrade can be justified based on a simple cost : benefit analysis, but there may be other immediate priority uses for that capital or existing financial commitments that already limit cash flow. Some useful overall machinery investment benchmarks to consider include:

- Alternative/priority uses for capital – i.e. what other 'big-ticket' items are due for an upgrade and will investing a certain amount of capital in improving your plant capacity limit you from getting the balance and timeliness right in other areas?
- Overall capital invested in machinery – ORM benchmarking data shows that the typical investment in machinery is \$1 for every \$1 of income generated, or a ratio of 1:1. Some businesses can maintain a 0.8:1 ratio without compromising timeliness, which means in a farm business that is generating \$1,000,000 income, \$200,000 of capital can be invested elsewhere.
- Total (horse) power, machinery (capital and operating) and labour (including your own) cost (TPML). ORM benchmarking data suggests that a figure under 40% of income is good and under 35% is great.
- Cash flow implications – machinery is often financed over five years and too much spent on machinery upgrade all at once can run down cash flow, particularly in a poor income year. Machinery repayments (principal and interest) below 13% of income is generally OK if other key-cost areas in the business are balanced.



Table 2b: Example of cost of owning a harvester and boomspray.**Machinery costings**

	Harvest		Spray
Operational use of machine:			
Hours worked annually	335		330
Hectares covered annually	2,500		13,840
Farm area	2,745		2,745
Financial costs of machine:			
Machine value	\$700,000		\$500,000
Number of years owned	5		5
Selling price after 5 years	\$350,000		\$250,000
Interest rate	3%		3%
Assumptions:			
Insurance, \$5/\$1000	0.5%		0.5%
Labour/hour (assume \$30/hr *1.5)	\$45		\$45
Fuel use Litres/Hour			
Fuel cost per Litre			
Spares & repairs, average year	4%		4%
Annual cost eg. Tyres	\$1,000		\$1,000
Fixed costs such as registration etc	\$500		\$500

	Hours p.a.		Hours p.a.
Hours worked annually	335		330
Fixed Costs:			
Machine value	\$700,000		\$500,000
Number of years	5		5
Selling price after 5 years	\$350,000		\$250,000
Average value	\$525,000		\$375,000
Interest rate	3%		3%
Interest per annum	\$15,750		\$11,250
Depreciation	\$70,000		\$50,000
Insurance and other fixed costs	\$4,000		\$3,000
Total annual fixed costs	\$89,750		\$64,250
Fixed cost per Hour	\$268 / hr		\$195 / hr
Variable costs:			
Operating costs per Hour			
- Labour	\$45 / hr		\$45 / hr
- Fuel			
Repairs and maintenance @ 4%	\$84 / hr		\$61 / hr
Total variable costs per hour	\$129 / hr		\$106 / hr
Total cost per Hour	\$396 / hr		\$301 / hr
Hectares worked annually	2,500 / yr		13,840 / yr
Fixed cost per Hectare	\$35.90 /ha		\$4.64 /ha
Total variable costs per hectare	\$17.23 /ha		\$2.52 /ha
Total cost per Hectare	\$53.13 /ha		\$7.16 /ha
Total cost p.a.	\$132,829		\$99,079



Conclusion

Choosing and justifying the right machinery doesn't have to be a difficult process. Taking the time to fully evaluate what capability you need, and the options and costings associated with achieving that capability, will ensure that you get the right machine for your operation.

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Can climate science improve grain grower profit?

Peter Hayman and Bronya Cooper.

SARDI Climate Applications.

Keywords

- seasonal climate forecast, climate risk management.

Take home messages

- Understand your decision context – is it more like chess or poker?
- Incorporate information from climate science into risk management and decision making.
- Over the past century, neutral climate drivers, like we have in 2018 have delivered a wide range of seasons. It is a mistake to assume neutral drivers result in a decile 5 season.

Introduction

Grain growers can learn from other industries about risk and business management. However, when reading general articles on business planning and monitoring, it is worth noting that agriculture is the most volatile industry sector in the Australian economy. Agriculture is more than 2.5 times more volatile than the average of all industries and significantly more volatile than the next ranking industries of insurance and construction, which were 1.5 times the average of all industries (Keogh et al. 2011). Australian farmers face a higher degree of production volatility than farmers in any other Organisation for Economic Co-operation and Development (OECD) country. At the same time there is little buffering by price support or government assistance. Compared to other OECD countries they have equal highest price volatility and relatively low levels of direct and indirect income support from government (Kimura and Anton 2011).

As grain growers have improved agronomy and access to better varieties, climate remains as a major risk. As an older farmer in the Mallee said 'We have beaten eel worm (cereal cyst nematode (CCN)), we are on top of weeds and nutrition, we have better varieties but we are still affected by frost and drought...what are you guys doing about it?'. The draft GRDC 2018–23 RD&E plan was widely circulated for input and discussion. This document placed significant emphasis on risk: 'Risk is an important part of the profit equation. Risk management that is too conservative can limit

profit in above average production years while approaches that are too aggressive can expose the grower to equity issues that adversely impact profit and future operations.' The plan included the research priority of 'Improving the management of production and business risk' (p15) and identified production risk as a major challenge for the Australian grains industry and listed future changes that might increase variability and production risk as a significant threat. The GRDC has funded two projects on climate risk that are particularly relevant to the SA grains industry.

Using seasonal forecast information and tools to manage risk and increase profitability in the Southern Region is a 21-month project (April 2018 to December 2019) with three main components:

- Extending the 'The Break' e-newsletter and video communication to cover the whole GRDC southern region. This will involve a South Australian, Victorian and Tasmanian version.
- Working closely with about 20 advisers from South Australia, Victoria and Tasmania through two workshops to explore if and how seasonal climate forecasts can be better incorporated into the management of grain farms.
- Create a summary publication with case studies and worked examples to assist GRDC Southern region growers and advisers on the use of seasonal forecast information to better target crop inputs, manage risk and increase profitability.



The project will be led by Graeme Anderson and Dale Grey from Agriculture Victoria. In addition to overall project management they will lead the extension of the successful 'The Break' suite of communication products across the Southern region. The development and running of the workshops with 20 advisers will be led by SARDI (Peter Hayman) working with Barry Mudge (low rainfall farmer from SA & Mudge Consulting) and Mark Stanley (Regional Connections).

GRDC is also a partner in the project funded by the Australian Government Department of Agriculture and Water Resources through the Rural R&D for Profit program Forewarned is forearmed (FWFA): equipping farmers and agricultural value chains to proactively manage the impacts of extreme climate events. This project is funding the Bureau of Meteorology to forecast extreme climate and weather events for a range of key rural industries including the grains industry.

What is the essence of the problem caused by climate variability?

Climate variability reduces farm profit directly through difficult seasons and indirectly by creating risky decisions. Drought, late starts, frost and heat have obvious direct impacts on farm profitability. The fortunes of grain farms and the communities that they are part of rise and fall with the seasons. A good season like 2016 in the SA grains belt allowed many people to pay down debts, invest in equipment and human capital whereas a difficult season like 2017 obviously leads to reduced profits and less investments.

In addition to the direct losses, climate variability imposes a subtler impact on farm profitability. Because the coming season is uncertain, many growers will make the reasonable decision to apply lower rates of fertiliser, perhaps sow later in frost prone regions and grow less pulses and canola than is optimal for long-term productivity. These decisions are rational, but they do create a drag on long term farm profit. Even risk neutral decision makers are faced with a 'moving target effect' whereby it is hard to make the optimal decision for the coming season on crop area, crop type, variety, sowing time and input level when there is uncertainty about the coming climate. The uncertainty makes giving advice and following decisions challenging and, for many people, stressful.

Decision making with climate uncertainty – more like poker or chess?

Dr Annie Duke was unwell just prior to completing her doctorate in cognitive psychology at a high ranking US university. To cover her costs she decided to try professional poker. Twenty years and \$6.4 million later, she combined her academic training and poker experience to write a book 'Thinking in bets, making smarter decisions when you don't have all the facts'. She argues that it is important to decide whether the problem you are dealing with is more like chess or poker? Chess contains no hidden information and very little luck. The pieces and positions are there for both players to see, there is no roll of the dice that can make a bishop disappear. If you lose at chess, it is because there were better moves that you didn't make. Poker is a game of incomplete information, of decision making under uncertainty. If you lose chess, I can assume the other player is better than you, but if you lose a hand of poker you may or may not be more skilful than your opponent. Both chess and poker have their attractions. Poker players will point to luck and uncertainty adding excitement, it also means that losing poker is easier on the ego than being beaten in chess. According to some recent research, you need about 1500 hands to be confident that one player is more skilful than another (<https://theconversation.com/hard-evidence-is-poker-a-game-of-chance-or-skill-39224>). Most on-line poker players play about a hand a minute, so it takes more than 24 hours to be sure that you have more skill than luck.

Annie Duke works with companies to make the point that good decisions will not always have a great outcome. A great decision is the result of a good process, and that process must include an attempt to accurately represent our own state of knowledge. That state of knowledge, in turn, is some variation of 'I'm not sure'. She argues that the choice between two options is rarely a case of 50:50 or 100% sure. She laments the current media environment where politicians, pundits and experts seem to have no self-doubt and if anyone does express some doubt they are assumed to know nothing.



Managing the direct and indirect impacts of climate

There are a range of options that successful grain farm businesses use to minimise the impact of adverse seasons. These include accepting that tough seasons will occur and undertaking sound business management using income smoothing tools such as Farm Management Deposits (FMDs) and in some cases, insurance. A long term strategy to deal with difficult seasons is diversification both on farm (crop and livestock) and off farm. Improved varieties and agronomy have enabled growers to make the most of difficult seasons. Zero tillage, especially on lighter soils has led to some remarkably good crops in tough seasons. In addition, there is the ability to recover when a season turns bad by considering 'safe fail' rather than fail safe systems, for example grazing or baling a failed crop. Much was learned by growers, advisers and researchers during the millennium drought 2002 -2009. A good summary is provided by the GRDC 2008 Planning Guide for Low-Risk Farming.

A careful reading of this guide shows that most of the recommendations are farm business and agronomy practices that are good to follow whatever the coming season. Recommended actions include developing an annual business plan, identifying the better and poorer paddocks, conducting a feed budget for livestock, controlling summer weeds, controlling fertiliser costs, carefully monitoring crops and pastures and planning marketing strategies. These all make up a useful checklist for people under the stress of a run of bad seasons but they apply to all farmers. These are more like chess strategies where it is easy to identify what is a good decision or best practice. That is not to say the outcome or benefit of following this advice is not affected by climate. The benefit of no till and controlling summer weeds will be more apparent in poor seasons (as 2008 turned out to be for some). Although the **outcome** is sensitive to climate, uncertainty about the coming climate doesn't change the advice or decision. These are not climate sensitive **decisions** in the way that the appropriate rate of N topdressing is a climate sensitive decision. Table 1 compares farm management practices that deal with climate variability, the first column is more like advising a chess player, the second column more like poker. The farming game involves a bit of chess and a bit of poker. Information from climate science has more to offer decisions under uncertainty which are more like poker.

There is a vast amount of advice and take-home messages written by researchers and advisers for grain growers and most of this is like chess moves. The best examples break a complicated problem down to a series of steps where the outcome is more or less guaranteed. This practical step by step approach has made an enormous contribution to sound agronomy. What is interesting is that even a problem like the appropriate N fertiliser rate in dryland farming tends to be written about as a chess move. Most of the discussion on N budgeting emphasises calculating the supply of N by soil testing and estimating mineralisation and then determining the crop demand by picking a single decile or target yield. There is often an acknowledgement that information on the coming season is unknown. However, in most of the vast amount of material on N budgeting, there is little formal, practical, step by step ways to consider this uncertainty. Much of the key material on N budgeting could be applied to an irrigated grain crop in the same way as a dryland crop.

Seasonal climate forecasts will not influence all farm management decisions. When forecasts do have potential, they should not be seen as a tip for a horse race but rather as information that feeds into risk management. Perfect knowledge about the future climate would mean that there was no need to focus on climate as a source of risk. From a risk management perspective, it is useful to think of uncertain rainfall variability in three categories:

1. The variation in rainfall that we can predict now.
2. The variation in rainfall that we can't predict now, but might be able to predict with future research and modelling power.
3. The variation in rainfall that we will never be able to predict even if we had unlimited funds and resources – this is the irreducible uncertainty.

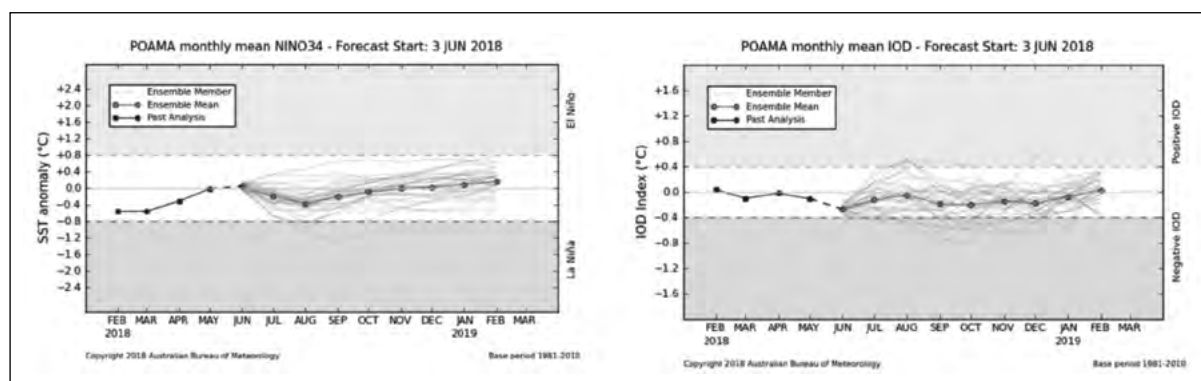
The ratio between the variation that can be predicted and the variation that can't be predicted changes from place to place and year to year. From looking at the skill maps from the Bureau of Meteorology the skill is highest in southern Australia in spring and lowest in early winter (<http://www.bom.gov.au/climate/ahead/verif/>).

When there is an El Nino like the growing season of 2015 or a negative Indian Ocean Dipole like 2016 the predictability of rainfall increases, whereas in years like 2017 and 2018 the lack of strong climate drivers makes prediction difficult.



Table 1: Comparison of farm management practices – is it chess or poker.

	Farm management practice relatively insensitive to seasonal climate . 'Good to do whatever the season'.	Farm management practice sensitive to climate of coming season . 'Outcome depends on how season turns out'.
Example for illustration	Maintain crop residue to improve WUE, reduce erosion risk and tillage costs.	Topdressing nitrogen at a rate higher than crop demand in an average to poor season
Chess or Poker?	More like chess – a series of logical steps leads to improved WUE. Decision closely linked to outcome with little hidden information.	More like poker – harder to distinguish a lucky decision from a good decision. Key information is hidden at time of decision.
Is this part of managing climate risk?	Yes, conservation farming is a major way that farmers manage climate risk.	Yes, matching inputs to the season is an important part of managing climate risk.
Does the outcome of the decision vary depending on the coming climate?	Yes, somewhat – although there are benefits of stubble retention in all years, the relative gains are greatest in dry years.	Yes, outcome strongly related to season – extra nitrogen will be a better investment in average to good seasons.
Is the optimum decision sensitive to the coming climate? Will there be regret?	No, decision is relatively insensitive to climate. Whatever the climate, regret about the decision will be low.	Yes, decision is highly sensitive to climate. Regret arises from either increased downside risk if drier than average or missed opportunity if wetter than average.
Value of historical climate for that location	Long term climate data might be useful to analyse long term benefit.	Helpful to work out risk and return over long term and before using a seasonal climate forecast.
Interest in seasonal climate forecast (SCF)	Little value of SCF because it is “good to do whatever happens.”	Potentially high value because “outcome depends on how season turns out.
Does climate uncertainty make the decision difficult	No, decision is not especially difficult. Practical application can be challenging.	Yes, would be an easy decision to decide on input if there was climate risk (eg. irrigated crop).
Nature of decision	A more strategic rule that applies across many seasons.	A tactical response to the coming season.
Ease of giving advice	Adviser needs to tailor advice for individual client finance, soil type etc. But an experienced adviser can be confident that procedure will work.	The uncertain season means that outcomes only partly correlate with the decision. Will be harder to distinguish good advice from bad advice.
Ease of measuring success of advice and decision	Relatively straightforward to measure extra stored soil water and subsequent benefit in crop yield.	Will require a number of years results to confirm good as opposed to lucky/unlucky advice and decision.
Some other examples	Many examples of what is generally considered sound agronomy. These include summer weed control, timely sowing, matching variety to sow date and maintaining good rotations. Business management including diversification both on farm (sheep and crops) and off farm. Use of income smoothing such as FMD.	Trade-offs between options with higher risk & return to those with lower risk & return. These include crop choice; pulses and canola vs cereals or lentils vs field peas. Area of cropping vs livestock, area dry sown in delayed start. Whole farm examples include major purchase that have cash-flow implications or the decision to self-insure or purchase insurance.

**Figure 1.** Early June forecast for remainder of year based on key climate drivers.

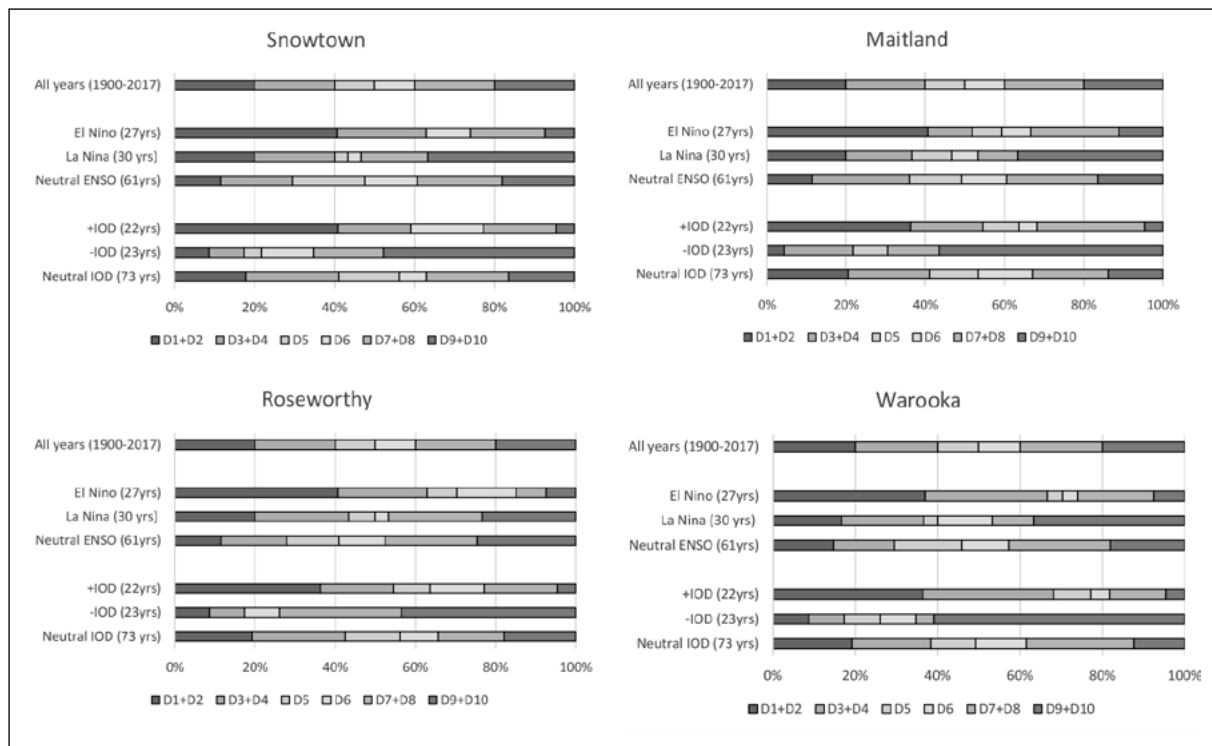


Figure 2. July to October historical rainfall (1900-2017) partitioned evenly into deciles across all years (top bar) at four locations, and the spread of these deciles found in the subset of years classified as El Nino, La Nina, Neutral El Nino Southern Oscillation (ENSO), Positive Indian Ocean Dipole (IOD), Negative IOD and Neutral IOD.

So what can we say about the rest of 2018?

Readers are strongly advised to get updates from the Bureau of Meteorology and the GRDC supported Break Newsletter (<http://agriculture.vic.gov.au/agriculture/weather-and-climate/newsletters>).

At the time of writing (6 June), it is important to start with 'we are unsure'. As shown in Figure 1, the climate drivers are neutral and current modelling is suggesting that they will stay neutral.

Figure 2 looks at the chance of rainfall being in different decile ranges for ENSO, IOD and neutral years. This shows that neutral years have slightly less emphasis on rainfall at Snowtown, for ENSO and IOD category.

Conclusion

As shown in Figure 2, the chance of being in the more extreme deciles of 1 and 2 or 9 and 10 is greatly affected when climate drivers are active. However, when climate drivers are neutral there is only a small shift in the odds. Growers and advisers should check for updates as the season unfolds. As Annie Duke points out, whether playing poker or making a business decision, the first step is to say 'I'm not sure' but also to make sure you don't stop there. Saying 'I'm not sure' is very different to saying

'I have no idea' or 'I know nothing'. In a variable climate, taking time and slowing down is important to improve the process of decision making (what is the best information available at the time, what outcomes are possible, how can we improve them).

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THE 2017-2019 GRDC SOUTHERN REGIONAL PANEL

FEBRUARY 2018



CHAIR - KEITH PENGILLEY



Based at Evandale in the northern Midlands of Tasmania, Keith was previously the general manager of a dryland and irrigated family farming operation at Conara (Tasmania), operating a 7000 hectare mixed-farming operation over three properties. He is a director of Tasmanian Agricultural Producers, a grain accumulation, storage, marketing and export business. Keith is the chair of the GRDC Southern Regional Panel which identifies grower priorities and advises on the GRDC's research, development and extension investments in the southern grains region.

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DEPUTY CHAIR - MIKE MCLAUGHLIN



Mike is a researcher with the University of Adelaide, based at the Waite campus in South Australia. He specialises in soil fertility and crop nutrition, contaminants in fertilisers, wastes, soils and crops. Mike manages the Fertiliser Technology Research Centre at the University of Adelaide and has a wide network of contacts and collaborators nationally and internationally in the fertiliser industry and in soil fertility research.

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JOHN BENNETT



Based at Lawloit, between Nhill and Kaniva in Victoria's West Wimmera, John, his wife Allison and family run a mixed farming operation across diverse soil types. The farming system is 70 to 80 percent cropping, with cereals, oilseeds, legumes and hay grown. John believes in the science-based research, new technologies and opportunities that the GRDC delivers to graingrowers. He wants to see RD&E investments promote resilient and sustainable farming systems that deliver more profit to growers and ultimately make agriculture an exciting career path for young people.

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PETER KUHLMANN



Peter is a farmer at Mudamuckla near Ceduna on South Australia's Western Eyre Peninsula. He uses liquid fertiliser, no-till and variable rate technology to assist in the challenge of dealing with low rainfall and subsoil constraints. Peter has been a board member of and chaired the Eyre Peninsula Agricultural Research Foundation and the South Australian Grain Industry Trust.

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FIONA MARSHALL



Fiona has been farming with her husband Craig for 21 years at Mulwala in the Southern Riverina. They are broadacre, dryland grain producers and also operate a sheep enterprise. Fiona has a background in applied science and education and is currently serving as a committee member of Riverine Plains Inc, an independent farming systems group. She is passionate about improving the profile and profitability of Australian grain growers.

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JON MIDWOOD



Jon has worked in agriculture for the past three decades, both in the UK and in Australia. In 2004 he moved to Geelong, Victoria, and managed Grainsearch, a grower-funded company evaluating European wheat and barley varieties for the high rainfall zone. In 2007, his consultancy managed the commercial contract trials for Southern Farming Systems (SFS). In 2010 he became Chief Executive of SFS, which has five branches covering southern Victoria and Tasmania. In 2012, Jon became a member of the GRDC's HRZ Regional Cropping Solutions Network.

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ROHAN MOTT



A fourth generation grain grower at Turriff in the Victorian Mallee, Rohan has been farming for more than 25 years and is a director of Mott Ag. With significant on-farm storage investment, Mott Ag produces wheat, barley, lupins, field peas, lentils and vetch, including vetch hay. Rohan continually strives to improve productivity and profitability within Mott Ag through broadening his understanding and knowledge of agriculture. Rohan is passionate about agricultural sustainability, has a keen interest in new technology and is always seeking ways to improve on-farm practice.

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RICHARD MURDOCH



Richard along with wife Lee-Anne, son Will and staff, grow wheat, canola, lentils and faba beans on some challenging soil types at Warooka on South Australia's Yorke Peninsula. They also operate a self-replacing Murray Grey cattle herd and Merino sheep flock. Sharing knowledge and strategies with the next generation is important to Richard whose passion for agriculture has extended beyond the farm to include involvement in the Agricultural Bureau of SA, Advisory Board of Agriculture SA, Agribusiness Council of Australia SA, the YP Alkaline Soils Group and grain marketing groups.

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RANDALL WILKSCH



Based at Yeelanna on South Australia's Lower Eyre Peninsula, Randall is a partner in Wilksch Agriculture, a family-owned business growing cereals, pulses, oilseeds and coarse grain for international and domestic markets. Managing highly variable soil types within different rainfall zones, the business has transitioned through direct drill to no-till, and incorporated CTF and VRT. A Nuffield Scholar and founding member of the Lower Eyre Agricultural Development Association (LEADA), Randall's off-farm roles have included working with Kondinin Group's overview committee, the Society of Precision Agriculture in Australia (SPAA) and the Landmark Advisory Council.

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KATE WILSON



Kate is a partner in a large grain producing operation in Victoria's Southern Mallee region. Kate and husband Grant are fourth generation farmers producing wheat, canola, lentils, lupins and field peas. Kate has been an agronomic consultant for more than 20 years, servicing clients throughout the Mallee and northern Wimmera. Having witnessed and implemented much change in farming practices over the past two decades, Kate is passionate about RD&E to bring about positive practice change to growers.

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BRONDWEN MACLEAN



Brondwen MacLean has spent the past 20 years working with the GRDC across a variety of roles and is currently serving as General Manager for the Applied R&D business group. She has primary accountability for managing all aspects of the GRDC's applied RD&E investments and aims to ensure that these investments generate the best possible return for Australian grain growers. Ms MacLean appreciates the issues growers face in their paddocks and businesses. She is committed to finding effective and practical solutions 'from the ground-up'.

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2017–2019 SOUTHERN REGIONAL CROPPING SOLUTIONS NETWORK (RCSN)

The RCSN initiative was established to identify priority grains industry issues and desired outcomes and assist the GRDC in the development, delivery and review of targeted RD&E activities, creating enduring profitability for Australian grain growers. The composition and leadership of the RCSNs ensures constraints and opportunities are promptly identified, captured and effectively addressed. The initiative provides a transparent process that will guide the development of targeted investments aimed at delivering the knowledge, tools or technology required by growers now and in the future. Membership of the RCSN network comprises growers, researchers, advisers and agribusiness professionals. The three networks are focused on farming systems within a particular zone – low rainfall, medium rainfall and high rainfall – and comprise 38 RCSN members in total across these zones.

REGIONAL CROPPING SOLUTIONS NETWORK SUPPORT TEAM

SOUTHERN RCSN CO-ORDINATOR: JEN LILLECRAPP



Jen is an experienced extension consultant and partner in a diversified farm business, which includes sheep, cattle, cropping and viticultural enterprises. Based at Struan in South Australia, Jen has a comprehensive knowledge of farming systems and issues affecting the profitability of grains production, especially in the high rainfall zone. In her previous roles as a district agronomist and operations manager, she provided extension services and delivered a range of training programs for local growers. Jen was instrumental in establishing and building the MacKillop Farm Management Group and through validation trials and demonstrations extended the findings to support growers and advisers in adopting best management practices. She has provided facilitation and coordination services for the high and medium rainfall zone RCSNs since the initiative's inception.

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LOW RAINFALL ZONE CO-LEAD: BARRY MUDGE



Barry has been involved in the agricultural sector for more than 30 years. For 12 years he was a rural officer/regional manager in the Commonwealth Development Bank. He then managed a family farming property in the Upper North of SA for 15 years before becoming a consultant with Rural Solutions SA in 2007. He is now a private consultant and continues to run his family property at Port Germein. Barry has expert and applied knowledge and experience in agricultural economics. He believes variability in agriculture provides opportunities as well as challenges and should be harnessed as a driver of profitability within farming systems. Barry was a previous member of the Low Rainfall RCSN and is current chair of the Upper North Farming Systems group.

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LOW RAINFALL ZONE CO-LEAD: JOHN STUCHBERY



John is a highly experienced, business-minded consultant with a track record of converting evidence-based research into practical, profitable solutions for grain growers. Based at Donald in Victoria, John is well regarded as an applied researcher, project reviewer, strategic thinker and experienced facilitator. He is the founder and former owner of JSA Independent (formerly John Stuchbery and Associates) and is a member of the SA and Victorian Independent Consultants group, a former FM500 facilitator, a GRDC Weeds Investment Review Committee member, and technical consultant to BCG-GRDC funded 'Flexible Farming Systems and Water Use Efficiency' projects. He is currently a senior consultant with AGRIVision Consultants.

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HIGH RAINFALL ZONE LEAD: CAM NICHOLSON



Cam is an agricultural consultant and livestock producer on Victoria's Bellarine Peninsula. A consultant for more than 30 years, he has managed several research, development and extension programs for organisations including the GRDC (leading the Grain and Graze Programs), Meat and Livestock Australia and Dairy Australia. Cam specialises in whole-farm analysis and risk management. He is passionate about up-skilling growers and advisers to develop strategies and make better-informed decisions to manage risk – critical to the success of a farm business. Cam is the program manager of the Woody Yaloak Catchment Group and was highly commended in the 2015 Bob Hawke Landcare Awards.

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MEDIUM RAINFALL ZONE LEAD: KATE BURKE



An experienced trainer and facilitator, Kate is highly regarded across the southern region as a consultant, research project manager, public speaker and facilitator. Based at Echuca in Victoria, she is a skilled strategist with natural empathy for rural communities. Having held various roles from research to commercial management during 25 years in the grains sector, Kate is now the managing director of Think Agri Pty Ltd, which combines her expertise in corporate agriculture and family farming. Previously Kate spent 12 years as a cropping consultant with JSA Independent in the Victorian Mallee and Wimmera and three years as a commercial manager at Warakirri Cropping Trust.

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FIGURE 1 The distribution of members of the GRDC's Regional Cropping Solutions Network in the southern region, 2017-2019.

RCSN zones

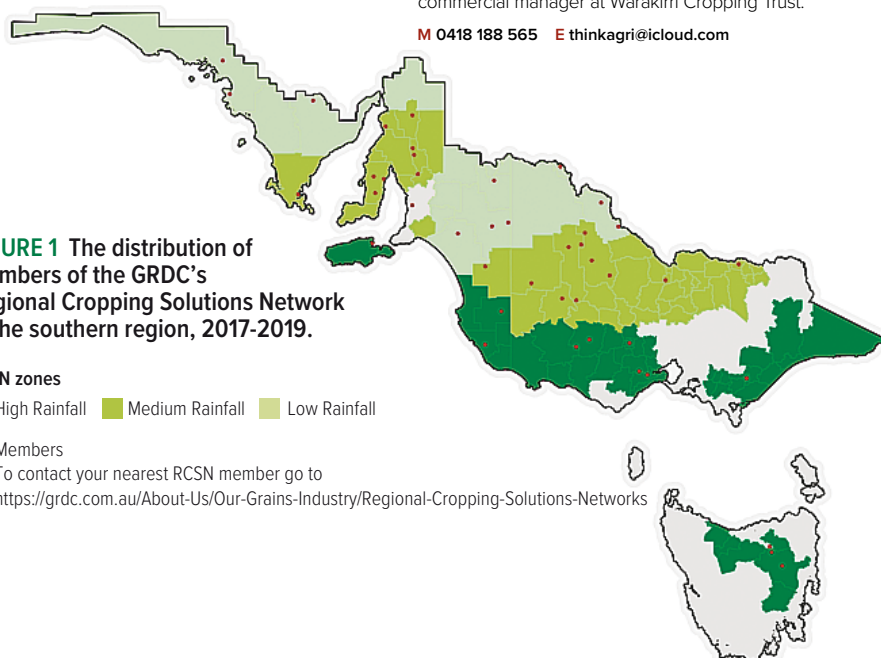
High Rainfall Medium Rainfall Low Rainfall



Members

To contact your nearest RCSN member go to

<https://grdc.com.au/About-Us/Our-Grains-Industry/Regional-Cropping-Solutions-Networks>



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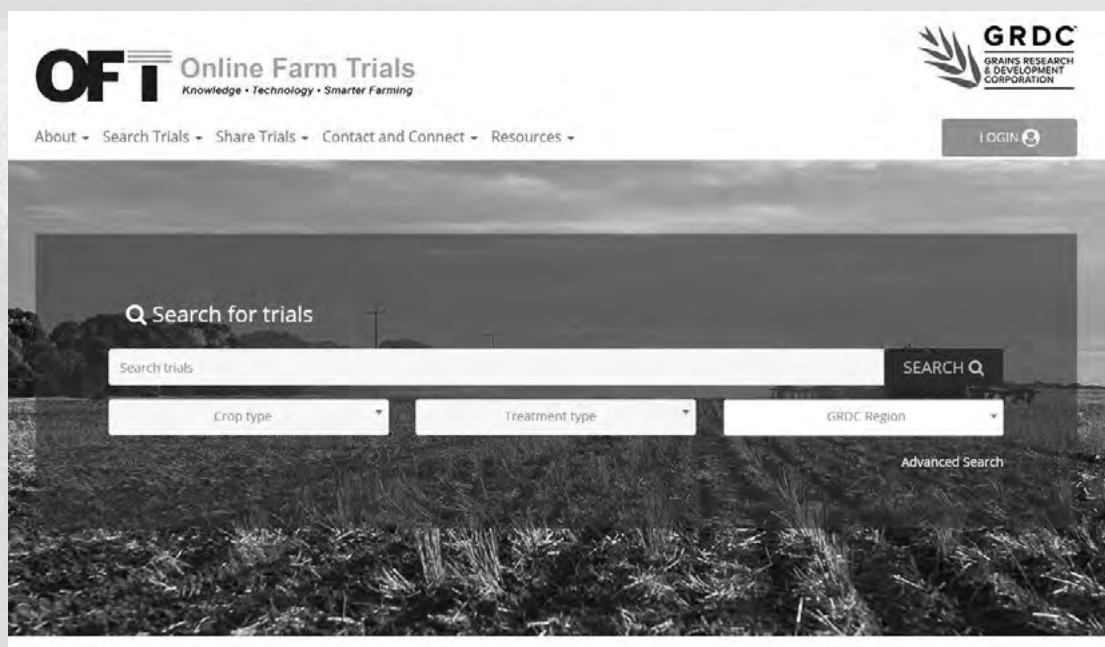
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- **Access** trials data and reports from across Australia
- **Share** your grains research online
- **View** seasonally relevant collections of trials
- **Search** by GRDC programs
- **Refer** to location specific soil and climate data
- **Compare** results from multiple trials to identify trends

Looking for relevant and freely accessible information on issues such as crop nutrition, disease control or stubble management in your region? Online Farm Trials (OFT) contains more than 6000 trial projects, 80% of which are publically available, from across Australia on a wide variety of crop management issues and methods. Use OFT to discover relevant trial research information and result data, and to share your grains research online.



www.farmtrials.com.au

 [@onlinefarmtrial](https://twitter.com/onlinefarmtrial)



Acknowledgements

The ORM team would like to thank those who have contributed to the successful staging of the Maitland GRDC Farm Business Update:

- The local GRDC Farm Business Update planning committee that includes both government and private consultants and GRDC representatives
- Partnering organisation: YPASG





You can now provide feedback electronically 'as you go'. An electronic evaluation form can be accessed by typing the URL address below into your internet browser.

To make the process as easy as possible, please follow these points:

- Complete the survey on one device (i.e. don't swap between your iPad and Smartphone devices. Information will be lost).
- One person per device (Once you start the survey, someone else cannot use your device to complete their survey).
- You can start and stop the survey whenever you choose, **just click 'Next' to save responses before exiting the survey**. For example, after a session you can complete the relevant questions and then re-access the survey following other sessions.

www.surveymonkey.com/r/Maitland-FBU



2018 Maitland GRDC Farm Business Update Evaluation

1. Name

ORM has permission to follow me up in regards to post event outcomes.

2. How would you describe your main role? (choose one only)

- | | | |
|---|--|--|
| <input type="checkbox"/> Grower | <input type="checkbox"/> Grain marketing | <input type="checkbox"/> Student |
| <input type="checkbox"/> Agronomic adviser | <input type="checkbox"/> Farm input/service provider | <input type="checkbox"/> Other* (please specify) |
| <input type="checkbox"/> Farm business adviser | <input type="checkbox"/> Banking | |
| <input type="checkbox"/> Financial adviser | <input type="checkbox"/> Accountant | |
| <input type="checkbox"/> Communications/extension | <input type="checkbox"/> Researcher | |

Your feedback on the presentations

For each presentation you attended, please rate the content relevance and presentation quality on a scale of 0 to 10 by placing a number in the box (**10 = totally satisfactory, 0 = totally unsatisfactory**).

3. Marketing grain – what, where, how and who of maximising profit: *Chris Heinjus*

Content relevance /10 Presentation quality /10

Have you got any comments on the content or quality of the presentation?

4. Succession – why viability (profitability) is critical to the process: *Judy Wilkinson*

Content relevance /10 Presentation quality /10

Have you got any comments on the content or quality of the presentation?

5. Efficiency versus over investment in plant and equipment – guidelines to help with machinery investment decisions: *David Smith*

Content relevance /10 Presentation quality /10

Have you got any comments on the content or quality of the presentation?



6. Can climate science improve grain grower profit? *Peter Hayman*

Content relevance /10

Presentation quality /10

Have you got any comments on the content or quality of the presentation?

Your next steps

7. Please describe at least one new strategy you will undertake as a result of attending this Update event

8. What are the first steps you will take?

e.g. seek further information from a presenter, consider a new resource, talk to my network, start a trial in my business

Your feedback on the Update

9. This Update has increased my awareness and knowledge of farm business decision-making

Strongly agree
☐

Agree
☐

Neither agree
nor Disagree
☐

Disagree
☐

Strongly disagree
☐

10. Overall, how did the Update event meet your expectations?

Very much exceeded
☐

Exceeded
☐

Met
☐

Partially met
☐

Did not meet
☐

Comments

11. Do you have any comments or suggestions to improve the GRDC Update events?

12. Are there any subjects you would like covered in the next Update?

Thank you for your feedback.

