FARM TO PROFIT
FARM BUSINESS UPDATE

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

Goondiwindi

Wednesday 7th September, 2022

O'Shea's Royal Hotel, 48 Marshall Street, Goondiwindi

Narrabri

Thursday 8th September, 2022

Tourist Hotel Narrabri, 142 Maitland Street, Narrabri

#GRDCUpdates

2022 GOONDIWINDI & NARRABRI GRDC Farm Business Update planning contributors

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ORM acknowledges and thanks all contributors to 2022 planning

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GRDC Farm Business Update
proudly convened by ORM Pty Ltd.

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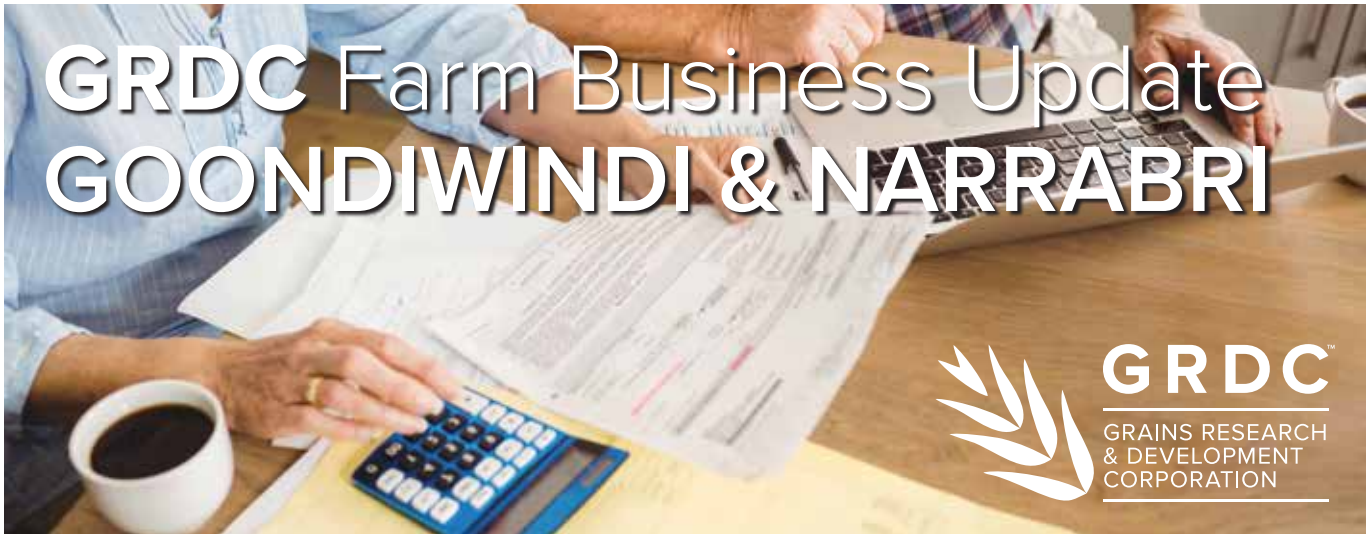

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#GRAINSTORMING

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WHERE SHOULD GRDC FOCUS ITS INVESTMENT?

CONTRIBUTE NOW TO HELP SHAPE THE 2023-28 RD&E PLAN

We want to understand what is challenging you, what excites you, the issues facing the grain industry and where you believe grains research and development should be focused to deliver greatest impact.

SCAN ME

WHAT WILL WE SEE TOWARDS 2040

30.6m people living in Australia[1]

1.4 billion extra mouths to feed globally[1]

39% global population growth in Asia[1]

Additional **13.7 million** tonnes of wheat demand across Indonesia, Philippines, Thailand and Vietnam[1] by 2030

Carbon intensity of ships to be cut by 40% by 2030[1] (International Maritime Organisation)

More people will die prematurely from over-consumption than perish from starvation[1,2]

India will import between **6-11** million tonnes of pulses p.a.[1] by 2030

Electric vehicles to represent **32%** new passenger vehicle sales globally by 2030[2]

Additional **2.9** million tonnes stockfeed + **0.8** million tonnes grain for food required domestically[1]

HOW TO CONTRIBUTE

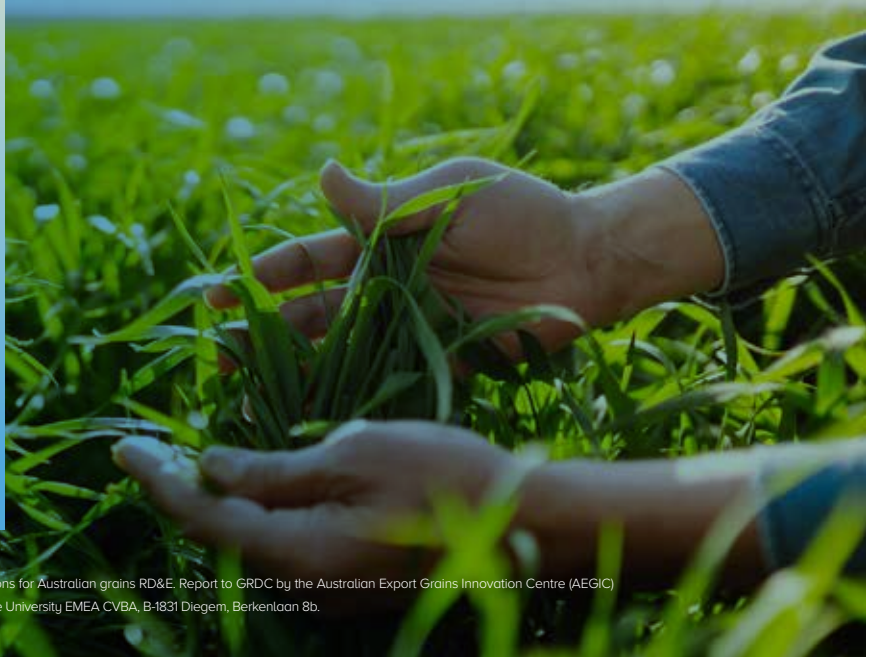
You are encouraged to contribute to shaping the Plan by visiting:

rdeplan.grdc.com.au/consultation

Alternatively, feedback can be provided to us at any stage of the consultation process through:

- rdeplanconsult@grdc.com.au
- @theGRDC
- https://www.facebook.com/theGRDC

We encourage all stakeholders to contribute new ideas and opportunities for investment throughout the life of this Plan by contacting GRDC staff based in our regional offices or Canberra.



1. Kingwell, R. (2021). Grains industry supply/demand drivers and trends: Considerations for Australian grains RD&E. Report to GRDC by the Australian Export Grains Innovation Centre (AEGIC)
2. Deloitte (2020). Deloitte Insights: Electric vehicles. Setting a course for 2030. Deloitte University EMEA CVBA, B-1831 Diegem, Berkenlaan 8b.

Program

9.30 am	**Announcements**	
9.35 am	**GRDC welcome**	
9.40 am	**Commodity outlook – focusing on the key global events**	***Adrian Ladaniwskyj,*** *Mecardo*
10.20 am	**From paddock to port – tactics, trends & strategy – grain logistics and planning considerations**	***Robert Imray,*** *Farmarco*
11.00 am	***Morning tea***	
11.30 am	**Be your best! – five archetypes for smart and savvy personal leadership**	***Zoë Routh,*** *Inner Compass Australia*
12:10 pm	**Increasing farm scale in the current market – economies of scale versus diminishing marginal return**	***John Francis,*** *Agrista*
12.50 pm	***Lunch***	
1.50 pm	**Subsoil constraints – strategic soil amelioration targeting return on investment**	***Ned Skehan,*** *Optisoil*
2.30 pm	**Machinery investment – how much is enough?**	***Ben White,*** *Kondinin Group (via livestream)*
3.10 pm	**Wrap up and evaluation**	
3.15 pm	**Event close**	

The WeedSmart Big 6

Weeding out herbicide resistance in winter & summer cropping systems.

The WeedSmart Big 6 provides practical ways for farmers to fight herbicide resistance.

How many of the Big 6 are you doing on your farm?

We've weeded out the science into 6 simple messages which will help arm you in the war against weeds. By farming with diverse tactics, you can keep your herbicides working.

Rotate Crops & Pastures

Crop and pasture rotation is the recipe for diversity

- Use break crops and double break crops, fallow & pasture phases to drive the weed seed bank down,
- In summer cropping systems use diverse rotations of crops including cereals, pulses, cotton, oilseed crops, millets & fallows.

Mix & Rotate Herbicides

Rotating buys you time, mixing buys you shots.

- Rotate between herbicide groups,
- Mix different modes of action within the same herbicide mix or in consecutive applications,
- Always use full rates,
- In cotton systems, aim to target both grasses & broadleaf weeds using 2 non-glyphosate tactics in crop & 2 non-glyphosate tactics during the summer fallow & always remove any survivors (2 + 2 & 0).

Increase Crop Competition

Stay ahead of the pack

Adopt at least one competitive strategy (but two is better), including reduced row spacing, higher seeding rates, east-west sowing, early sowing, improving soil fertility & structure, precision seed placement, and competitive varieties.

Double Knock

Preserve glyphosate and paraquat

- Incorporate multiple modes of action in the double knock, e.g. paraquat or glyphosate followed by paraquat + Group 14 (G) + pre-emergent herbicide
- Use two different weed control tactics (herbicide or non-herbicide) to control survivors.

Stop Weed Seed Set

Take no prisoners

- Aim for 100% control of weeds and diligently monitor for survivors in all post weed control inspections,
- Crop top or pre-harvest spray in crops to manage weedy paddocks,
- Consider hay or silage production, brown manure or long fallow in high-pressure situations,
- Spray top/spray fallow pasture prior to cropping phases to ensure a clean start to any seeding operation,
- Consider shielded spraying, optical spot spraying technology (OSST), targeted tillage, inter-row cultivation, chipping or spot spraying,
- Windrow (swath) to collect early shedding weed seed.

Implement Harvest Weed Seed Control

Capture weed seed survivors

Capture weed seed survivors at harvest using chaff lining, chaff tramlining/decking, chaff carts, narrow windrow burning, bale direct or weed seed impact mills.

WeedSmart Wisdom

Never cut the herbicide rate – always follow label directions
Spray well – choose correct nozzles, adjuvants, water rates and use reputable products,
Clean seed – don't seed resistant weeds,
Clean borders – avoid evolving resistance on fence lines,
Test – know your resistance levels,
'Come clean. Go clean' – don't let weeds hitch a ride with visitors & ensure good biosecurity.

Commodity outlook – what to watch on the global landscape

Adrian Ladaniwskyj

Mecardo

What is the outlook on grain commodities for Australian growers? Join Adrian for his analysis of commodity prices and the longer-term view of the demand / supply dynamics affecting global markets.

Adrian will break down the key issues and events to watch on the global landscape that will influence grain prices through harvest 2022.

Further information

Mecardo grains Analysis & commentary https://mecardo.com.au/category/grains-oilseeds/

The latest ABARES Australian crop outlook https://www.agriculture.gov.au/abares/research-topics/agricultural-outlook/crop

USDA global crop explorer https://ipad.fas.usda.gov/cropexplorer/Default.aspx

More about Adrian . . .

Adrian is a seasoned commodity economist and Certified Practicing Accountant with more than a decade's experience working in financial markets, business optimisation, and financial risk management. He holds a Bachelor's degree in Business, Economics with honours, majoring in Finance, Accounting and Statistical Analysis from the University of Tasmania.

Prior to joining Mecardo, Adrian operated in the renewable energy, mining, and manufacturing sectors. Adrian and his wife also run a small vineyard in the Pyrenees region of central Victoria.

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Tactics, trends and strategy for grain logistics and planning

Robert Imray

Farmarco Australia

Key Messages:

- East Coast is Domestic dominant – domestic/export tactics will vary depending on the market.
- Effective storage is important but equally important is contracting grain for sale and execution of that sale – effective storage on farm must have multiple outcomes/objectives.
- The trend 'on-farm storage capacity' continues to grow. This will continue to impact the logistical pathways – a key is to stay flexible and nimble. Increased on farm storage is changing the nature of "Bulk Handling Company (BHC)" investment.
- Consumer expectations are increasing about traceability though to the paddock. Disaggregation of storage means storages inside the farm gate must perform as well as the traditional BHC.
- Longer term strategic approaches to building and operating on-farm storage need to account for broader aspirations (quality, flexibility, financial).

Introduction

On farm storage has and will increase for multiple reasons (including harvest management and marketing flexibility) and thus on-farm stored grain is becoming an integral component of the domestic/export supply chain. Grain logistics and planning exist on numerous levels, including harvest management and short-term tactical marketing through to the longer-term incorporation of a return on investment from storage (gains/savings), efficiency, blending/segregation, quality, strategic marketing flexibility, commodity price risk management and finance.

Putting harvest logistics to one side we will briefly look at tactical marketing and some of the lessons taken from the 2021 harvest and how these might be applied for the coming harvest. This requires flexibility in terms of grain outturn quality (including grain treatments) to suit varied markets, grade segregation and a mix of markets and contractual terms. 2022 Harvest currently appears to face similar logistical challenges to last year – tactically how one adapts can add value.

The trend of increasing on-farm storage will continue to change the nature of the supply chain as East Coast storage assets become more disaggregated. Supply chains that are more "paddock to port / end user" or "paddock to rail head / container packer" will increase as industry participants move to gain efficiencies. The swing toward "paddock to somewhere" while providing numerous potential benefits to the producer also places onus on those with on-farm storage to lift (and continue to lift) quality processes to at least those of the BHC's, to ensure Australia's reputation as a quality and reputable supplier is not damaged. Those that can run a professional storage asset, will over time reap the benefits of not only synergies mentioned above but a "premium" through being a reputable and efficient supplier.

2021 Harvest – some take outs

- A major export year with export dominating (unusual for our region).
- Longer freight runs at the same time as doubling or more of freight costs post-harvest, made the cost of execution well above expectations and dented grain prices accordingly.
- For those with quality and the ability – road direct to port saw significant premiums, particularly when logistical shorts popped up.
- Grain quality can be problematic when destination is a long way from home. Rejection and having to take a load to an alternative destination, or home, can significantly impact your overall return (what seemed like a good price no longer is). Insects are the major problem but also think back to issues with Mice.
- Incorrect fumigation (perhaps aiming at a domestic rather than export market) has led to rejections. Many export destinations (and sites for that matter) are Pesticide Residue Free (no contact chemicals). Continued incorrect fumigation (often day prior) leads not only to market risks but work health safety (WHS) issues and insect resistance.
- Some disparity observed between "expected" price either ex-farm if selling delivered, or delivered if selling ex-farm. This is mostly due to freight costs moving substantially or actual availability of freight. Also impacted timing of cashflow (see below).
- Delayed ex-farm pick-up (impacting cashflow, quality maintenance) or delays in delivering (ie container packer with container access issues).
- Weather impacting access and grain quality (in some cases significant impacts on supply chain capacity).

2022 Harvest – some lessons to apply

- La Nina again? Weather – impacts quality, yield and access to storage/markets (need all weather access). Current forecast models point to a third year of La Nina. Call it an increased potential for weather to snarl harvest delivery to destination. Look for flexibility in contract terms (multi-grade), timing of delivery and potentially a mix of pathways to market (both as a grade and as a destination).
- Fumigate (chemical with no residue) to correctly keep access to export markets, as well as domestic markets (feed).
- Freight – both availability and cost are again likely issues. Closer destinations may work more favourably (local packer, miller, rail head). Freight companies struggle with labour among other elements – shorter runs appear more favoured.
- Avoid markets (or choose markets with a back-up destination) if your quality is borderline, particularly if that destination is a long haul.
- Contractual terms – consider "grade flexibility" with protein and/or screenings.
- Delivering to up-country BHC site - if possible, choose sites favoured by site to port logistics (trains/ good outturn etc).

Trends in Supply Chain developments

- Increasing volume of on-farm storage. There are various estimates, but an accurate assessment of on-farm storage is not available (that we are aware of). This on-farm storage is becoming an integral component of the supply chain and new pathways are developing to cater for this.
- Supply chain investment – more non-traditional i.e., new ports, portable loading at port, larger upcountry rail heads, larger upcountry container packers, larger up-country sites to aggregate bulk vessels surge loading.
- Think of it as increasing disaggregation of East Coast storage (from 5 BHC's to thousands). Over time this will require some "central framework" for effective operation of the supply chain.
- With disaggregation there is the possibility/probability of increasing reputational risk to the grain industry if not managed correctly. This comes about through quality, chemical residues, New Plant Breeding Technologies among others.
- International customers are becoming more demanding on looking back into the supply chain (transparency and food safety). Importing countries also have their own requirements in terms of MRL's (Maximum Residue Limits) and other phytosanitary requirements. Often these can be used as Non-Tariff Barriers which can effect the industry more widely.
- Overall, there is a slow push to bring more efficiency and investment into the supply chain between farm/site and port (which is where the major bottlenecks are).
- Overall, keep in mind that increasingly the East Coast is a domestic market. Unless we are experiencing a sea change, the run of good growing seasons is an aberration and not the norm. Investment strategy must account for this in that there will be a trade-off between what might be "an ideal, or wish list" and the reality, which is a balance of capacity to fit a more seasonal outcome for the region (ie taking account of volatility in production).

Strategy – a longer look into the future

- Capital invested in on-farm storage must have an eye to the outcomes you want to achieve (what can achieve a harvest logistics or short-term storage outcome may be significantly different from longer term storage aims, and/or diversified marketing aims, and/or strategic business aims). Positioning of storages on farm is also important (access).
- Capital invested is not only in storage, but into the equipment to service that storage - speed of through put, site access (weather and fleet combinations), weighbridge (?), grain assessment technology/equipment, procedure/governance, training/knowledge, systems to monitor and record (to name a few). Bio-security is a key component. None of this comes without significant cost.
- Effective running of on-farm storage should at the end of the day build confidence in you as a quality/ reliable supplier and confidence in the markets you serve around your product. This confidence reduces cost and can achieve a premium.
- Given the disaggregation or storage on the East Coast there is a move to develop industry wide "Storage Asset & Operating Standards". Currently this is seen as a voluntary framework (procedures, practices, compliance with Govt requirements, audit based on risk assessment) and is being favourably received at Department level.
- The ultimate aim is improved Industry QA capability and confidence. This will support the maintenance of the grain industries reputation as a reliable/quality supplier and reduce the risk of non-compliance at destination (whether domestic or export market).
- Aside from quality maintenance aims, such a process is being followed with interest by Financial Institutions as they seek to take Inventory finance more readily inside the farm gate (larger pool of finance). Overall an increased and more disbursed pool of finance to fund stored grain is of potential benefit for not only the individual, but the industry in general.

My follow up questions for the speaker.

Why working on this could be great for your farming business

To build confidence in this area, reduce cost and target premiums;

- Determine the outcomes you wish to achieve with on-farm storage.
- Weigh your wish list of outcomes against realistic requirements inside the farm gate (harvest management) and post the farm gate, in terms of the markets that are more likely to be served.
- Consider how far down the supply chain you wish to reach (storage – freight – packer)?

Self-evaluation

Thinking about your own business, or your client's businesses;

- How well do you understand the broader market situation and the markets you are targeting (domestic/export or both)?

Not at all.....Fully

- In terms of short-term tactics, are you storing grain in a way that achieves the outcomes you want? (Perhaps think of outcomes in terms of flexibility of market opportunities).
  Y / N / Room for improvement

Note any areas you want to work on

In terms of longer-term strategy, where do you want to position yourself?
– as a producer who delivers to a local site / destination, or
– as a producer that is effectively moving down the supply chain as a storage operator (being your own BHC), potential freight company etc.

- With the market increasingly domestic, and in more years than not most grain is fed to an animal – should a few years of exportable surplus drive or influence my strategy?

We want to work on this in our business, what should we do next?

- Focus on tactics for 2022 Season harvest. Have a plan in mind for how you will deal with harvest - keeping in mind the possible markets for your grain, the timing of sales, quality flexibility, contractual flexibility and point of sale/transfer.
- Longer term trends and strategy – this is a consideration of your wider business strategy - take some time out for this one.

Our First Action

Our Second Action

Want to learn more, here are some suggestions;

- Grain Trade Australia (May 2018 ed), Australian Grain Industry Code of Practice. Australian Grain Industry Code of Practice 2018.pdf (graintrade.org.au)
- Grain Trade Australia (2019), A Guide to Selling Grain Using Grain Contracts. A Guide to Selling Grain Using Grain Contracts March 2020.pdf (graintrade.org.au)
- Grain Producers Australia (July 2021), Growing Australian Grain - Safely managing risks with crop inputs and grain on farm. cce1a6_a7f86972d0cd46a7a580467c2d189372.pdf (grainproducers.com.au)
- AEGIC (Oct 2018), Australia's grain supply chains. FULL-REPORT-Australias-grain-supply-chains-DIGITAL___.pdf (aegic.org.au)
- Freeth, Andrew (Sep 2017), On Farm Storage and the Grain Supply Chain. 2015_AU_Andrew-Freeth_On-Farm-Storage-And-The-Grain-Supply-Chain.pdf (nuffieldscholar.org)
- AEGIC (Mar 2021) Australia's Grain Outlook 2030. AEGIC-Australias-Grain-Outlook-2030.pdf

More about Robert...

Rob brings over 30 years of experience in commodity market analysis and insight; a demonstrated track record in price forecasting and market opinions; and in particular, expertise in managing fluctuations in commodity prices, foreign exchange and basis (techniques, strategy and tactics around managing soft commodity price risk) and in operation risk (policy, process, reporting, etc). He also holds a bachelor's degree in Business (double major in Marketing and Applied Finance), a Graduate Diploma in Accounting and a master's degree in Business (International Business).

Robert has been involved in grains, cotton and oilseeds at Farmarco since 1996, and is currently Managing Director. Rob is also a Director of 'Cotton Compass', an analytical publication focused on Australia and S.E. Asia, past president of Queensland Agricultural Merchants Inc. and a non-executive Director of Grain Trade Australia.

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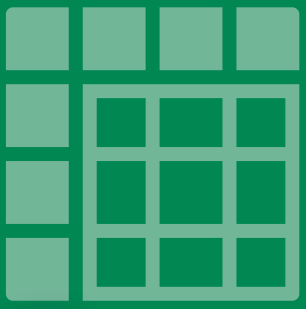

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Be Your Best! Secrets of five archetypes for smart and savvy personal leadership

Zoë Routh

Inner Compass Australia Pty Ltd

Key Messages:

- Let's face it, we're not always the best version of ourselves. A sleepless night, long days, and a bad cup of coffee can sour our mood.
- If we want to be more influential, and salvage our relationships, we need to stamp out grumbles, and light up sparkles!

Introduction

Influence starts with identity. Who we are shapes our thinking and action. We are growers, farmers, parents, siblings, businesspeople. Often our identities accumulate by default rather than by design.

As leaders, we can be intentional with our identity: we can become the leader others choose to follow. The easiest way to do this is to choose an identity that is well-known - an archetype. These are familiar stories that give us an ideal to live into.

Archetypes create architecture for action

By following specific leadership archetypes, we can act with more wisdom and compassion. Instead of reacting, we respond. Instead of blowing up, we calm down.

The five leadership archetypes we can draw from include: the Elder, the Warrior, the Diplomat, the Guardian, and the Pioneer. We can choose the best aspects of each of these, depending on whether we need to protect or progress, win or build, in our work with others.

It's not always plain sailing! We need to be mindful of the shadow of each archetype too:

The Elder can easily become the Tyrant, the Warrior can slide into the Bully, the Diplomat becomes the Trickster, the Pioneer becomes the Gambler, the Guardian develops into the Fanatic.

Ultimately, identity is influence. Why not choose one that serves rather than hinders our leadership goals?

Today Zoë will present:

- Crucial archetypes for maximum influence: a shortcut for confidence.
- How to avoid the shadow archetypes and their destructive patterns.
- Become suave and sophisticated by bringing your archetypes to life!

My follow up questions for the speaker.

Why working on this could be great for your farming business

- Become a leader others choose to follow.
- Feel confident, capable, and in control, even when times are tough.
- Build better rapport and relationships: less stress, calmer.
- Get more done with fewer hassles!

Self-evaluation

Ask yourself the following questions to check if more skills in this space could be great for you.

- Do you feel like you are constantly nagging or reprimanding or correcting your people?
- YES / NO
- Do you sometimes lose inspiration because of the daily pressure of work and forget the bigger picture? YES / NO
- Do you feel you could be more influential without always having to tell people what to do? YES / NO
- Do you want to be taken more seriously? YES / NO

We want to work on this in our business, what should we do next?

- Identify which archetype(s) would be most helpful to you right now.

- Choose someone you know - a public figure or someone you know - that best represents that archetype in your mind. List their attributes.

- Choose a talisman or object or image to help remind you of the archetype you most want to embody.

Want to learn more, here are some suggestions;

- Routh, Z. (2020) People Stuff - Beyond personality problems, an advanced handbook for leadership. *Inner Compass Australia.*

More about Zoë . . .

Zoë Routh is a leadership expert, speaker and award-winning author specialising in the people stuff. She shows leaders and teams how to work better together.

Since 1987, Zoë has worked with individuals and teams internationally and in Australia. From the wild rivers of northern Ontario to the remote regions of Australia, Zoë has spent the last thirty-five years showing teams how to navigate the wilderness of leadership.

Zoë delivers training to leaders and teams nationally, including an advanced leadership development program for CEOs, Managing Directors, General Managers and Senior Executives from across different sectors. An author of four leadership books, Zoë also produces a Podcast about all things people stuff in leadership. Zoë's fourth book, 'People Stuff - Beyond Personality Problems: An advanced handbook for leadership', won 'Book of the Year' at the Australian Business Book Awards 2020.

Zoë is an outdoor adventurist and enjoys telemark skiing, has run 6 marathons, is a one-time belly-dancer, has survived cancer, and loves hiking in the high country. She is married to a gorgeous Aussie and is a self-confessed dark chocolate addict.

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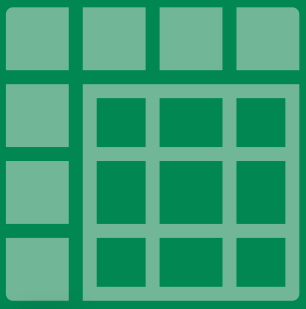

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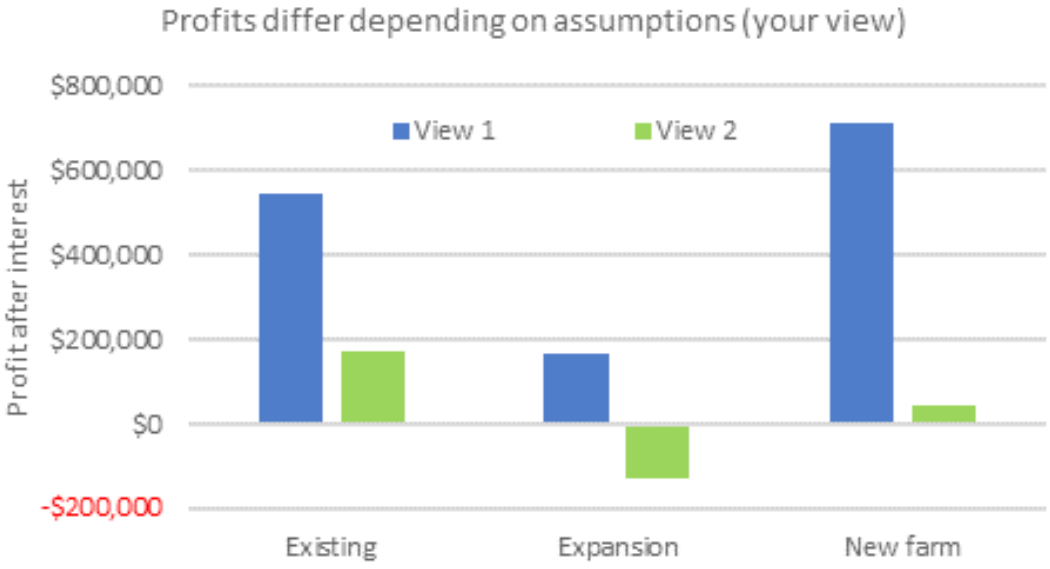
What is the impact of high asset values on expansion decisions?

John Francis

Agrista

Key Messages:

- The fundamentals for making a well-informed expansion decision have not changed.
- Economies of scale differ by business and by circumstance.
- Understand the business needs beyond interest costs.
- Form a rational view of the future.
- Develop an executable exit strategy and treat it as an insurance policy.



Introduction

While the factors influencing the outcomes of farm expansion investment analyses (interest rates, costs, commodity prices) are always changing, the principles for making a well-informed expansion decision have not.

Key considerations for expansion irrespective of whether land prices are considered extreme, follow.

- Economies of scale differ by business and by circumstance.
- Understand the business needs beyond interest costs.
- Form a rational view of the future.
- Develop an executable exit strategy and treat it as an insurance policy.

The aim of a well-informed decision about farm expansion is not to predict the future. Rather it is to consider all the possibilities (good and bad), weight them based on your views and to have a risk management plan that minimises the impact of disasters and allows for business continuity even in the most extreme of circumstances.

Expansion and intensity generate economies of scale – but not in every case

Economies of scale are the business efficiencies resulting from additional production generated at a lower marginal cost, when compared with the business in its existing state. To understand how economies of scale are achieved it helps to understand the concept of a partial budget. A partial budget is a decision framework that measures the change in business performance by comparing alternative business activities with existing activities. This change in performance is known as the "marginal benefit" and requires a marginal thinking, rather than an average thinking approach.

Consider the following situation. A crop-only business generates $690 per hectare gross income, $400 per hectare in enterprise costs and $150 per hectare in overhead costs. The operating profit (before lease) of that business is $140 per hectare. This was calculated by deducting enterprise and overhead costs from income. The output of this business performance is shown in figure 1a.

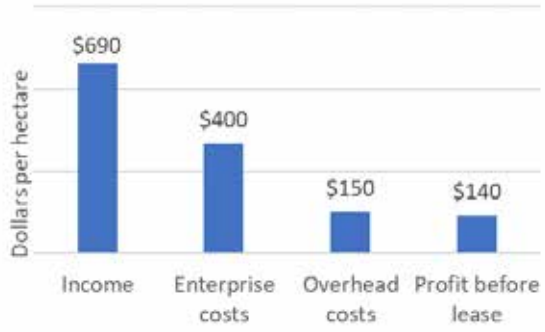
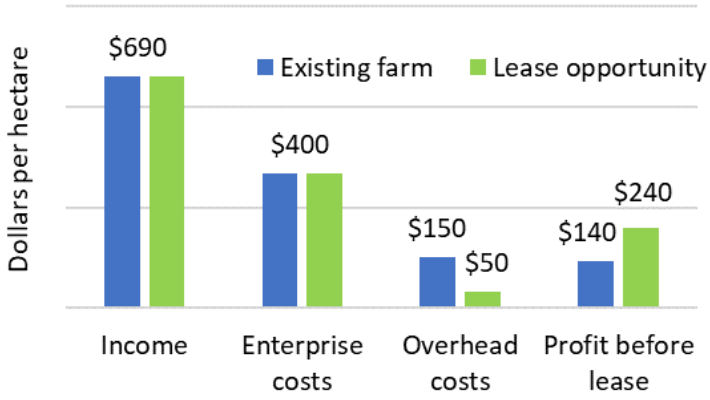


Figure 1a. Crop business performance example.



1b. Marginal thinking compares performance differently.

You are provided with an opportunity to lease 250 hectares next door at $140 per hectare – should you take it? The immediate inclination is to decline the offer on the basis that your existing profit, replicated over the additional area would be sufficient only to cover the lease thus there would be no net benefit after lease payments are made. The issue with this line of thinking is that it is average thinking rather than marginal thinking.

Now, for context, consider that the existing business is not running labour and machinery optimally, so this opportunity requires no more machinery, labour or insurance costs and only results in slight increases in administration, motor vehicle and repairs and maintenance costs. These additional costs total $12,500, equivalent to $50 per additional hectare cropped.

Now reconsider the opportunity for expansion in the context of the change in overhead costs. The change in overhead costs delivers a cost saving on every additional, or marginal, hectare cropped. This cost saving of $100 per hectare flows to the profit line - delivering a marginal profit of $240 per hectare before lease on every additional hectare cropped, or $100 per hectare after lease costs of $140 per hectare, on every additional hectare cropped.

Table 1 shows the importance of taking a marginal thinking (or partial budgeting) approach when analysing investment opportunities, as returns are dependent on the methodology used in investment decision-making. The aim of this exercise is not to promote the virtues or otherwise of leasing, but rather to demonstrate the importance of understanding partial budgeting as an important first step in assessing business growth opportunities.

Table 1. Comparison of financial analysis of an investment using average and marginal thinking. Marginal thinking is required in investment analyses.

		Average thinking	Marginal thinking
Profit before lease	($/ha)	$140	$240
Lease cost	($/ha)	$140	$140
Profit after lease	($/ha)	$0	$100
Area	(ha)	250	250
Return on operating capital	(%)	0%	17%

Economies of scale – doing more with less

Economies of scale are efficiency gains achieved by producing more at a lower marginal cost. Economies of scale can be achieved by producing:

- more with the existing cost structure
- more with a slightly higher cost per production unit, but lower than in the business as it is
- the same, with less cost.

Economies of scale are typically achieved by spreading an overhead cost structure of the existing business, over more productive units. Overhead costs are the costs of doing business and include administration, depreciation, electricity and gas, insurance, general repairs and maintenance, motor vehicle expenses, rates and wages and on-costs. Labour and machinery costs are two areas that typically have the biggest influence on contribution of costs to economies of scale.

The value of the economies of scale that can be achieved when increasing production depend on:

1. The extent to which you are already optimising machinery and labour efficiency.
2. The change in scale between the existing business and the expansion.
3. The extent to which the additional production improves machinery and labour efficiency.
4. The efficiency gained by increasing production (proximity to existing, similarity to existing).
5. Assess the extent to which economies of scale will provide benefit in your business as follows;

Create a table with four columns.

1. First column - list broad expenditure categories into which you can group all of the individual overhead costs of the business.
2. Second column - sum the overhead costs in each category applying to the existing business.
3. Third column - sum the overhead costs expected for each category for the proposed expansion.
4. Fourth column - calculate the relative difference between costs by item, by dividing the proposed expansion overhead cost (column 3), by the existing business overhead cost (column 2).

The output of these steps is shown as Table 2.

Table 2. Categorising overhead costs helps to understand the extent of economies of scale that can be expected when expanding.

Area (ha)	2000	400	20%
Overhead line item	**Existing farm overhead costs**	**Proposed expansion overhead costs**	**Relative difference**
Administration	$12,000	$1,000	8%
Depreciation	$70,000	$5,000	7%
Electricity and gas	$5,500	$0	0%
Fuel & lubricants (non crop)	$5,000	$500	10%
Insurance	$12,000	$2,000	17%
Lime/gypsum	$30,000	$6,000	20%
Motor vehicles	$5,000	$200	4%
Rates & rents	$12,000	$2,400	20%
Repairs & maintenance (general)	$28,000	$5,000	18%
Wages	$120,000	$0	0%
Total overhead expenses	**$299,500**	**$22,100**	**7%**
Total overhead expenses ($/ha)	**$150**	**$55**	**37%**
Marginal benefit of scale ($/ha)		$95	

Points to note;

The example shown in Table 2 shows the overhead costs for an existing farm of 2,000 hectares with a proposed acquisition representing 20% of area relative to the existing business. In this example, no additional labour and no additional machinery is required to manage the additional area. This is shown in the proposed overhead cost structure (column 3) as no additional wages and very little additional depreciation in the respective lines. Other line items increase but not necessarily in a pro rata alignment with the increase in scale.

The relative difference in overhead costs between the existing farm and the proposed acquisition are shown in column 4. In total, a 20 percent increase in scale resulted in a 7 percent increase in overhead costs, with both of these represented as a relativity when compared with the existing business.

At a productive unit (per hectare) level, the marginal, or additional, overhead costs incurred as a result of expansion equate to $55 per hectare, compared with $150 per hectare in the existing business. The benefit of scale therefore equates to the difference between these two – that is $95 per hectare. This flows straight through to operating profit and represents the extent to which profits of the expansion will be superior to profits of the existing business, assuming no difference in production or enterprise cost structure between the two.

While economies of scale add considerable value to a business when expanding it is also possible for a business to achieve diseconomies of scale. This occurs where the marginal overhead costs are higher in the expansion than in the existing business. This leads to an operating cost inefficiency in operating the additional land.

Diseconomies of scale typically occur where:

- labour or machinery are not well matched to the scale of the business
- the expansion is located a considerable distance from the existing business
- there are operational inefficiencies in operating the additional area.

Consider a situation where the expansion required an additional labour unit costing $60,000 per annum. In this case, the overhead cost structure in the expansion would increase to $82,000, or $205 per hectare. This would deliver a diseconomy of scale equating to $55 per hectare. In other words, every additional hectare would deliver profit $55 lower than in the existing business.

Leveraging equity

Over the last ten years the financial leveraging of equity has created a lot of wealth in agriculture. Those who used their increased equity from capital growth to further grow their businesses have been handsomely rewarded. Some farm asset owners have increased their net asset value by a magnitude of 10 times on the back of financial leverage. The key drivers of the extreme rates of wealth creation over the ten years from 2012 to 2022 are:

- extremely low interest rates
- reasonable operating returns
- exceptional capital growth on land.

A physical lever, such as a pair of fencing strainers, or a spanner, is a tool that magnifies force. The magnification of force delivers value by making the job easier. Financial leverage, put simply, is the use of existing equity to secure debt and magnify wealth.

Financial leverage achieves the goal of magnifying wealth where the returns from the debt exceed the cost of the debt (interest). The greater the positive disparity between return on the investment and the interest cost on the debt, the greater the rate of wealth creation.

The cautionary tale of using debt when leveraging equity is that just as financial leverage can magnify wealth creation, it can also magnify wealth destruction. Where investment returns on debt accumulated exceed the costs of that debt, then wealth is destroyed at a greater rate than in an unleveraged investment scenario.

This is why the use of debt requires a very good business case and a solid understanding of the risks presented to the business if things don't go according to plan.

Business and personal needs - asking the right questions

One of the questions that should be asked prior to expanding is: "What are the annual financial demands on the business after interest is paid?" This is important because it ensures that additional interest costs of debt funded expansion don't consume all of the business surpluses. The business should have adequate funds after all interest payments to:

- repay the principal in a timely manner
- pay for annual capital costs such as machinery
- fund future liabilities such as retirement and succession plans.

Take a view

It is important to clarify and quantify your view prior to expanding, because this view will form the assumptions in an analysis. Your view is unique to you and your circumstances, but should be weighted on evidence, or formed based on some sort of rationale. Given that a decision about expansion is about the future, there is no way of guaranteeing an outcome - however the aim of forming a view based on evidence, is to weight the probability of the outcome in your favour. The view, or opinion, of individuals in the market varies widely and this often explains the wide range in perceived value of land.

When forming your opinion, or view, of the future, consideration needs to be given to the following factors:

- rate of capital gain
- Interest rate
- commodity prices
- cost structure
- changes in production.

Irrespective of your view, it is important to run sensitivity analyses to ensure that you have valued the upside and costed the downside. Exit strategies are developed to assist in isolating losses to the expansion investment and prevent impacts over the whole asset portfolio.

Table 3 shows two different views (1 & 2), while Figures 2 and 3 show the extent of the difference in financial projections based on the views formed for an investment in 33 percent more land. The scale (2,500 hectares), debt (15% asset value), and asset values of the existing business ($3,825/ha) and proposed expansion do not change between views.

Table 3. Assessment of two different future views. View 1 and view 2 differ widely.

	View 1	View 2
Rate of capital gain	10%	1%
Interest rate	2%	8%
Commodity prices	High	Low
Cost structure	Low	High
Changes in production	Low	Low
Profitability	6%	3%

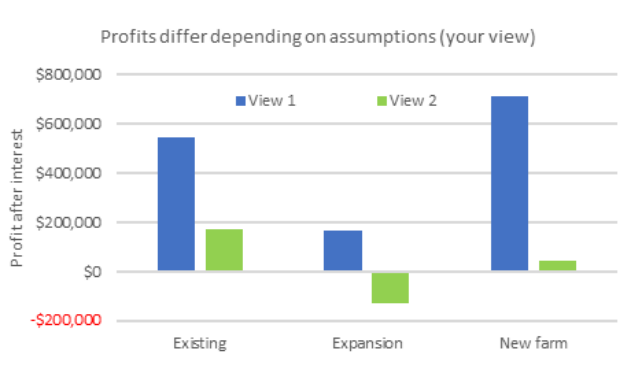


Figure 2. Profit after interest for Views 1 and 2.

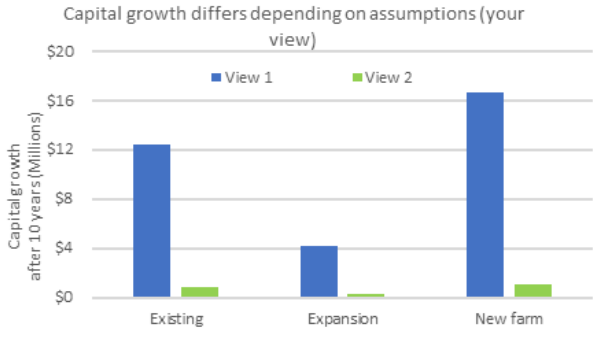


Figure 3. Capital growth for Views 1 & 2.

View 1 projects post-expansion profits after interest of $700,000, with capital growth of over $16 million while View 2 projects post expansion profits after interest of $40,000 and capital gain of only $1.1 million. It is easy to see how the manager with View 1 may offer more for the land. It is important to note that if more is offered for the land then the projections in this analysis also change.

Exit strategies

One of the keys to a solid expansion plan is the exit strategy. In other words - don't get in without considering how to get out. The cost of execution of the exit strategy is typically the transaction costs incurred at purchase and again on liquidation of the assets, plus any loss of capital value which occurs between purchase and disposal of the assets. It can help to think of these costs as an insurance policy. It is undesirable to have to execute the policy, but execution prevents a financial loss of a far greater magnitude than the cost of the policy itself.

Consideration could also be given to alternatives such as leasing the assets if this delivers a more desirable outcome.

Conclusion

The aim of a well-informed decision about farm expansion is not to predict the future. Rather, it is to give consideration to all of the possibilities (good and bad), weight them based on your views and to have a risk management plan that minimises the impact of disasters and allows for business continuity even in the most extreme of circumstances.

My follow up questions for the speaker.

Why working on this could be great for your farming business

- This process can assist in decision making.
- Provides a process that can be followed for success.
- Assists in managing expectations and risk.

Self-evaluation

- Do you have a historical record of your key financial ratios? Y / N
- How would an expansion of varying scale impact economies of scale in your business?

- What is your view on interest rates, capital gain, commodity prices and costs?

We want to work on this in our business, what should we do next?

- Run an expansion analysis for a fictitious expansion so you are prepared when the time is right.
- Consider the extent to which you will achieve economies of scale when expanding.
- Start forming your view on interest rates, commodity prices, production and costs.

Our First Action _____

Our Second Action _____

Want to learn more, here are some suggestions;

- GRDC Farm Business Management resource and publication links. https://grdc.com.au/resources-and-publications/all-publications/farm-business-management-manuals
- Krause, M. (2015). Farming the Business Manual. GRDC Publication. https://grdc.com.au/resources-and-publications/all-publications/publications/2015/01/farming-the-business-manual
- ORM. (2013). Making effective business decisions. GRDC Fact Sheet. https://grdc.com.au/resources-and-publications/all-publications/factsheets/2013/07/orm-fbm-making-effective-business-decisions
- Hudson, T. (2013). Key financial ratios. GRDC Fact Sheet. https://grdc.com.au/~/media/documents/resources/publications/fact-sheets/8116-key-financial-ratios-fs-pdf.pdf
- Nicholson, C. et.al. (2020). Farm decision making. GRDC Publication. https://grdc.com.au/resources-and-publications/all-publications/publications/2020/farm-decision-making

More about John . . .

John Francis is farm business management consultant with over fifteen years' experience in agricultural consultancy and a further fifteen years' experience in production agriculture (agronomy). John holds a Bachelor of Applied Science (Agriculture) and a Certificate IV in workplace training and assessment.

John is the owner of Agrista, an agricultural consultancy business based in Wagga Wagga in southern NSW. Agrista provides farm business management advice to farm asset owners and managers, the finance sector, government, industry and the agricultural services sector. John's expertise generates value for clients by identifying opportunities to improve productivity and profitability.

John is passionate about improving financial literacy in farm managers as he sees this as key to improving business performance. His detail-oriented personality type and ability to think critically, rationally, and objectively underpin John's development and delivery of courses designed to improve business skill and identify the factors influencing farm growth investment outcomes.

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Notes

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Subsoil constraints – strategic soil amelioration targeting return on investment

Ned Skehan

OptiSoil

Key Messages:

- Primary soil constraints are acidity/alkalinity and structural problems (dispersion/slaking) which arise from chemical imbalance and compaction. Others include salinity and nutritional limitations/ toxicity.
- Soil constraints are expensive to ameliorate, meaning the risk of over or under application of product is greater than it is for plant nutrition.
- Accurate soil maps reduce this risk and open up significant financial upside to soil productivity.
- Variable rate application of ameliorants should be done using Return on Investment mapping.
- Soil data and soil amelioration programs are capital expenses within the farm business.

Introduction

Soil data and soil amelioration, particularly that of the subsoil, should be considered a capital expense within the farm business. Significant production gains are possible if constraints to plant root growth are ameliorated, however the cost associated is sometimes quite significant making the risk of over and under application of ameliorant, a high risk. This risk is mitigated by collection of highly accurate soil maps which enable amelioration based on Return on Investment.

The collection of accurate soil maps, in conjunction with good quality yield modelling enables decisions to be made on spatial profitability, as opposed to other variable rate approaches that aim to replace nutrient, or apply 'more on the poorer country'. The cost of soil data is often accounted for by the optimised ameliorant application, as well as the production gains that are made as a result of knowing about the soil. With the cost of collection of this data "paid for" by production improvements, it can be leveraged into other projects such as soil carbon monitoring. This mitigates the cost of an expensive baseline as the data is

being used for more than just monitoring, it is being used for operational decision making.

Background

Approximately 77% of Australia's cropping soils are constrained by a chemical or physical property (Orten et al, 2018). Options exist for ameliorating constraints however they generally have been accepted to be too expensive to execute, and instead have been managed by limiting inputs, if they've been managed at all. With the cost of inputs and land value rising dramatically, a revisiting of soil amelioration should be undertaken to consider whether there are production improvements available. Results from trials in the 1970's (Doyle et al, 1979) show the Moree area to be responsive to this work. This was a time where there were no major nutritional limitations and minimal deep machinery compaction: dispersive/sodic subsoil was the primary limitation.

Table 1. Yates yield responses to various soil amelioration options.

Treatment	'Gurley Station'					'Delvin'			
A Series Experiments: Wheat grain yield, t/ha (Gypsum surface application was in January 1973)									
	1973	1974	1975	1976	1977	1973	1974	1975	1977
Control	1.1	0.8	1.7	0.7	1.0	0.2	1.1	1.4	1.8
Chopped straw (12 t/ha)	0.8	0.9	2.1	0.9	-	1.5	2.5	1.3	2.0
Deep plough (DP) 25 cm	1.0	1.1	2.1	1.0	1.2	-	2.3	1.2	1.7
Gypsum (12.5 t/ha)	1.8	1.0	2.6	1.5	2.0	1.4	3.3	1.7	2.6
Gypsum (12.5) + DP	1.5	1.8	2.6	1.7	1.8	0.6	3.5	2.0	2.8
LSD (p = 0.05)	*0.5*	*0.6*	*0.6*	*0.3*	-	*0.3*	*0.5*	*0.4*	*0.3*
B Series Experiments: Wheat grain yield, t/ha (Gypsum and lime surface application was in April 1974)									
Control		0.5	1.0	0.7	1.0		0.7	1.5	1.5
Gypsum (1.25 t/ha)		0.5	1.6	1.0	1.3		1.5	1.5	1.9
Gypsum (2.5 t/ha)		0.9	2.1	1.1	1.5		1.7	2.1	1.8
Lime (5 t/ha) + El. Sulfur		0.7	1.9	1.0	1.5		0.7	1.9	1.9
LSD (p = 0.05)		*ns*	*0.5*	*0.3*	*ns*		*0.7*	*0.4*	*0.4*
Potential Yield, t/ha (French & Schultz 1984)	4.3	3.3	5.3	4.3	2.2	3.0	3.5	3.3	6.4

Table 1 shows 12.5T/ha of Gypsum to have a significant and lasting response over 5 years at least. When looking at the net profitability however (Table 2), we see that when interest rates are low (for purchasing ameliorant), all applications are profitable, but rising interest rates (up to 10%) pushes the 2.5T/ha application to the front as the most profitable.

Table 2. Yates economic analysis of various soil amelioration options with sensitivity to ameliorant cost.

Treatment	Ameliorant Cost ($/ha)*	'Gurley Station' NPV ($/ha)			'Delvin' NPV ($/ha)		
		0%	5%	10%	0%	5%	10%
A. Control	$0						
A. Chopped hay (12 t/ha)	$1,800	-1700	-1721	-1738	-1100	-1155	-1203
A. Deep plough (DP) (25 cm)	$60	215	171	137	165	149	135
A. Gypsum (12.5 t/ha)	$875	25	-108	-214	250	131	33
A. Gypsum (12.5) + DP	$925	100	-46	-163	175	40	-70
B. Control	$0						
B. Gypsum (1.25 t/ha)	$88	212	175	144	212	185	162
B. Gypsum (2.5 t/ha)	$176	424	358	303	299	260	226
B. Lime (5 t/ha), S (120 kg/ha)	$340	135	79	33	-140	-167	-189

Noticing the amelioration cost in Table 2, we can see that we're moving from $50-$100/ha for annual nutrition management, to $100-$2000/ha for soil amelioration. Whilst the Net Present Value (NPV) demonstrates profitability over 5 years for 2.5T/ha gypsum application, there is still a significant upfront cost overcome. This should be considered a capital expense and deciding whether or not to make the investment should be considered within the context of the entire farming business. Positing the value proposition for this work in terms of Return on Investment allows us to consider the expense in this way.

This, and many other experiments, produce strip trials such as this as "(X) T/ha is the optimal rate", however this is the response to this specific soil condition. As soil chemical and physical properties change across the field, we must consider if this rate is going to be profitable everywhere. Mapping soil properties and modelling yield allows us to quantify this profitability and produce maps such as seen in Figure 1.

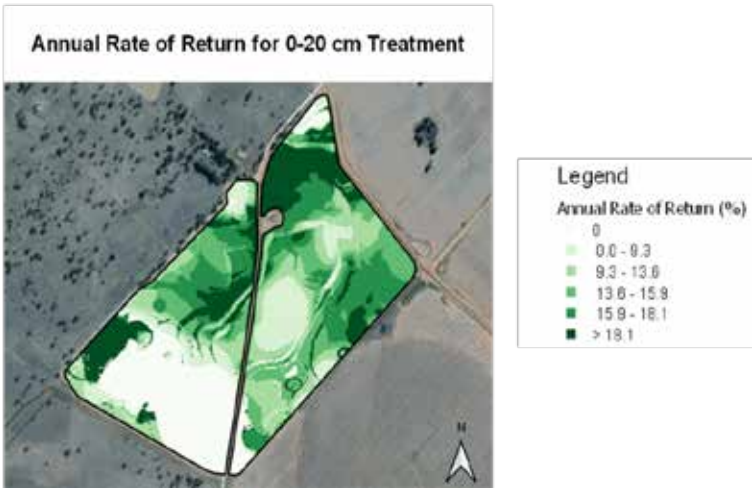

Figure 1. Return on Investment map – with relativity to soil properties and yield potential.

Figure 1 was produced using a true variable rate gypsum application map, as determined by ESP (exchangeable sodium percentage), CEC (cation exchange capacity), and BD (bulk density) from detailed soil information, overlaid with predicted yield, should the sodicity constraint be removed.

Maps such as these can minimise over and under application of ameliorant, whilst targeting only the soil zones that will return a particular level of profitability. If there is more profit to be made by investing your money somewhere else in the farm business, then that is where it should be spent.

With datasets such as these, the potential for making economic decisions around soil management is significant. Commonly, the improvements in crop production and reduction in wasted input can cover the cost of collecting the initial data. With this data 'paid for' by operational decisions, it can be leveraged into a range of other spaces such as the carbon market. This serves as a benchmark, but also facilitates the opportunity for mapping carbon sequestration potential for example and may guide which parts of the farm contain the most potential for a carbon offset program.

References

Doyle, A.D., Tayler, D.W., Yates, W.J., So, H.B. and McGarity, J.W., 1979. Amelioration of structurally unstable grey soils in the north-western wheat belt of New South Wales. *Australian Journal of Experimental Agriculture*, 19(100), pp.590-598.

Orton, T.G., Mallawaarachchi, T., Pringle, M.J., Menzies, N.W., Dalal, R.C., Kopittke, P.M., Searle, R., Hochman, Z. and Dang, Y.P., 2018. Quantifying the economic impact of soil constraints on Australian agriculture: A case-study of wheat. *Land Degradation & Development*, 29(11), pp.3866-3875.

My follow up questions for the speaker.

Why working on this could be great for your farming business

- Achieving scale - unlocking production in your current asset may be a method to scale your business, as opposed to investing in more land.
- Optimise inputs - understanding the full benefit of a particular input application before spending the money will avoid unnecessary spending, or inversely, justify the application of extra.
- Social licence - collection of soil data will quantify the impact various management strategies have upon the environment. This will be a critical aspect of both cropping and grazing businesses into the future.

Self-evaluation

- How do you currently view and value soil data? Yearly operational expense?

- Have you considered a carbon project, but were turned away by the cost of baselining? Y /N
- Do you know what soil constraints exist on your farm? Y / N

What soil constraints do you have?

Are they managed as is?

If they haven't been ameliorated already, what is the reason for that?

We want to work on this in our business, what should we do next?

- Various soil specialists exist, I'm just one example.
- Follow up with publicly available information and data on your farm. This is a very sound starting point for understanding the constraints you might expect and the potential for amelioration. A soil specialist can aid you in interpreting and deriving value from this information.
- Consider fields that don't perform as you'd expect and think about why that might be the case. Soil specialists can aid you in understanding why your "Sunday" soils are the way they are.

Our First Action _____

Our Second Action _____

Want to learn more, here are some suggestions;

- The economics of ameliorating sodicity with gypsum and lime (McKenzie): https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2022/03/the-economics-of-ameliorating-sodicity-with-gypsum-and-lime/Paper-McKenzie-David-February-2022.pdf
- Ameliorating sodicity; what did we learn about ameliorating sodicity constraints with a range of treatments? Yield responses to ripping, gypsum and OM placement in constrained soils (Lester et al, 2022): https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2022/03/ameliorating-sodicity-what-did-we-learn-about-ameliorating-sodicity-constraints-with-a-range-of-treatments-yield-responses-to-ripping,-gypsum-and-om-placement-in-constrained-soils/Paper-Lester-Guppy-et-al-soil-constraints-February-2022.pdf

- Satellite sites – ameliorating spatially variable soil constraints. What did growers try, what was done and how has it worked so far? (Roberton, 2022): https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2022/03/satellite-sites-ameliorating-spatially-variable-soil-constraints.-what-did-growers-try,-what-was-done-and-how-has-it-worked-so-far/Paper-Roberton-Stirling-February-2022.pdf

Acknowledgements;

- GRDC Project: USQ1803-002RTX

More about Ned . . .

Ned Skehan is a final year PhD student at The University of Southern Queensland. Ned's project 'Sub paddock scale mapping of the soil water characteristic: the requirement for localised calibration' is demonstrating the value in collecting directly measured data in the field to improve the accuracy of sub paddock scale modelling. This collection of data is an expensive exercise meaning the output of this work will be a framework to allow the optimal amount of data to be collected to make economically sensible decisions.

Ned comes from a mixed farming operation at Inverell, NSW and has a worked in industry as a precision agriculture consultant prior to his study.

OptiSoil is born out of a desire to see the quality research that has occurred in spatial subsoil constraint management, delivered to those that would greatly benefit from it: growers.

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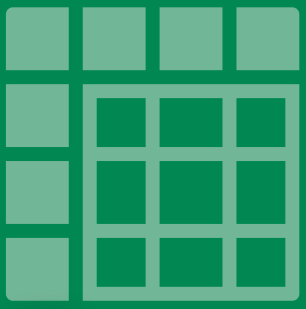

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Machinery investment: What works for your business?

Ben White

Kondinin Group

Key Messages:

- Every business is different, but benchmarks can help to provide perspective.
- Machinery investment levels are generally commensurate with cropping turnover.
- Ratios of seeding / spraying / harvesting machinery investment vary geographically.
- Machinery plant investment also needs to factor repairs and maintenance, skilled labour inputs and contracting relative to total cropping income.
- The national average benchmark for TPLM+C : Cropping income = 0.34

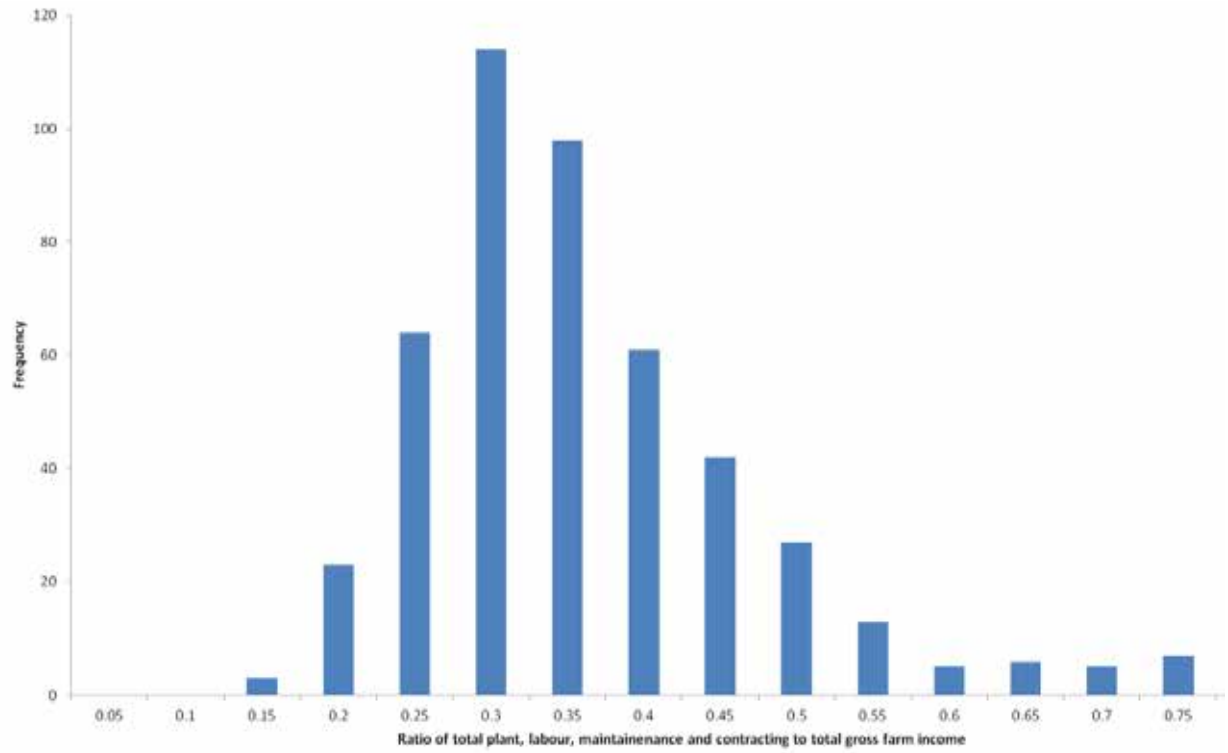

Figure 1. National frequency of ratios of total plant, labour, maintenance and contracting (TPLM+C) to total gross farm income in Australian cropping enterprises (National: n=411)

Introduction

Working with Cussons Media, Farmanco, Agripath and Pinion advisory, Kondinin Group collated machinery ownership data from more than 400 farmers across Australia to gauge machinery investment levels relative to business turnover.

A booklet produced for GRDC contains thirty case studies to illustrate ownership models and change-over triggers as well as survey data for specific to cropping Agro-Ecological Zones (AEZ's).

Overview

Detailed financial figures and data from 480 farmers nationally was probed to provide a detailed analysis. This was combined with case studies of 30 farmers spread nationally and representative of the spectrum of data collected. Points to note include;

- Average cropping income by GRDC region varied from around $1.4m in the South to $2.4m in the West with the Northern region coming in at around $1.6m.
- Previous studies of machinery investment levels had not included farm labour, contracting, repairs and maintenance.
- Including these figures ensures the data are not skewed by investment in additional repairs and maintenance for older equipment, or additional skilled labour to operate lower cost and lower capacity equipment.
- A standard depreciation rate of 10 per cent was applied across equipment unless the fleet of equipment was very new. While this can vary over the lifetime of the machine, across the thousands of machines in the survey data, this depreciation figure is around the average according to farm management consultants.

When making machinery investment decisions, evaluate the financial impact the investment will have. For technology investments, work on the return on capital for the technology. Section control is a good example of where technology can pay for itself depending on individual circumstances.

For other equipment, maintain knowledge of current market values and utilise the known ratio of 0.34 investment to income to determine if your farm is undercapitalised or overcapitalised with farm machinery.

My follow up questions for the speaker.

Why working on this could be great for your farming business

- Machinery investment decisions are usually big decisions which take into account not just the financial implications, but also the maintenance, service and backup as well as human capital costs to the business.
- Comparing farm investments in machinery to other farms in the area can provide a perspective on relative machinery outlay and provide guidance for benchmark investment levels.
- Reading case studies of the approach other farmers take can be useful in making decisions.

Self-evaluation

Are you comfortable with your current levels of investment in machinery? Y / N

Why? / Why not?

Do you know your TPLM+C and average long term income figures? Y / N

- If yes, where do you sit relative to the national average investment ratio of 0.34?

  Below **Similar to** **Above**

- If no, and you want to work on this in your business, calculate your TPLM+C and see how it compares to the benchmark.

What machinery or technology can we invest in next to improve our business?

We want to work on this in our business, what should we do next?

Answer the questions:

- What is the current market value of your machinery fleet?
- What is your total long term cropping income?
- Where do you sit relative to the 0.34 Investment : Income ratio?
- Is there technology available that will provide a financial benefit to your farm business?

Our First Action

Our Second Action

Want to learn more, here are some suggestions;

- Keep an eye out for the GRDC booklet on farm machinery investment that includes 30 case studies from across Australia.

Acknowledgements

Thanks to Primary Business, Farmanco, Agripath and Pinion advisory and Cussons media for their assistance. In addition to the 30 farmers who were interviewed, we would like to thank the 450 farmers who provided data for the study.

Useful resources

ORM (2016) GRDC Farm Business fact sheet: Western Region, Cost effective investment in machinery
https://grdc.com.au/resources-and-publications/all-publications/factsheets/2016/10/investmentinmachinery

DPIRD, Alexander and Hagan (2015) Machinery purchasing decision support for broadacre growers
www.agric.wa.gov.au/sites/gateway/files/Machinery%20purchasing%20decisions%20support%20for%20broadacre%20growers.pdf

ORM (2013). GRDC Farm Business Management Fact Sheet: Southern Region, Farm Business Risk Profiles
www.grdc.com.au/GRDC-FS-FarmBusinessRiskProfiles

ORM (2014) GRDC Farm Business Management Fact Sheet: Southern Region, Machinery Investments and costs
www.grdc.com.au/FBM-MachineryInvestmentAndCosts

Farmanco (2016) Profit Series 2015/16. Farmanco
Kirk, G (2013) How to farm profitably in the eastern wheatbelt. Planfarm
Iowa State University (2015), Estimating Farm Machinery Costs www.extension.iastate.edu/agdm/crops/pdf/a3-29.pdf

Iowa State University (2015), Replacement Strategies for Farm Machinery
www.extension.iastate.edu/agdm/crops/html/a3-30.html

Herbert, A (2017) An International Benchmarking Comparison of Australian Crop Production and Profitability, Agrarian Management

Sands, R (2013) How is your Farming System Performing? Liebe Group, Farmanco

Sands, R (2014) Financial Ratios and Indicators – The Critical Numbers, Farmanco Management Consultants

Redden, P (2013) Dollar$ and ene, Ground Cover, July/August 2013 pg33, GRDC Research Code ORM00004

Mudge, B (2013) How much Machinery is too Much? Ground Cover, Iss 107, GRDC Research Code ORM00004

Alexander, T (2013) Farm Business Management, Ground Cover Supplement, Nov-Dec 2013 Iss 107

Langemeier, M (2014) Crop Machinery Benchmarks, Purdue Agricultural Economics Report, pg5

Edwards, W (2015) Replacement Strategies for Farm Machinery, Ag Decision Maker, 641-732-5574

White, B, Warrick, C, (2017) Machinery investment and replacement options for growers in the Kwinana West RCSN port zone
www.grdc.com.au/replacing-machinery

More about Ben . . .

Ben is an agricultural engineer, Kondinin Group's research manager and editor of Farming Ahead magazine and, as an independent consultant, is a member of the GRDC stored grain extension team.

Based in Western Australia, Ben comes from a family farm in the New England region of northern NSW. Since completing his engineering studies at the University of Southern Queensland, Toowoomba, Ben has worked predominantly for the Kondinin Group for over 20-years.

Ben has extensive experience in delivery of research and has expertise in the areas of farm machinery investment, sheep handling and livestock infrastructure, farming technology and communications, grain storage, precision farming, engine technology, harvesting, seeding and spraying equipment.

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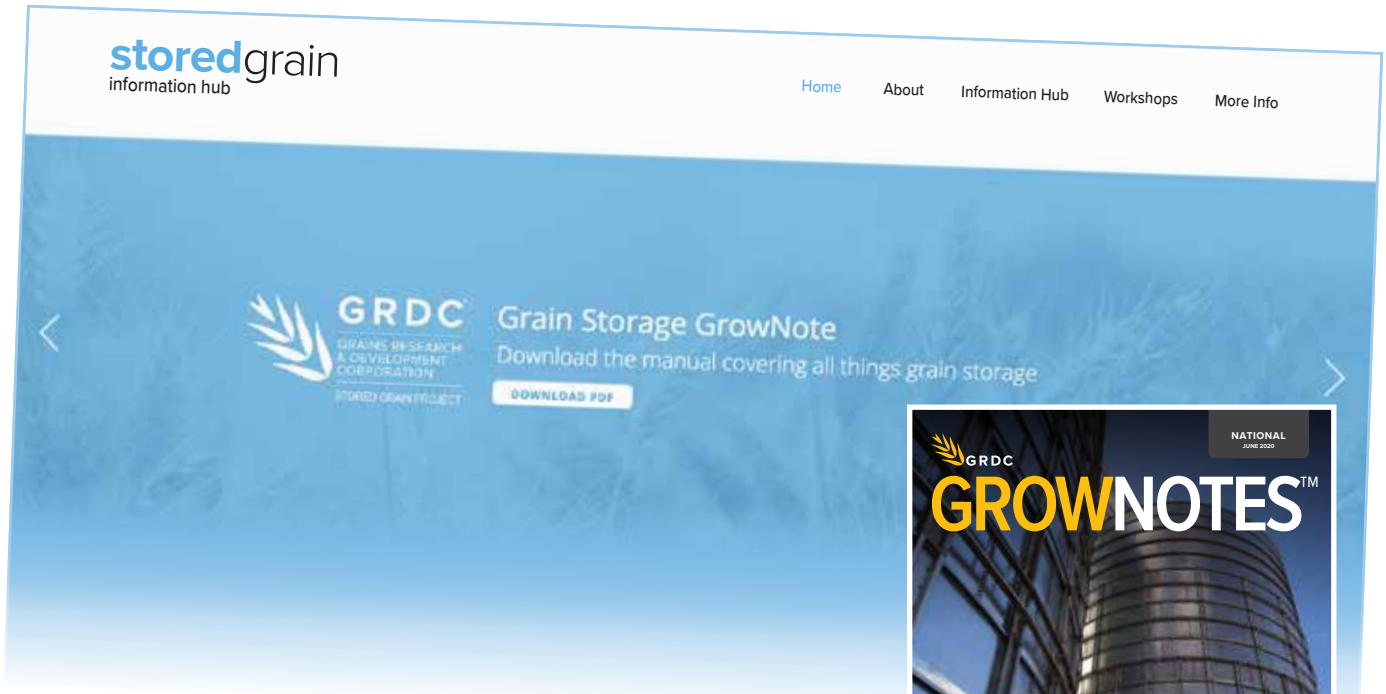

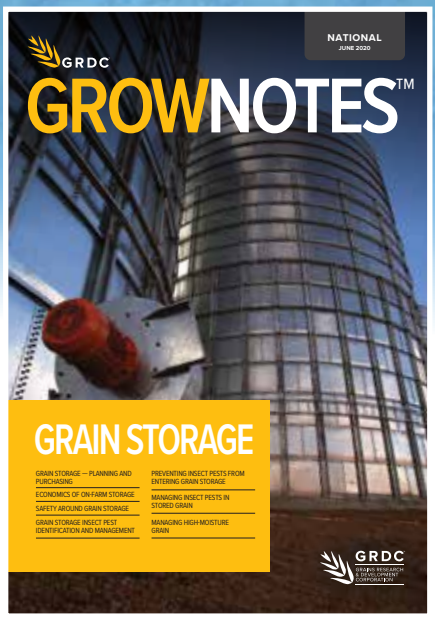

The complete manual for on-farm grain storage

Call the National Grain Storage Information Hotline **1800 WEEVIL** (1800 933 845) to speak to your local grain storage specialist for advice or to arrange a workshop.

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November 2021

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Barmedman, NSW

John runs a mixed broadacre farming business and an agricultural consultancy, Agriculture and General Consulting, at Barmedman in south-west NSW. John is chair of the district council of the NSW Farmers' Association, sits on the grains committee of NSW Farmers' Assn and is a winner of the Central West Conservation Farmer of the Year award. His vast agricultural experience in central west NSW has given him a valuable insight into the long-term grains industry challenges.

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Chinchilla, QLD

Arthur is a grain, cotton and beef producer near Chinchilla, Queensland. He has a business degree from the Queensland University of Technology in international business and management and has completed the Australian Institute of Company Directors course. He is a previous vice-president of AgForce Grains and has an extensive industry network throughout Queensland. Arthur believes technology and the ability to apply it across industry will be the key driver for economic growth in the grains industry.

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BRUCE WATSON

Parkes, NSW

Bruce and his family operate a 3400 ha family grain growing business near Parkes NSW, which produces a mixture of dryland winter cereals, pulses and oilseeds as well as summer dryland cereals, pulses and cotton grown on a 12m zero till CTF platform with full stubble retention. Bruce holds a Bachelor of Agricultural Economics from the University of Sydney and previously worked with PricewaterhouseCoopers in its Transfer Pricing practice. He was awarded a Nuffield Scholarship in 2009. Bruce is interested in both transformational or blue sky research and ensuring that existing that existing research delivers profitability to grower's businesses.

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DR JO WHITE

Maryborough, QLD

Since 2017 Jo has been based in the Wide Bay Burnett Region and is a private consultant while also running her own protected cropping horticultural operation. Previously Jo was a researcher for over 15 years working for the Queensland Government and university institutions. She holds a PhD in sorghum plant pathology and has extensive experience in delivering research for the broadacre summer crops plant pathology program based in Toowoomba. Jo has a keen interest in developing and delivering on-ground practical research solutions to growers which improve productivity and profitability of their farms.

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ROY HAMILTON

Rand, NSW

Roy runs a 4400ha mixed family farming enterprise near Rand in NSW's Riverina with his wife Leanne and family. He was an early adopter of minimum till practices and direct drill and press wheel technology. His farming system comprises 80 per cent wheat, canola, barley, triticale, faba beans, while the remainder is under pasture running 1400 ewes and trade lambs. He has held roles on the south east NSW Regional Advisory Committee, the GRDC's southern region RCSN (now GRDC National Grower Network) and was a founding committee member of the Riverine Plains farming systems group.

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PETER MCKENZIE

Quirindi, NSW

Peter operates a private agronomy consulting business based in Quirindi NSW. His main focus is supporting growers to achieve high economic returns via best practice production management. He is a passionate supporter of research and has been active in extending weed management research information to industry, particularly in central west NSW, is a former director of Conservation Farmers Inc. He is a former member of the north east Regional Advisory Committee and a participant in Northern Growers Alliance local research group on the Liverpool Plains.

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GRAHAM SPACKMAN

Formerly Emerald, QLD

Graham has been managing director of a private agricultural consultancy in Emerald, Queensland, for the past 30 years providing agronomic and farm business management advice in summer and winter crops in dryland and irrigated systems ranging from broadacre to mixed grain and grazing. For two decades he participated in GRDC and Department of Primary Industries-funded farming systems projects, particularly in the areas of weed management, soil fertility and adaption of agronomic practices for Central Queensland conditions. Graham is a chartered member of Ag Institute Australia and an Aust. Institute of Company Directors graduate. He has recently retired but remains actively interested in RD&E particularly in Central Queensland.

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CHRIS CLYNE

Moree, NSW

Chris is a grain grower, who farms a broadacre property east of Moree, in northern NSW. His farming system rotation includes wheat, barley, chickpeas and sorghum. He has a Bachelor of Commerce and a Bachelor of Laws from the University of Sydney and worked as an investment banker in derivative structuring in Sydney and Hong Kong before returning home to Australia. Chris believes in the potential to increase farm profitability through data-based decision-making and is a supporter of investigating and developing higher value grain markets to provide profitable alternatives to traditional crops. Chris is an advocate of understanding and improving seasonal climate forecasting models and tools to effectively guide on-farm decisions.

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GEORGINA PENGILLEY

Tamworth, NSW

Originally from Tasmania Georgina was involved in her family's 8500ha irrigated and dryland mixed farming enterprise. Before moving to NSW in 2018 Georgina was Leader of Grains Research and Strategy and Senior Industry Development with the Tasmanian Institute of Agriculture. Today, she is a research leader with NSWDPI based in Tamworth. With a PhD in growing canola in low rainfall environments, Georgina currently oversees the department's investment in chickpea and durum wheat breeding, pulse and cereal quality and post-entry quarantine programs.

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ADAM TOMLINSON

Orange, NSW

Raised on a grain property near Moree in north western NSW, Adam has a Bachelor in Applied Science Crops and Rangelands and postgraduate qualifications in agribusiness. Over the last 20 years he has held senior positions in banking, agricultural research and advisory roles within Australia and internationally. He works in the finance sector in Orange and has a small-scale farming operation. Adam's expertise lies in providing strategic guidance to support the profitability and sustainable growth of a broad range of agribusinesses.

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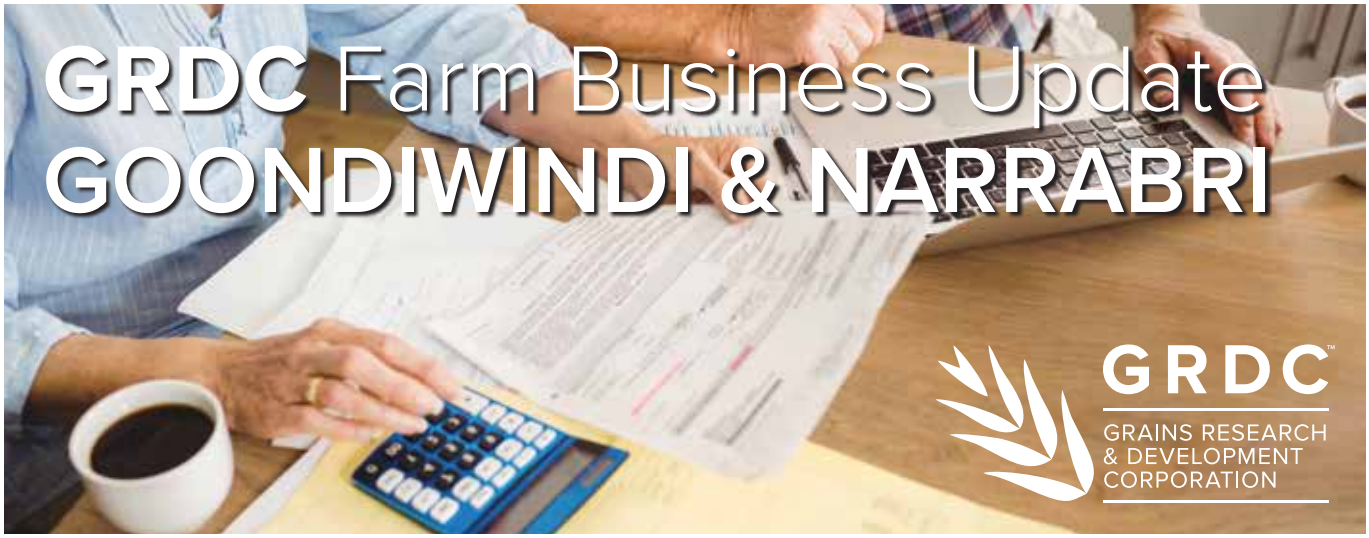

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- The local GRDC Farm Business Update planning contributors.

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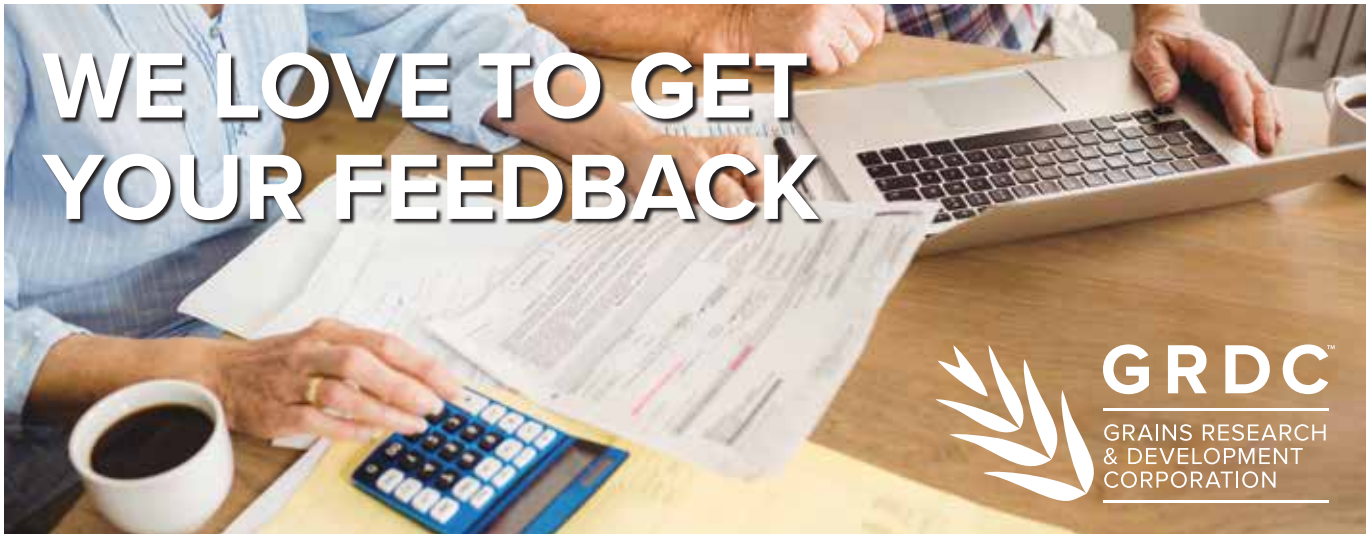

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2022 Goondiwindi & Narrabri Farm Business Updates feedback

1. Location of Update

❑ Goondiwindi ❑ Narrabri

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

❑ Grower
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❑ Communications/extension
❑ Grain marketing
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❑ Banking
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Please rate each presentation you attended in terms of relevance and quality
(10 = totally satisfactory, 0 = totally unsatisfactory).

3. Commodity outlook – focusing on the key global events. ***Adrian Ladaniwskyj***

Content relevance ☐ /10 Presentation quality ☐ /10

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

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7. Subsoil constraints – strategic soil amelioration targeting return on investment. *Ned Skehan*

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8. Machinery investment – how much is enough? *Ben White*

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

Your next steps

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

10. 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

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

Strongly agree	Agree	Neither agree nor Disagree	Disagree	Strongly disagree
❑	❑	❑	❑	❑

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