

**WARRA, QLD**  
TUESDAY 3RD

**MOREE, NSW**  
WEDNESDAY 4TH

**GUNNEDAH, NSW**  
THURSDAY 5TH

SEPTEMBER 2024

# HIGH PERFORMING FARMS FARM BUSINESS UPDATE



# FARM TO PROFIT

## FARM BUSINESS UPDATE



## GRDC FARM BUSINESS UPDATES

9:30am - 3:15pm

**WARRA QLD, Tuesday 3 September 2024**

Warra Memorial Hall, Warra QLD 4411

**MOREE NSW, Wednesday 4 September 2024**

Moree Services Club, Moree NSW 2400

**GUNNEDAH NSW, Thursday 5 September 2024**

Gunnedah Band Hall, Gunnedah NSW 2380

#GRDCUpdates



NORTHERN REGION GRDC FARM BUSINESS UPDATES 2024

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**GRDC Farm Business Update**  
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# FARM TO PROFIT

## FARM BUSINESS UPDATES



### PROGRAM

Time	Topic	Speaker(s)
9:30 AM	<b>GRDC welcome</b>	<i>GRDC</i>
9:40 AM	<b>Managing the margin squeeze in cropping enterprises - 'How to maintain profitability with rising land, machinery and input prices' – what are the key metrics?</b>	<i>Kim Bowman/Simon Fritsch (Agripath)</i>
10:20 AM	<b>Cybersecurity masterclass for rural small businesses.</b>	<i>Liam Boundy/Kerryn Shearman/Tracey Carr (NBN)</i>
<b>11:00 AM</b>	<b>MORNING TEA</b>	
11:35 AM	<b>Thinking differently about attracting and retaining staff. Being an employer of choice - new and novel ways to value staff through remuneration, recruitment, onboarding and training.</b>	<i>Rebecca Fing (Housepaddock Consulting)</i>
12:15 AM	<b>Carbon calculators compared for Australian grain growers - current opportunities, risks and next steps.</b>	<i>Sarah Hyland (Grain Growers)</i>
<b>12:55 PM</b>	<b>LUNCH</b>	
1:50 PM	<b>Precision fertiliser decisions in a tight economic climate</b>	<i>Tim Neal (DataFarming)</i>
2:15 PM	<b>'Machinery replacement economics' – What are the trigger points and where is the sweet spot?</b>	<i>Kim Bowman/Simon Fritsch (Agripath)</i>
2:55 PM	<b>Panel Session: additional questions to the panel</b>	
<b>3:15 PM</b>	<b>CLOSE</b>	



# FARM TO PROFIT FARM BUSINESS UPDATE



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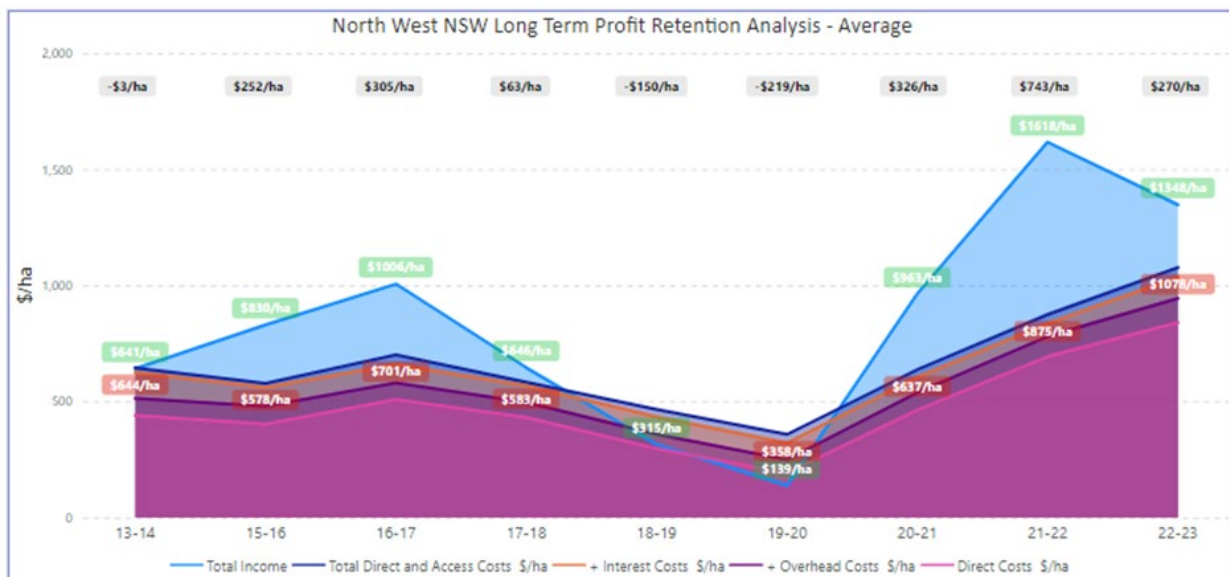


# How to maintain profitability with rising land, machinery and input prices – What are the key metrics?

Kim Bowman & Simon Fritsch, Agripath

## Key messages

- High crop gross margins produce high farm profit
- Crop choice and rotation is a key factor of success
- Yield still has the largest impact on margin
- Know your key cost areas and where you can have influence
- A lot of decisions are within your control.



**Figure 1.** Average yearly income, costs & profit for dryland farms in North West NSW region (13/14 – 22/23). Gross crop income is on the blue line and direct costs including interest is up to the dark blue line. The annual profit or loss per year is recorded by the top row of (grey) numbers (i.e. income – costs).



## Introduction

Farmers are aware that the cost of most crop inputs rose substantially during 2022 & into 2023, but have reduced slightly into 2024, but still higher than in 2021-22. What impact is this having on crop gross margins? To date the increase in input costs has been largely offset by good seasons and good prices. The big question is how will this sit into the future?

Other costs that have also risen sharply during this period are interest rates up by 4% and the cost of purchasing plant and machinery up by 40-60%.

Land values have also increased rapidly, which has underpinned farm asset security but has made it more challenging for farmers to produce an acceptable level of return on asset.

The challenge for all farmers is what can you do or what do you need to do to get your business operating at a profitable level?

At Agripath we believe the answer lies in understanding and mastering the 4 key profit drivers:

1. Income – crop choice then yield x price.
2. Direct costs – inputs to crop + fuel, R&M, labour, contractors, depreciation, etc.
3. Overhead costs – fixed costs such as rates, accountant, admin, farm insurance, etc.
4. Operating profit – The result of the above (income – direct - overhead costs).

## What are the issues?

### Rapidly rising land prices

The average annual growth rate for cropping land in the northern GRDC region from 1992 – 2023 is 7.4%. However the average annual growth rate for the first 22 years was an average of 5.3% whereas the last 10 years has been at well over double that rate at 13.1%.

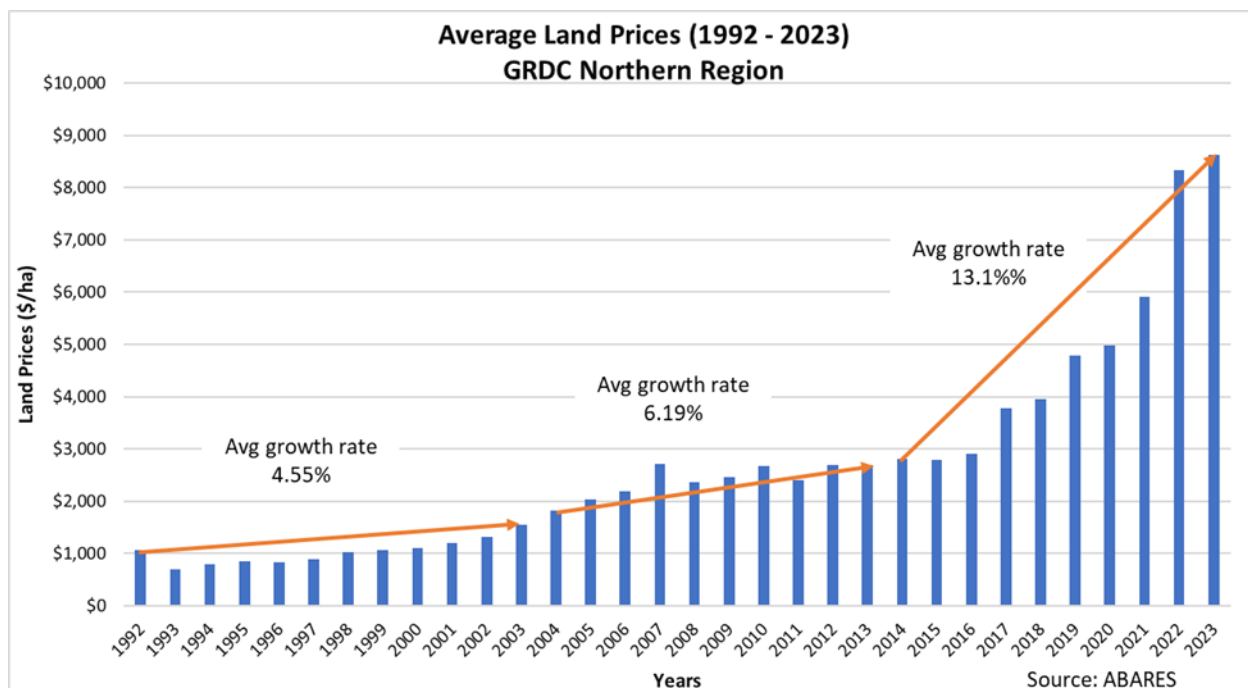


Figure 2. Average farm land prices in the GRDC Northern Region



### Rising input prices

The RBA keeps track of business related costs by using a number of industry related indices called Producer Price Indexes (PPI's). The chart below indicates there was a 60% increase in the costs for fertilizer and chemicals from 2021 into 2022 & 2023, with a slight easing in late 2023 into 2024.

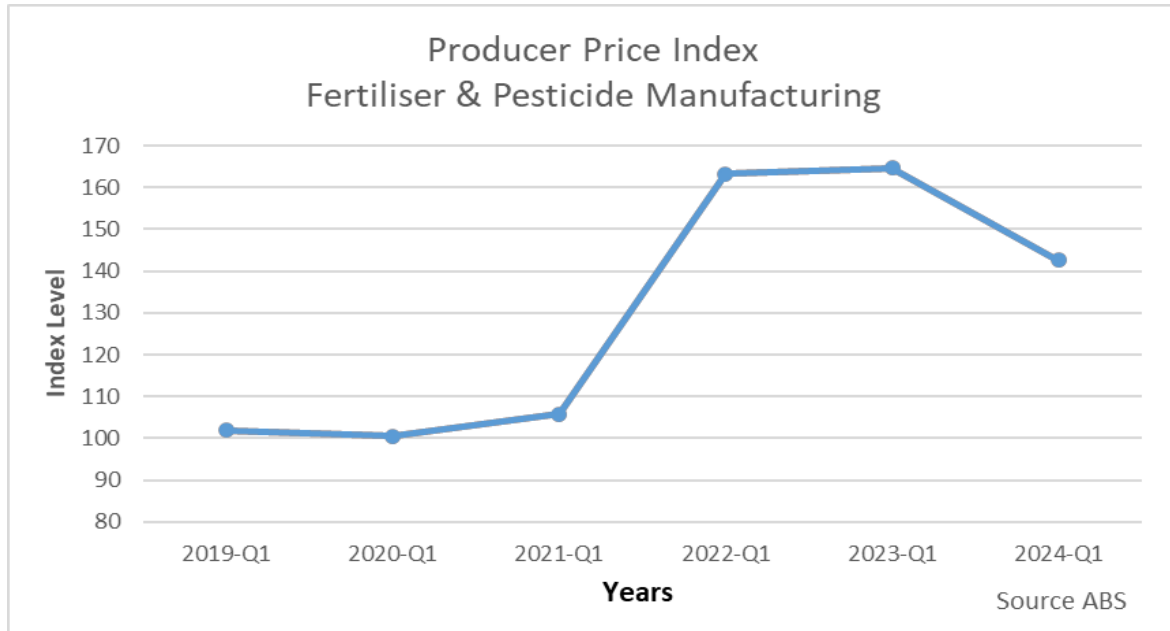


Figure 3. The PPI for fertiliser and pesticide manufacturing

### Rising interest rate

There has been a rapid rise in interest rates of 4.0% from mid 2022 to late 2023. This rise in rates is another rising cost factor placing additional pressure on farm profitability at this time.

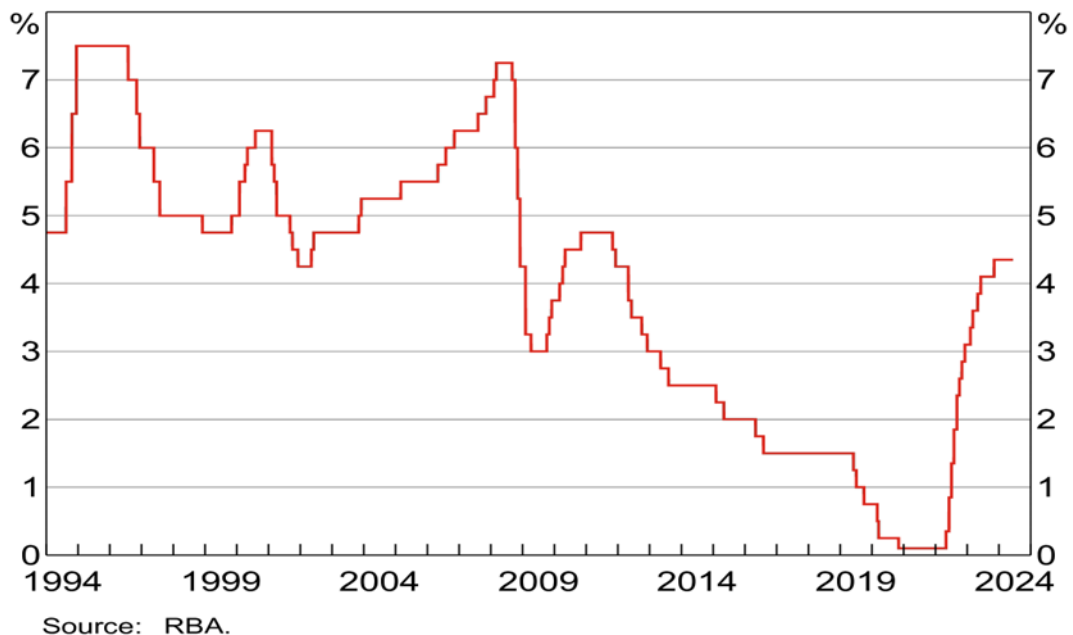


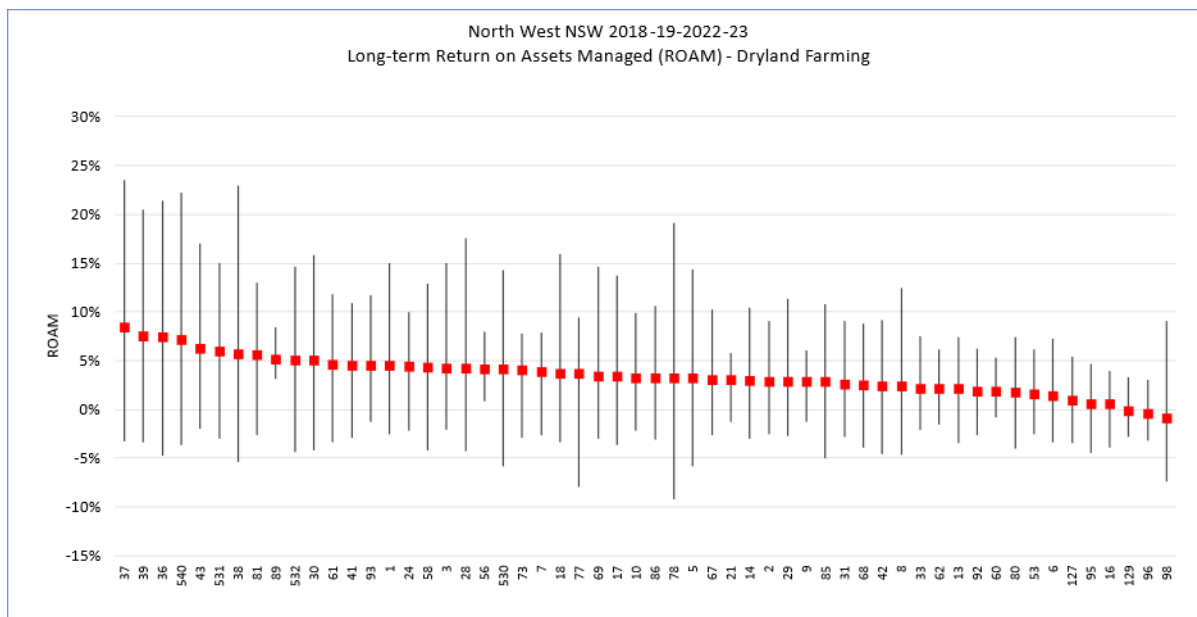
Figure 4. RBA Australian cash rate





## Some historical data

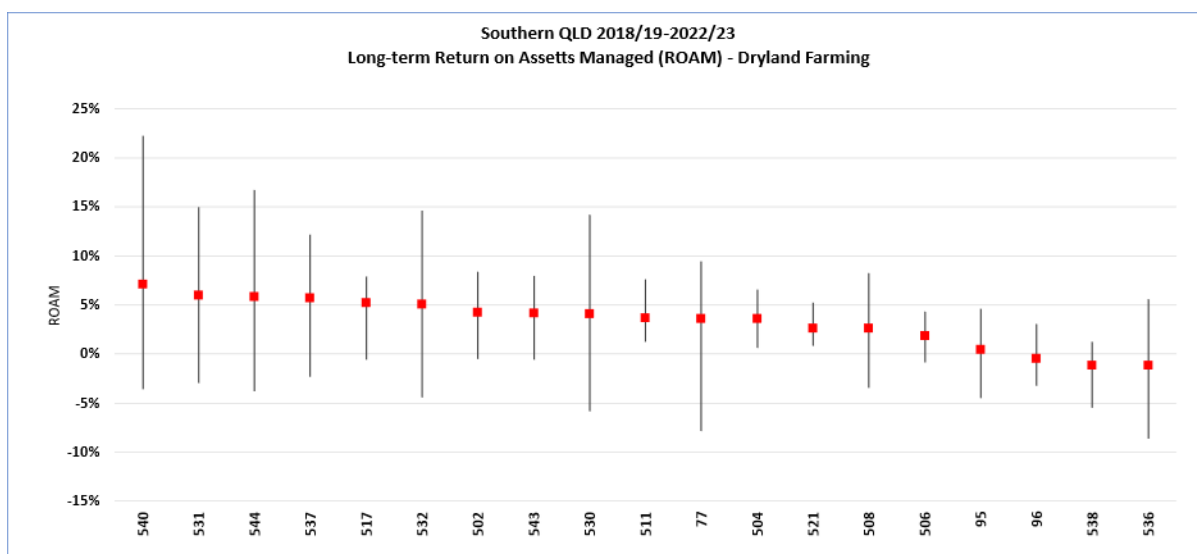
Each year Agripath collects benchmark data from 300 farms in eastern Australia. This data is then collated into regional groups, the charts below summarise 5 years of averaged data for two of those groups (southern QLD and northwest NSW).



**Figure 5.** LT ROAM results for dryland farms in NW NSW

Referring to both charts, these charts are useful because they show the average return for each farm (red dot) over the 5 year period, but they also show the large and varied variance in returns for each individual farm (black vertical lines). The numbers along the bottom represent individual farms.

The Return on Assets Managed (ROAM) is on the left axis, the 5 year average for NW NSW was 3.5% and the Top 20% of farms achieved a 6.2% ROAM. This difference in ROAM of 3.2% is significant especially when we consider that the average assets managed over this period was around \$60 M, which relates to an annual difference of \$1.7 M of operating profit.



**Figure 6.** LT ROAM results for dryland farms in Sth QLD



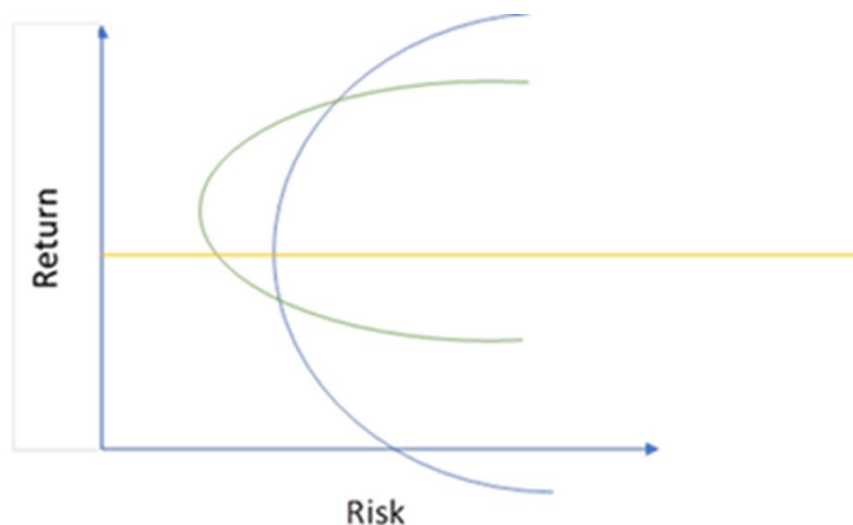
The average return and differences to the Top 20% were very similar to the previous chart.

The differences in performance over time are ultimately based on a number of external and internal factors but most importantly on key decisions that farmers made.

## Risk & return

From the previous charts we can see there is a large variation in average return and in the variance from high to low. A large portion of this effect could be related to seasonal condition but an equally large portion is related to decisions that are made by the farmer and their team. The sort of decisions that are in the farmers control are many and varied, as follows:

- Strategic level
  - Crop rotational sequence & frequency is critical.
  - Land ownership - how much land you own, do you lease any land, do you sharefarm?
  - Machinery ownership – how much plant to you own, how do you decide when and what to upgrade, do you use contractors, can you use contractors more? Does this affect your timing of crop operations and therefore yield potential?
  - Labour – do you have a number of permanent staff & rely on casual staff during the busy periods, can you get good quality staff, how much do you pay, etc.?
  - Managing climate risks – frost, drought, flood, waterlogging, late planting & hail.
- Operational level
  - Crop selection, variety, rate, plant date.
  - Fertiliser type, when to apply, what rate.
  - Crop spraying, fallow sprays, in-crop sprays, timing.
  - Harvest timing, own headers or contractors, is there grain storage on farm or grain depot or end user, own trucks or contractors.
  - Crop insurance, wether to insure or not.



**Figure 7.** Risk v Return model can be changed by strategic decision making.



## Profit drivers

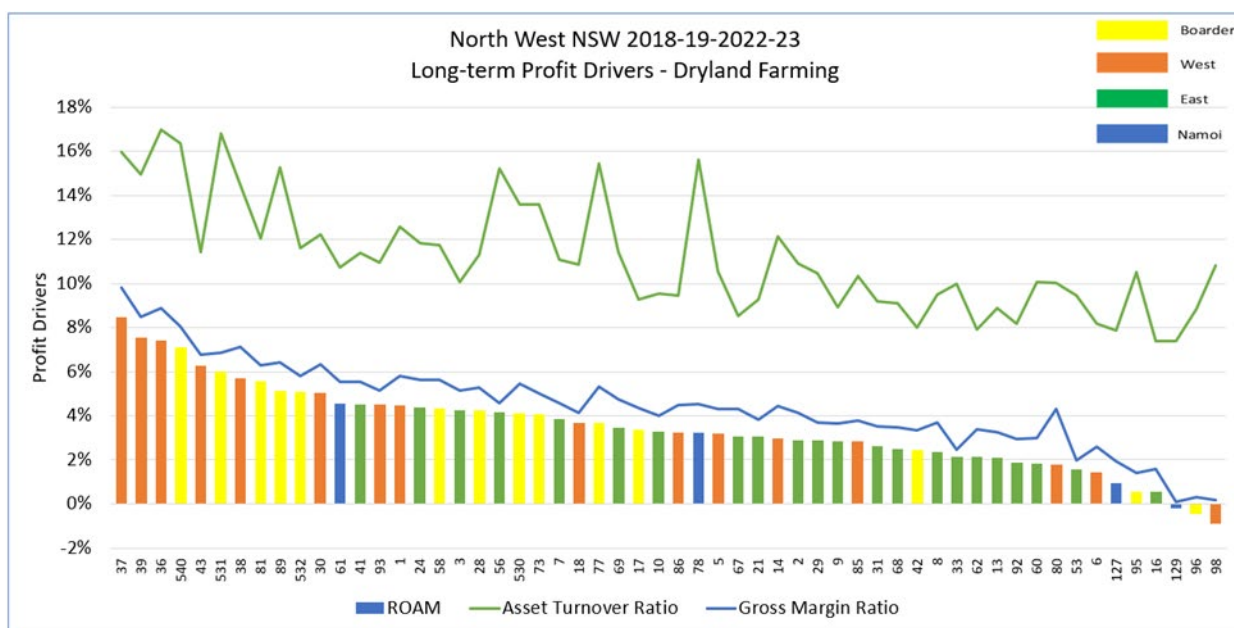
The key profit drivers based on the data are summarised in the chart and table below.

Details of the chart below

The green line shows the asset turnover ratio (ATR) for individual farms. The ATR is the amount of income generated divided by the value of the assets being managed.

The blue line shows the gross margin ratio (GM) for individual farms. GM reflects how much of the income generated has been retained after Direct Costs are deducted.

Individual farm performance (ROAM %) is shown by the columns. ROAM is calculated by taking the operating profit (gross margin less overhead costs) and dividing it by the value of the assets managed.



**Figure 8.** Long term profit drivers for dryland farms in the NW NSW region

Based on the above data and from other datasets such as southern QLD and the Liverpool Plains, we have developed a number of recommendations for each region.



**Table 1.** Profit driver targets for dryland farms in the Northern Grains Region

Profit drivers	Target %	Low Rainfall	Medium Rainfall	High Rainfall
Average Assets Managed (\$/ha)		\$9,000	\$12,000	\$15,000
Asset turnover ratio (\$/ha) <i>(income/asset value)</i>	<b>15%</b>	\$1,350	\$1,800	\$2,250
Direct cost ratio (\$/ha) <i>(costs/income)</i>	<b>50%</b>	\$675	\$900	\$1,125
Gross margin ratio (\$/ha) <i>(margin/income)</i>	<b>7.5%</b>	\$675	\$900	\$1,125
Overhead ratio (\$/ha) <i>(overhead costs/income)</i>	<b>&lt;10%</b>	\$135	\$180	\$225
Operating profit (\$/ha) <i>(income-costs)</i>		\$540	\$720	\$900
ROAM (%) <i>(operating profit/assets managed)</i>	<b>6%</b>	6%	6%	6%

We have also provided an example of some actual gross margin returns from NW NSW for short fallow wheat over the past 3 years (these are average results over +80 farms ranging from east of Moree to Mungindi in the west).

**Table 2.** Average wheat gross margins for farms in NW NSW for 3 years

Wheat gross margins NW NSW	2020	2021	2022	Change (%)
Yield (t/ha)	3.22	4.45	3.4	
Price (\$/t)	289	332	393	
<b>Total income (\$/ha)</b>	<b>931</b>	<b>1477</b>	<b>1336</b>	<b>44%</b>
Area costs (\$/ha)	175	244	419	139%
TPML costs (\$/ha)	187	221	303	62%
Yield costs (\$/ha)	76	121	111	46%
<b>Total costs (\$/ha)</b>	<b>438</b>	<b>586</b>	<b>833</b>	<b>90%</b>
<b>Gross margin (\$/ha)</b>	<b>493</b>	<b>891</b>	<b>503</b>	<b>2%</b>

Observations from the above table:

- The rise in crop income has been largely due to price increases.
- Direct costs have risen by 90% over the period.
- Gross margin has had a marginal improvement.
- There would be many individual farms within this dataset that have performed above these levels.



## Summary/conclusion

So what are the strategies for farmers to maintain profitability as we move forward? We have summarised some of the key points into four areas, but we provide more insight in the presentation.

### 1. Strategy

- Crop selection and rotation – crop selection and rotations are an important part of optimising farm profitability and managing problems such as diseases and weeds.
- Optimising soil moisture – farming systems and practices which optimise moisture storage and build healthy soils, include zero tillage, controlled traffic, camera spraying and components of precision agriculture.
- Risk management – the development of resilient farming systems, which may have components of diversification and crops grown on long fallow.
  - Frost risk can be spread by having a diversity of crops and varieties with different planting times and maturities.
  - Drought risk is reduced by cutting back on plantings when soil moisture is low and increasing the amount of long fallow.
  - Waterlogging can be reduced by paddock drainage and growing water tolerant crops in high risk areas.
  - When there is good subsoil moisture but no planting rain the use of moisture seeking planters can enable a crop to be planted at the optimum time.

### 2. Crop Agronomy

- An integrated program will use crop rotation and varietal selection to minimise the impacts of things such as nematodes and crown rot in wheat as well as the need for expensive selective in-crop sprays.
- Pre planting preparation – timely control of weeds in the fallow and the selective use of residual on problem weeds if it fits in with your crop rotation plan.
- Planting decisions – many decisions around variety, time of planting and getting the fertiliser balance correct, which becomes more important as yield levels increase and the age of cultivation increases.
- Analysing yield variability – paddock variability can be a profit dragger and precision agriculture is increasingly providing information that farmers can analyse to implement any modifications required.

### 3. Operations

- Timeliness – of operations is a key ‘mantra’ for successful farmers, especially in the areas of weed control, planting and harvest. Strategically the decision is how many activities can I do with my resources of machinery & labour and can I get contractors to cover the balance (and what is the optimum mix).
- Precision operations – with planters, spray rigs & harvesters there are many options, the key is to get the best equipment for the job within your budget that can get the job done when required.
- People management – people are key to successful operations, so having good training and communication is essential. To attract good staff you will need to have good living standards, flexible work hours, attractive salary and maybe a bonus.



#### 4. Cost management, finance, budgeting & marketing

- Machinery & labour – machinery prices have risen sharply in recent years, but new technology and minimal breakdowns are important for good results in a timely manner. Don't be afraid to utilise contractors for certain operations because it may save you having to purchase & service an item plus you don't need to employ a person to operate it.
- Analysing and fine tuning the business – it is important to keep check on crop margins and to examine the impact of water, yields, prices and cost of inputs. Fine tuning based on objective analysis of profit margins, is needed to make the business a little better than last year and profitable into the future.
- Finance management – with rising interest rates it is imperative to have a good knowledge of the rate and terms on your farm loans and equipment finance. Try and have enough room to be able to purchase inputs as required so as to not miss on opportunities & produce low margin crops.
- Budgeting – allocate some time so that you can produce an accurate budget based on the assumptions used, this will be critical for your bank but important for your planning. If you need help in this area, get it, as it will be important to demonstrate to your bank that you understand what is going on within *your* business.
- Marketing – this is an important component and increasingly so as there have been some large seasonal variations in price. The key is to have a basic plan, monitor the markets regularly and have someone that you trust that you can consult with regularly. Don't be too greedy if there is a price that is at or above your target level then take some action.

#### Why working on this could be great for your farming business

- An overview of historical data from your business to provide some context (seasonal conditions versus income and expenditure)
- Some targets (ie. cost, price & gross margin) that you should be aiming for.
- Some tools to Assist you to get a better understanding of how well your business is performing.

#### Self-evaluation

	High – doing this well	Medium – room to improve	Low – need to implement actions to improve
Do you know what all of your business costs are?			
Do you know what the gross margins are for each of the crops that you grow?			
Can you calculate your operating profit and is this acceptable?			
What level is your income ratio?			
Are your direct costs at about 50-55% of your income?			



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

- Identify what decisions you can control to manage the profitability of your business?
- Analyse your own business to see how it is performing. Ideally you need at least 3 years of historical returns to allow for seasonal variations of drought, flood, etc. You could do this yourself but ideally you could use a company such as Agripath because they can provide comparison data of other similar farms in your region.
- Identify your current and historical overhead & direct costs?
- Seek help if needed because you may be a good farmer but you may not have the time to pull of the data together to make sense and to be able to compare apples with apples.

### **Want to learn more, here are some suggestions**

- You can contact a company like Agripath that specialises in benchmarking farmers data
- GRDC publication (2019) – Farming the Business (Krause).

### **References/acknowledgements**

- Australian Bureau of Agricultural & Resource Economics & Sciences (ABARES)
- Australian Bureau of Statistics (ABS)
- [www.agripath.com.au](http://www.agripath.com.au)



#### **More about Simon and Kim...**

Simon Fritsch is founder of Agripath, Simon has over 20 years experience in agriculture with his client base encompassing irrigation, dry land farming and grazing operations.

He has Southern, Central, and Northern NSW farming systems experience. Simon's particular strengths have been in financial analysis and planning to deliver profitable outcomes for client businesses. Simon has worked as an irrigation agronomist for Twynam Cotton at Warren, a dry land consultant agronomist for Hassall & Associates and team leader Farm Business Consulting for Hassall & Associates.



Simon has worked in many parts of Australia, giving him a broad understanding of all facets of farming in diverse environments and an excellent network of skilled land managers/farm advisors.

Kim Bowman Kim is originally from a farming family in WA but has been working and consulting with farm families and businesses in southern QLD & northern NSW for over 20 years. Kim joined Agripath in 2016 where the main focus has been around benchmarking farm production and financial performance. Kim's main drive is to assist individual businesses to achieve their goals and to improve their overall profitability and sustainability.



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## Notes





# Cyber awareness for small to medium business

Liam Boundy, Kerry Shearman, Tracey Carr, nbn Co

## Key messages

- Importance of password strength
- How simple steps can help protect your business
- Where to go for information and help if you are affected by a cyber-attack.
- Resources you can use to help get more information

## Introduction

- Our aim is to inform the audience of current scams and security risks along with the small steps they can take now to help protect them in the future
- Utilising a strong password will protect your business and customer data and your personal or business information
- Ensuring you are taking a few minutes to verify information before responding can save you thousands of dollars and hours wasted responding to a breach
- There are many places you can go for help or more information to reduce your chances of being impacted by a cyber-attack
- Other organisations and companies that you can access for help or information.

*Protecting your personal and online data from a cyber-attack to reduce the risk of a breach and possible loss of income, savings, and identity. Supporting slides will be shown during the presentation.*

## Summary/conclusion

Taking small steps to safeguard your identity only takes a few minutes and can help reduce the risk of you becoming a victim of online attacks. Forming good habits online and teaching those around you to do the same will make it harder for cyber-crime to occur against you.

## Why working on this could be great for your farming business

- Helps reduced the risk of your income and savings being compromised
- Helps reduced the risk of your identity being stolen
- Helps reduces the risk of cybercrime against you.



## Self-evaluation

	High – doing this well	Medium – room to improve	Low – need to implement actions to improve
Do you use electronic equipment to run your farming business?			
Do you pay invoices without a second thought?			
Do you use online banking?			

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

- Change or check passwords or passphrases and change if not meeting the minimum requirements
- Take just 2 minutes to check that your devices and apps have been fully updated
- Take a few extra minutes to verify details on emails, texts and invoices before clicking on links or paying balances.

### Want to learn more, here are some suggestions

- [scamwatch.gov.au](http://scamwatch.gov.au)
- [cyber.gov.au](http://cyber.gov.au)
- [ldcare.org](http://ldcare.org)

### Acknowledgements

- Paul De Araujo- Developer-nbn Security Considerations
- Nbn Local Community Engagement Specialists



### More about Liam, Kerryn and Tracey...



Liam Boundy is the Community Engagement Specialist for nbn in Southern Queensland. In this role, he engages with communities extending from the west of Ipswich to the borders of South Australia and the Northern Territory. Liam's primary focus is on enhancing digital capabilities, online safety awareness, and assisting communities with better connectivity. His efforts are aimed towards ensuring that communities can use the internet to connect with friends and family, access essential services, and participate in education and entertainment. Liam is particularly passionate about scam awareness. This spark was ignited in 2013 when his grandfather lost \$90,000 to an investment scam. This experience has driven Liam to educate others about the dangers of scams and how to protect themselves.



Kerryn Shearman was appointed Community Engagement Specialist with nbn Local in May 2024. She has held roles with Mideroo Foundation as the Senior Accounts Manager-GenerationOne for NSW and across the VTEC platform for various organisations. Kerryn has been active in Community Engagement at a federal, state and local level and has over 15 years' experience in leadership roles across stakeholder management, marketing and community engagement, focused on regional and rural NSW. She has completed micro courses with Yale University and has multiple qualifications in stakeholder engagement and AIP2 certification. Outside of work Kerryn enjoys travelling, loves reading and especially enjoys camping.



Tracey Carr was appointed Community Engagement Specialist with nbn Local in May 2024. She has previously held various roles in Local Government and has over 10 years' experience in leadership roles across sustainability and governance focussed on water management, drought response and compliance. She has studied Business at the University of New England and has completed the Australian Institute of Company Directors course. Outside of work Tracey enjoys travel, particularly within Australia, true crime podcasts and enthusiastically attempting numerous creative endeavours such as painting, sculpture and drawing, with varied results.

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# Thinking differently about attracting and retaining staff

Rebecca Fing, House Paddock Training and Consulting

## Key messages

- To get different results – we need to think differently – think creatively!
- Acknowledge the value of staff and that times have changed... and mould your business accordingly!
- Providing a professional, compliant, safe workplace is a given when recruiting; not a sales pitch – get this stuff right from the start
- Think beyond the money - because your next hire will be! What is your edge? What can you offer that's different, not just more.
- Once we have recruited, the hard work starts. Loyalty is not a guarantee – manage your team and business to ensure they are satisfied enough to stay.

## Introduction

These days good people are hard to find! One of the most competitive elements in broadacre farming is attracting the right people – to attract the cream of the crop, we need to be on our game. In addition - times have changed. Employees don't walk over hot coals for a job anymore... employers need to meet the candidate in the middle...or risk not attracting the right people.

It is essential that employers take a proactive approach to planning their workforce and recruiting well. This includes ensuring the right people are in the right jobs and positions are well defined and appropriate. Once a team is assembled, no laurels can be rested upon! Meeting operational and legal compliance requirements is the given – running a professional, engaging operation is a must.

Business owners and managers who have clarity of direction, set and communicate realistic expectations and actively manage their team are those who are most likely to not only attract the cream of the crop, but also keep them!



One of the biggest battles broadacre producers have is attracting and retaining staff. And the reality - the success of a farming business that has grown beyond a “family operation”, is intricately tied to the dedication and hard work of its staff. In an industry marked by technological advancements and shifting market trends, the importance of attracting and retaining skilled workers cannot be overstated. It is vital to adapt to the changing times, position your farm as an employer of choice, and ensure compliance with the latest regulations to build a strong and sustainable workforce.

Times have changed in the world of staff attraction and retention. Today, the complexity of modern farming practices, the need for specialized skills, and the competitive nature of the industry demand a more diverse and skilled workforce. According to recent statistics, the demand for skilled agricultural workers in Australia is on the rise, with an increasing number of farms facing challenges in finding and retaining qualified staff.

In addition, expectations of employees have changed. A fair day’s work, for a fair day’s pay, in safe conditions is not a selling point – it is a given. Those who recruit (and retain!) the cream of the crop are going multiple steps further and are thinking creatively. They are considering what it is that is important to the incumbent team member and they deliver. Sounds hard and expensive. Quite the opposite – valued, satisfied, fulfilled staff have proven more profitable and productive – with less stress and burden on business owners and managers.

To thrive in this evolving landscape, farmers must strive to become employers of choice. And while the language of being an ‘employer of choice’ may seem kitschy, the alternative is being an ‘employer of last resort’. Being an employer of choice entails creating a work environment that not only attracts top talent but also keeps them engaged and motivated for the long term. Offering competitive wages, providing opportunities for training and career development, and fostering a positive workplace culture are key elements in becoming an employer of choice. But offered in an archaic form, is not enough. Producers who are attracting and retaining the cream of the crop are not working harder, they are working differently. Doing something out of the box.

In a competitive labour market, where skilled workers have their pick of employers, offering more than just a pay cheque is paramount. Producers can differentiate themselves by going above and beyond to create a supportive and inclusive work environment. This can include providing benefits such as flexible working arrangements, promoting work-life balance, and recognizing and rewarding employee contributions. By demonstrating genuine care for their staff and fostering a sense of belonging, farmers can inspire loyalty and commitment among their workforce.

Remuneration can also take different forms - traditional remuneration models often focus on fixed wages or hourly rates. Farmers are exploring innovative and creative remuneration models that go beyond the conventional pay structures – profit share, complex bonus structures, business partnership opportunities and non-monetary benefits. And where time or career development is more important than money to an individual – a focus on flexibility and training will be the carrot that wins the prize.

It is critical that producers consider a range of sources of labour if the local pool of “full time employees” is limited. When recruiting, cast your net wider and be open to non-traditional alternatives. Job share, short term labour, itinerant staff, gap year students and alternate work hours where the business model allows. While full time employees are usually a preferred



solution, highly engaged employees on a slightly different arrangement can be just, if not more, valuable and a very viable alternative.

While a basic requirement and not a selling point, it is crucial for farmers to stay legally compliant with the relevant employment laws and regulations. Ensuring compliance not only protects the rights of workers but also shields the farm from potential legal risks and liabilities. From fair wages and working hours to work health and safety standards, adherence to legal requirements is non-negotiable. By proactively addressing compliance issues and staying informed about changes in legislation, farmers can build a reputation as responsible employers and attract high-quality employees who value ethical practices.

Once an employee has taken a job, the hard work is done right? Unfortunately, not – this is where the hard work starts. Just because they are coming, doesn't mean they will stay! Having proactive strategies to retain staff is essential for ensuring continuity, productivity, and a positive work environment. Statistics show that employee turnover in the agricultural sector can be costly and disruptive to operations. High turnover not only impacts productivity and morale but also incurs recruitment and training expenses. By focusing on employee retention strategies, farmers can mitigate turnover rates and build a stable and cohesive team. Implementing measures such as ongoing training, coaching and mentoring, regular performance reviews, open communication channels, and opportunities for advancement can help create a sense of loyalty and job satisfaction among staff.

## **Summary/conclusion**

The success of many farming businesses hinges on its ability to attract and retain skilled staff in a changing and competitive environment. By adapting to the demands of modern agriculture, positioning themselves as employers of choice, and ensuring legal compliance, farmers can build a strong and sustainable workforce that drives productivity and innovation. Through fostering a positive workplace culture, offering opportunities for growth and development, and prioritizing employee retention, farmers can cultivate success and secure the future of their operations in the vibrant landscape of grain farming.

If your workforce is your greatest asset - invest in them, support them, and watch your farm flourish.

## **Why working on this could be great for your farming business**

- Increased productivity due to consistent, engaged staff
- Increased compliance and reduced business risk
- Increased staff satisfaction and owner/manager stress!



## Self-evaluation

	High – doing this well	Medium – room to improve	Low – need to implement actions to improve
You have proactive and creative systems in place to attract staff?			
Your business actively works to meet legislative requirements in terms of staff management?			
Staff retention doesn't happen by accident – it is through actively managing your team according to the things that are important to both your business and the team member?			
Legislation compliance and money are the given when attracting staff. Alternate staff attraction mechanism are also used e.g. growth, flexibility, opportunity			

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

- Shift your thinking on recruiting, attracting and retaining staff... as typically employees aren't lucky to have a job... we are lucky to have them!
- Consider recruitment a marketing exercise and list your selling points – if they aren't obvious – work on them!
- Ensure roles and responsibilities of individuals in your business are clearly defined
- Review staff compliance is order and legislative requirements are met

### Want to learn more, here are some suggestions

- READ: The War on Talent – Mandy Johnson
- READ: Leading on the Edge – Rachel Roberston
- [www.peopleinag.com.au](http://www.peopleinag.com.au)
- [www.fairworkombudsman.gov.au](http://www.fairworkombudsman.gov.au)



#### More about Rebecca...

Rebecca Fing of House Paddock Training and Consulting has been helping farming businesses think strategically and provide a safer, more productive work environment for 20 years. Based in Goondiwindi, Rebecca provides Business Strategy, WHS and HR consulting services to farmers and small business. Having been on over 600 farms across six states, Rebecca has seen it done well (and not so well!) and loves sharing what she has seen and learnt along the way. Bec runs programs to help farmers and small businesses improve business strategy, WHS and HR through workshops, industry programs and online courses and is focused on practical, real solutions to everyday problems.



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## **Notes**



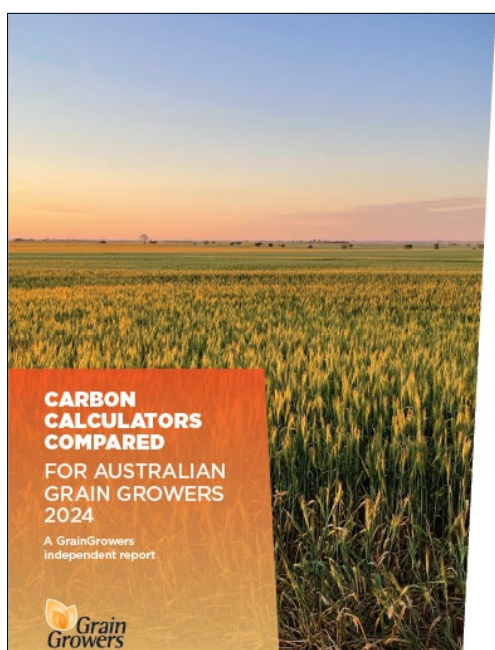


# Carbon calculators for Australian growers: opportunities, risks and next steps

Sarah Hyland, GrainGrowers

## Key messages

- Increases in greenhouse gases due to human activity have been the dominant cause of observed global warming and changes in all components of the climate system since the mid-20th century.
- Globally, reporting on GHG emissions by business continues to rise in prominence. This is driven by the organisations' own GHG emission reducing goals, regulatory bodies, shareholders, export markets, customers, investors and lenders.
- To support Australia's transition to a net zero future, the Australian Government has signalled its intent to mandate climate-related disclosure. This will have implications for farming businesses in the medium term.
- An accessible and reliable carbon calculator is an important tool to help growers measure, realise, report and reduce GHGs emissions in their operation.
- Australian agriculture is particularly vulnerable to climate change and adopting emissions reduction activities go hand in hand with more resilient, economically viable and sustainable land use practices on a landscape level.
- Carbon Calculators Compared compares two freely available carbon calculators for growers. It demystifies the process and assists growers to make an informed decision on next steps.



## Introduction

Increases in greenhouse gases (GHG) due to human activity have been the dominant cause of observed global warming since the mid-20th century. The rising temperatures create more extreme and unpredictable weather, and this is the phenomenon known as climate change.

Globally, the burning of fossil fuels is the most significant source GHG. On-farm, GHGs are produced from enteric emissions from ruminants, tilling the soil, liming, inefficient use of nitrate and ammonium-based fertilisers, residue decomposition, burning crop residue, and burning fuel.

All industries and enterprises across the world face growing demands for transparent greenhouse gas (GHG) emissions reporting from regulatory bodies, shareholders, export markets, customers, investors and lenders. Almost certainly, there will be expectations for growers to show how they are reducing their on-farm emissions in the future. In addition, GHG emission reducing activities almost always deliver co-benefits improved soil health and productivity, improved water holding capacity and management of erosion and salinity as well as positive biodiversity.

Growers can review available guidance materials such as *GrainGrowers' Carbon Calculators Compared* and *Carbon and Cropping*, gain hands on experience with carbon calculators online, engage their agronomist for more information and assistance and connect with peers already actively measuring emissions

***Note: All information shared is for educational purposes and advice is general in nature. Individuals should seek advice specific to their enterprise. Any products or companies mentioned are for informational and educational purposes and are not intended to be endorsements or recommendations.***

## 1. The carbon cycle, greenhouse gas emissions and climate change

### The carbon cycle

- In agriculture, it's important to understand the natural carbon cycle because growers depend in it
- The natural carbon cycle centres around the ability of crops to absorb carbon to make their own carbon-based food
- To cultivate enough safe and nutritious grain to feed our domestic and global population, human intervention is required – relying on photosynthesis is not enough
- We use lime and gypsum to improve nutrient absorption from the soil
- We use synthetic nitrogen-based fertilisers to stimulate crop growth
- We use pesticides, fungicides and herbicides to protect crops from pests, disease and weeds
- We (have) tilled the soil, we burn fuel, we burn crop residue or let it decompose in the paddock.

### GHG emissions

- While these agricultural chemicals and practices have helped double the rate of food production, a byproduct of their application is the liberation of greenhouse gases



- A greenhouse gas (or GHG for short) is any gas in the atmosphere which traps heat, and thereby keeps the planet's atmosphere warmer than it otherwise would be
- The main GHGs in the Earth's atmosphere are carbon dioxide, methane and nitrous oxide
- Globally, the burning of fossil fuels is the most significant source of carbon dioxide, and the most abundant GHG
- On-farm, carbon dioxide is produced from tilling the soil, liming, residue decomposition, burning crop residue, and burning fuel
- Methane is chiefly generated via enteric emissions from livestock, and in cropping is liberated from residue decomposition and burning crop residue
- The main source of nitrous oxide is from the inefficient use of nitrate and ammonium-based fertilisers, and from residue composition
- GHGs are a problem because they are increasing and remain there for a long time. This is causing an increase in global air, water and soil temperatures inducing changes to the climate.

### **Climate change**

- The international scientific community accepts that increases in greenhouse gases due to human activity have been the dominant cause of observed global warming since the mid-20th century
- Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system
- The rising temperatures create more extreme and unpredictable weather, and this is the phenomenon known as climate change
- Climate change impacts everything. It continues to put pressure on the environment, on people and other living things, on economies and on governments
- The CSIRO climate projections for Australia : Climate projections for Australia – CSIRO (<https://www.csiro.au/en/research/environmental-impacts/climate-change/climate-change-information>)
  - Hot days will become more frequent and hotter (very high confidence)
  - For southern mainland Australia, winter and spring rainfall will decrease (high confidence)
  - Time in drought will increase over southern Australia (high confidence)
  - Soil moisture will decrease from mid-century in the southern regions (high confidence)
  - Southern and eastern Australia will experience harsher fire weather (high confidence).

## **2. What does this mean for growers and why should you care?**

- As the planet's environment changes, so do its effects on the business world
- Environmental changes impact business practices. From natural resources to supply chains, to logistics, to energy sources, to customer behaviours and demographics
- The agricultural sector's vulnerability is a globally concerning scenario, as sufficient production and food supplies are threatened due to irreversible weather fluctuations



- Global and domestic business is responding to these challenges by adapting and transforming their practice, but adaptation and transformation are not enough
- Most industries, enterprises and countries have set GHG emission reduction targets
- All industries and enterprises across the world face growing demands for transparent greenhouse gas (GHG) emissions reporting from regulatory bodies, shareholders, export markets, customers, investors and lenders, for example, the likely mandatory GHG reporting in 2025; Clean Energy Regulator
- The changing business environment indicates that growers will likely be required to report their greenhouse gas emissions on farm in the medium future. Some growers are moving on this sooner than later to capture first mover advantage
- Almost certainly, there will be expectations for growers to show how they are reducing their on-farm emissions in the future.

### 3. Calculating your greenhouse gas emissions

- Carbon calculators were developed in the early 2000s by non-government organisations to encourage consumers to measure and reduce their emissions
- With advancements in climate science, calculators have broadened in their application to meet the needs of all sectors including agriculture, manufacturing, and government
- Three reasons why growers may choose to use a carbon calculator for their business
- Using a carbon calculator is an important tool to help growers measure their GHGs – to realise, to report, to reduce

#### **To realise GHG emissions**

- ✓ Growers can measure their farm GHG emissions and pinpoint the sources of emissions.
- ✓ By modelling ‘what if?’ scenarios on the calculator, growers can explore options around inputs, practices, and processes and use this data to optimise their farm business.
- ✓ Opportunities such as increasing nitrogen use efficiency and switching to renewable energy can deliver productivity and cost improvements that also lower GHG emissions.

#### **To report GHG emissions**

- ✓ A carbon calculator could help growers to report their farm carbon footprint to customers and other stakeholders in the commercial landscape including banks.
- ✓ Disclosing greenhouse gas emissions could help growers to further enhance their reputation, to differentiate themselves and gain advantages in the marketplace.

#### **To reduce emissions.**

- ✓ Measure the impact of practice change against you baseline GHG emissions value.

### Why reduce emissions?

- Grain value chain partners such as bulk handlers, customers, banks and investors etc. have set GHG emission reduction goals and will seek your input.
- Grains are an important export commodity, and our international customers require information on Australia’s GHG reduction commitments.
- We want Australian grains to be more competitive in an international context. Demonstrating improvements in performance over time is a good negotiating tool in trade deals, more attractive terms of trade, increasing quotas, opening new markets and more.



- GHG emission reducing activities almost always deliver co-benefits improved soil health and productivity, improved water holding capacity and management of erosion and salinity as well as positive biodiversity.

#### 4. The calculators

- Recognising that accessible and reliable calculation methods are needed for growers, GrainGrowers has just released Carbon Calculators Compared 2.0.
- By comparing carbon calculator outputs, GrainGrowers aims to assist growers in understanding the metrics involved in calculating the GHGs generated in the production of grain; and to help growers select the most appropriate carbon calculator for their operation.
- The report compares two free and accessible carbon calculators for Australian grain growers:
  - The Grains Greenhouse Gas Accounting Framework (G-GAF) V10.9; and
  - The Cool Farm Tool (CFT) V2.10.0
- The report evaluates the commonalities and key differences between the G-GAF and CFT calculators, informed by real farming data.
- Winter 2022 crop data from two grain farms, Blue Hills in New South Wales (NSW) and Sanderson Farms in Western Australia (WA), was entered into both calculators. Emissions outputs were compared across Scopes 1, 2 and 3 and disaggregated by crop type.
- The key difference between the calculators is way they each treat the chemical inputs, specifically anhydrous ammonia glyphosate, paraquat, and diquat.

#### Conclusion

- Quantifying on-farm GHG emissions is a significant undertaking, but an important one for advancing sustainable practices. The report provides a useful starting point, but hands-on experience and learning from industry peers can help accelerate understanding and application of carbon accounting on individual farms. Three actions that you can take now include:
  - Review available guidance materials: Consider reviewing resources from GrainGrowers such as the Carbon and Cropping Guide and the Carbon Calculators Compared report. These provide useful overviews of carbon accounting and comparisons of calculation methodologies
  - Get hands on experience with carbon calculators: Try using one of the calculators assessed in the report to gain first-hand experience with the processes involved. This will help inform which approach may be most suitable for you
  - Learn from peers already actively measuring emissions: Connecting with other growers further along in carbon accounting and measurement activities could offer helpful advice and guidance. The experiences shared by growers in the report who have undertaken on-farm GHG quantification, serve to highlight first steps and important considerations for those just starting out.
- Growers will already have most of the figures required to measure the carbon footprint of a crop, particularly if they use software packages such as Agworld



- The recently launched Agriculture Innovation Australia Environmental Accounting Platform is funded by the GRDC and others. It is user friendly and interfaces with Agworld and all farm data software packages
- You don't have to do it yourself; you could ask your trusted advisor or your agronomist to assist
- It is important to know that even with full optimisation of on-farm practice, grain growing will remain a net greenhouse gas emitter and cannot achieve carbon neutrality without sacrificing production.

### Why working on this could be great for your farming business

- Contribute to Australian grains' competitiveness on a global stage
- Improve productivity in your grain growing operation
- Enjoy co-benefits such as improved soil health and productivity, improved water holding capacity and management of erosion and salinity as well as positive biodiversity.

### Self-evaluation

	High – doing this well	Medium – room to improve	Low – need to implement actions to improve
Would you say that all aspects of your grain growing operation are fully optimised?			
Do you know the GHG emissions for your grain growing operation?			
Do you know the main sources of GHG emission for your grain growing operation?			

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

- Review available guidance materials
- Get hands on experience with carbon calculators
- Ask peers and trusted advisors about GHG emission calculation

### Want to learn more, here are some suggestions

- GrainGrowers Carbon and Cropping Guide
- GrainGrowers Carbon Calculators Compared
- The AIA Environmental Accounting Platform calculator link <https://www.aiaeap.com/>





### More about Sarah...

Sarah has over 30 years' experience in Australian food and agriculture. She has worked across research, new product development, manufacturing, sensory science, consumer research, and sustainability. At GrainGrowers, Sarah oversees GrainGrowers' sustainability programme which includes running the Grain Sustainability Framework.

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### Notes

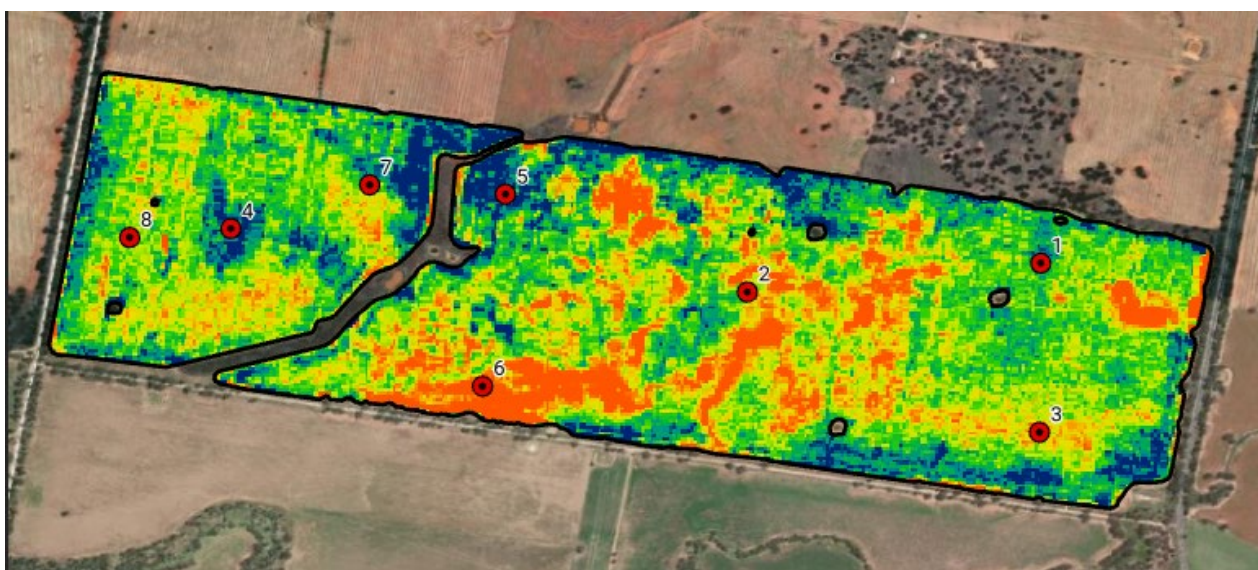


## Precision fertiliser decisions in a tight economic climate

Tim Neale, DataFarming

### Key messages

- There are large variations in key nutrients across our paddocks
- Many growers now have tools to manage that variation
- The missing piece is converting the data into action.



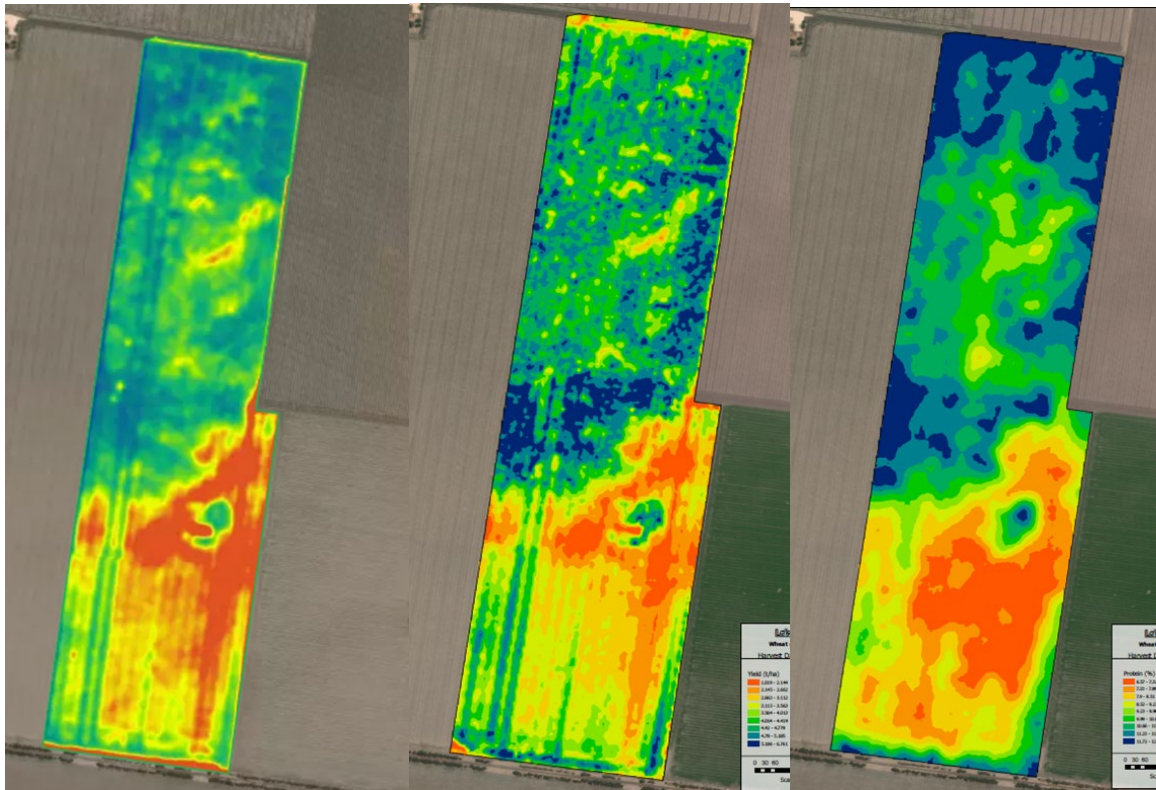
### Introduction

We all know that our paddocks are variable. But did you know that 300% yield variation, and 6% protein variation, is very common. This leads to inefficiencies in our fertiliser use, putting pressure on profitability of our farming systems. Growers with more modern machinery may also have many of the tools needed to manage this variability but may not know how to get from data into action.





The paddock below (Warra, Qld) shows how variable paddocks in our region can be. Satellite imagery NDVI during the season is on the left. Yield (in the middle) is varying from around 2t/ha to 6t/ha. Protein is on the right and is varying from 6.5% to 12.5%, meaning that around two thirds (2/3rds) of the field was Nitrogen limited yield.



When it comes to managing Nitrogen, the most valuable layer we have is protein. Proteins monitors require a capital outlay of around \$30,000. When you consider the cost of your Nitrogen fertiliser each year, it makes sense to better manage this input. CropScanAg produce and Australian made monitor as well as OEM integrations into the new CNH machines. John Deere offer the HarvestLab™ 3000. Targeted soil testing based on zones from the protein monitor help understand the underlying soil Nitrogen. Combined with a formula (or app if you are using the N-Guage app supplied by CropScan), you can instantly create variable rate prescriptions from this data. Several years of data clearly show how protein and yield variation can be reduced dramatically.

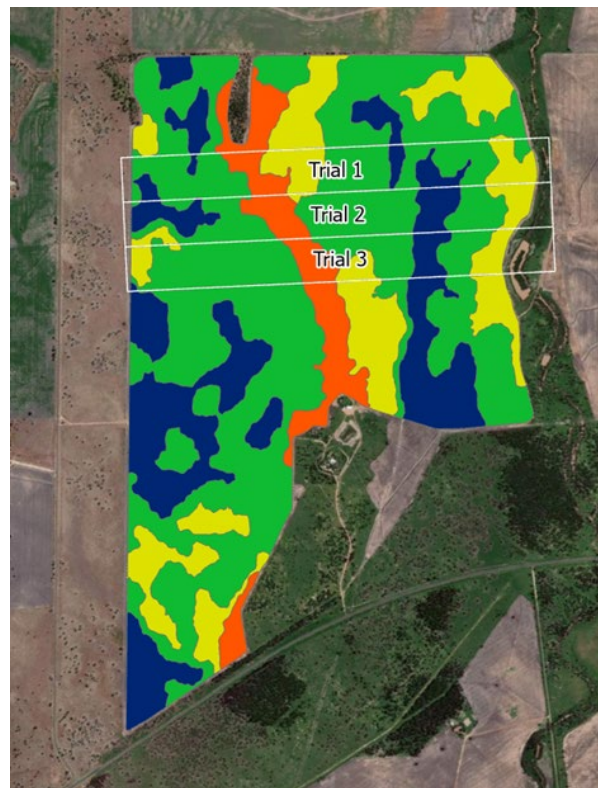
When it comes to managing Phosphorus, there are three main strategies available:

- EM (Electromagnetic) mapping for soil types and targeted soil testing
- Replacing P from the yield map (kg P/tonne of grain/ha)
- Grid based soil sampling

Below shows a zone map at Goondiwindi created from an EM (Electromagnetic) map. Targeted soil testing was conducted on this field. Colwell P tests showed that the orange zone (low) had 55, yellow zone 43, green zone 18, and blue (high) zone had 19. If only bulked soil tests were taken across the paddocks results may have indicated a Colwell P of around 35 – which would be considered adequate. But the zonal testing clearly showed that the poorer soils were



accumulating P from lack of extraction. A variable rate P map was created from this data and yield following this exceeded growers expectations. A full video on YouTube can be seen here [https://youtu.be/xp8WwGcxvwA?si=V\\_jVZV5Ff6pbDojs](https://youtu.be/xp8WwGcxvwA?si=V_jVZV5Ff6pbDojs).



### Summary/conclusion

- Use zones to define soil testing locations
- Protein mapping is the best layer for variable rate Nitrogen
- EM or grid soil sampling are the best layers for determining Phosphate
- Get tech support to enable easy data transfer into the cab

### Why working on this could be great for your farming business

- Input costs are climbing, putting pressure on profitability
- High performing areas of paddocks are less likely to be constrained by fertility
- Making paddocks more even makes them easier to manage
- Efficient fertiliser use ensures you are getting the best 'bang for buck'



## Self-evaluation

	High – doing this well	Medium – room to improve	Low – need to implement actions to improve
Soil testing based on zones, not across the whole field			
I have a protein monitor on my header			
Variable rate technology enabled on my machines			
My agronomist is on board with my approach to managing crop variability			
We have the tools to convert data into action			
We have the machinery tech support we need to make it happen			

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

- Start with soil sampling based on zones, not whole fields
- Ask your agronomist for help if you are not comfortable
- Use satellite imagery and yield maps to understand the variation
- Look at purchasing a protein monitor
- Check the compatibility of your machines for variable rate
- Get some help with technology in the tractor/sprayer

### Want to learn more, here are some suggestions.

- [Maps.datafarming.com](https://maps.datafarming.com) – sign up for a free account to start looking at your farm from satellite
- <https://cropscanag.com/>

### Acknowledgements

- Broden Holland, farmer from NSW
- Russell Taylor, farmer from QLD





### More about Tim...

Tim, who was named Australian agricultural consultant of the year 2018 and Australia's best Agritech 2023, has over 25 years' experience across Australia and internationally, 20 of which has been spent running his own business. Tim's strong ag tech focus has been driven by an evolution from CTF, auto-steer guidance technology, elevation mapping and water planning, yield mapping, variable rate, soil mapping, and satellite imagery.

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### Notes



# Machinery replacement economics – ‘What are the trigger points and what is the sweet spot?’

Kim Bowman & Simon Fritsch, Agripath

## Key messages

- Do you know what your machinery and plant is costing you?
- Timeliness of operations should be the No1 priority
- The use of contractors for some operations should always be considered
- How to decide if I should update to the latest technology and innovation?
- What will machinery replacement cost?

## Introduction

The primary reason for owning machinery & plant on a dryland cropping farm is to plant, maintain and harvest crops. The questions for the farmer are:

- How much machinery and plant do you need to own?
- How much can you afford?
- Do you have enough staff to operate the machinery?
- How effective is the machinery, plant and staff you do own on profitability?
- Are you getting your jobs done on time?
- What is technology and precision status of our kit? Is there a reason to upgrade?
- Are contractors an option for some jobs or a viable alternative?

These considerations continue to evolve for farmers. Recently, these considerations and scrutiny have increased due to the rapid rise in machinery prices. They've effectively doubled in past 5 years.

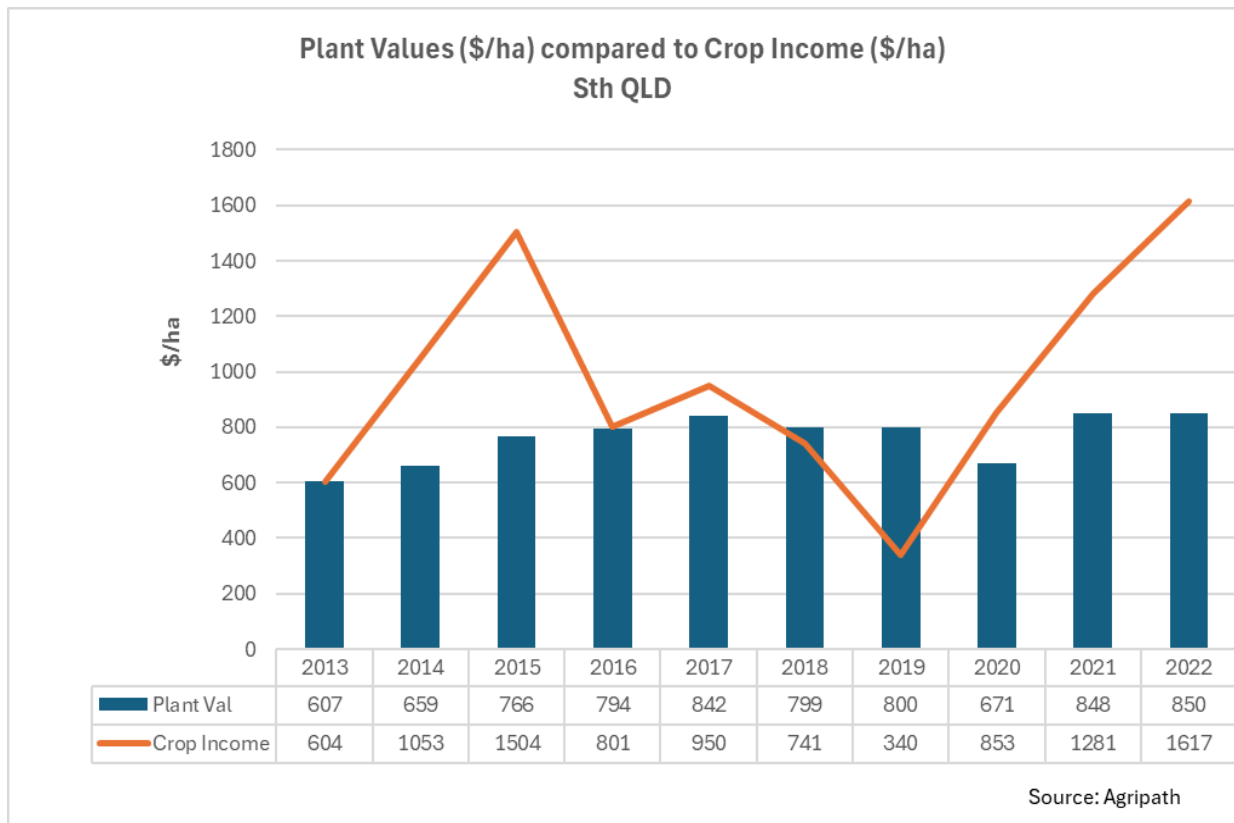
We will approach this topic in the following way:

1. What does historical data tell us? How much machinery do farmers own relative to their farm size and asset value? How does this ownership compare to their gross income and inside their crop margins?
2. How to calculate the costs associated with machinery/plant ownership and incorporate contracting costs.
3. Outline the key metrics for calculating the cost of machinery/plant.
4. Timeliness and efficiency of operations is paramount to farming profitability. There are ‘opportunity costs’ of not getting jobs done on time. What is this cost?
5. Technology and innovation continue to evolve. What does it cost and is it beneficial?
6. The various funding or finance options for machinery purchase. This will vary for every farmer depending on individual financial position, cashflow and farm profitability status.



## 1. Historical data

Agripath's historical long-term data show correlations between the value of plant & machinery owned vs property size, property value and gross income generated. The series of figures & tables below outline these findings in the decade to 2022.



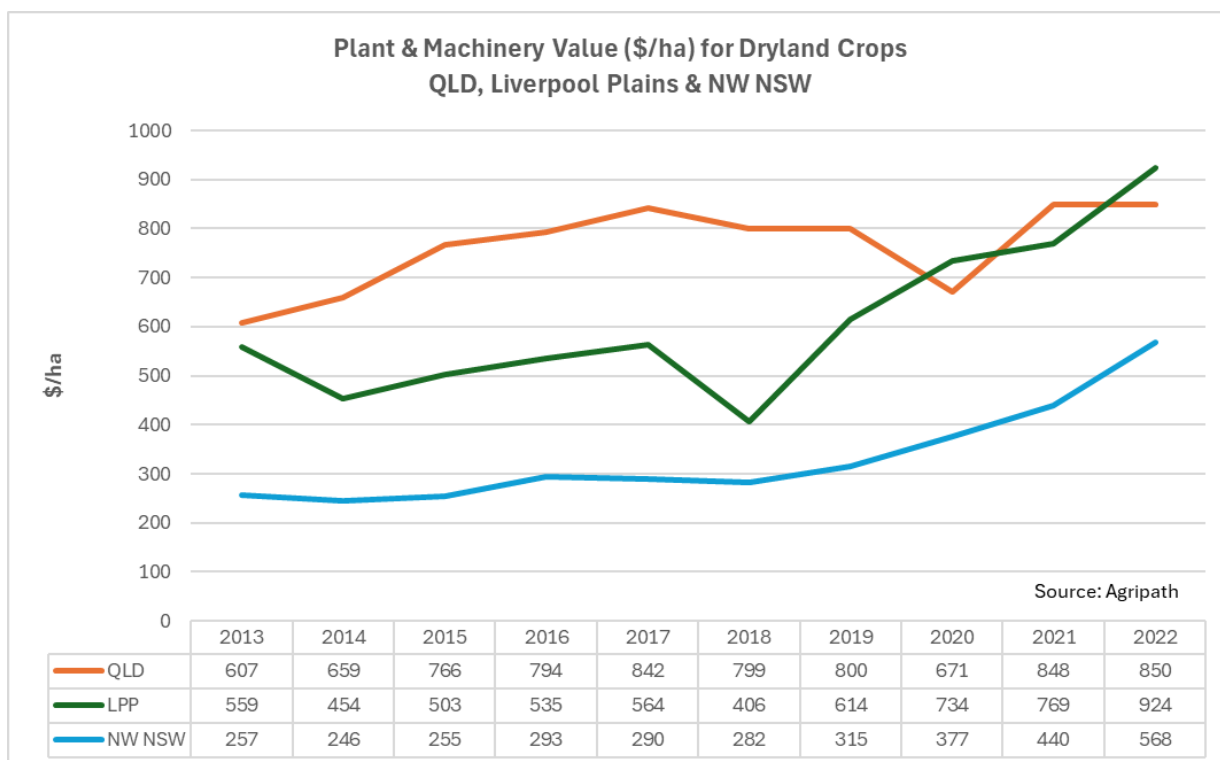
**Figure 1.** Comparison of machinery value (\$/ha) with farm crop income (\$/ha) for Southern QLD.

The data from this graph for Southern QLD shows:

- 10-year average machinery value was \$764/ha compared to average crop income of \$974/ha. This represents a ratio of 78%.
- It also shows the steady increase in owned machinery value over time, while income is highly variable.

Figure 2 shows a 10-year comparison of machinery ownership values for Southern QLD, Liverpool Plains and North-West NSW





**Figure 2.** Average plant and machinery values (\$/ha) for 3 regions (2013 – 2022)

The figure above shows:

- Southern QLD have owned a higher average value of plant & machinery. This is likely due to smaller farm size and having a greater mix of summer & winter crop activity or intensity.
- Liverpool Plains has a lower average plant & machinery ownership value than Sth QLD. However there has been a rapid increase since 2019 and during a high decile rainfall period.
- North-West NSW has the lowest average value of plant & machinery. Farm size is much larger, the physical environment is generally more efficient, and crop intensity is typically lower. There is an influence of economies of scale, particularly in the western regions.

**Table 1.** Average plant and machinery values (\$/ha) for 3 regions (2013 – 2022)

Ratios	STH QLD	Liverpool Plains	NW NSW
Farms size (ha)	2,124	2,151	6,771
Managed assets (\$/ha)	\$7,272	\$8,948	\$5,528
Plant value (\$/ha)	\$764	\$606	\$332
Crop income (\$/ha)	\$974	\$1,018	\$712
Plant value : crop income (%)	78%	60%	47%
Plant value : asset value (%)	11%	7%	6%

Table 1 summarises several of the metrics already discussed. The main additional metric is the comparison of plant & machinery value with the total value of dryland cropping assets managed. This ratio supports the observations from figure 1.



- The Southern QLD region has invested more money in plant & machinery (\$/ha) than the other regions. Machinery ownership represents 11% of the total dryland crop assets managed.
- By comparison, the average investment in machinery as a proportion of total asset value is 7% in the Liverpool Plains and 6% in NW NSW.

## 2. Agripath cost analysis

Agripath segregates the key costs used in the determination of operating profit into four key categories.

### a. Area costs

These includes direct cost such as seed, fertiliser, chemicals, agronomy, fuel & oil.

### b. Total plant, machinery & labour (TPML) costs

- Depreciation - a flat machinery replacement allowance of 15% of machinery & plant value used in the cropping operation.
- Labour costs (which include an inputted cost for owner operators that do not charge themselves a wage).
- Repairs & maintenance for operating plant & machinery.
- Contracting costs - all external contracting costs incurred.

### c. Yield costs

These include the costs that typically incurred on a tonnage or yield basis such as freight/cartage, selling costs, storage costs, marketing costs and crop insurance.

### d. Overhead costs

These refer to the standard fixed costs that keep the business in operation and those costs that can't be categorised to cropping activities. There is also an allocation of overall plant, machinery & labour costs that occur in running the business regardless of whether you plant a crop or not.

The first 3 cost categories are used in gross margin calculations. The overhead costs are then subtracted from gross margin to calculate operating profit and measure farm performance. The cost component we will be focussing on for this session is TPML.

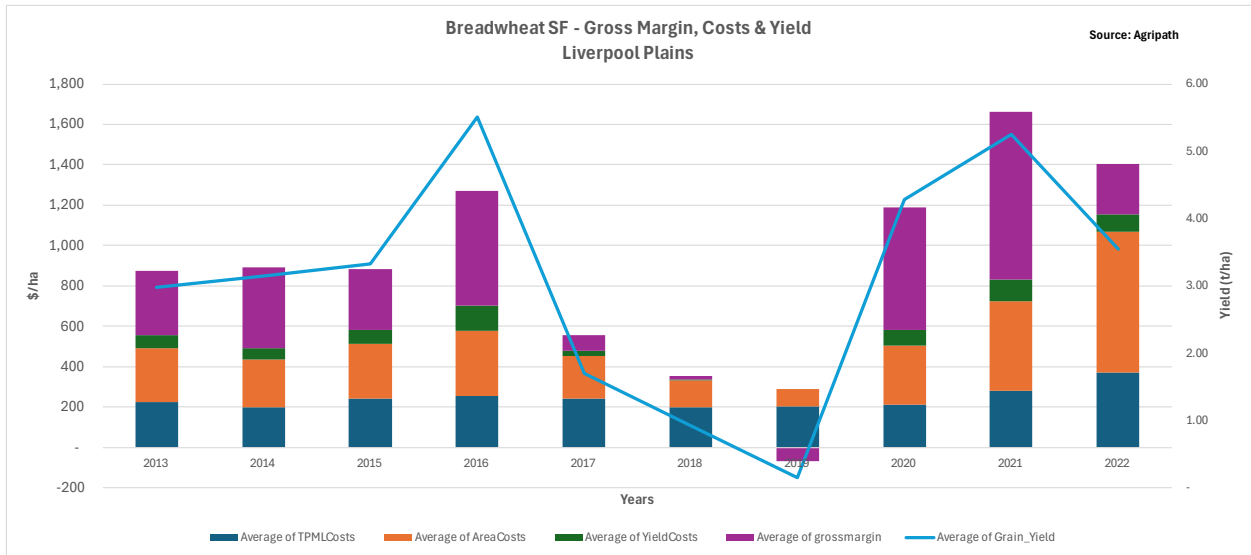
### What is Total Plant Machinery and Labour (TPML)?

TPML is the collective cost associated with executing the physical operations involved in crop activities (the cost of 'getting the job done,' e.g. planting, spraying and harvesting etc). TPML also includes the cost of using contractors. The components of total TPML allow farms to compare a full machinery ownership model, vs full contract model vs a combination of ownership and contracting.

The figure below shows the components of total cost for short-fallow bread wheat enterprises on the Liverpool Plains.





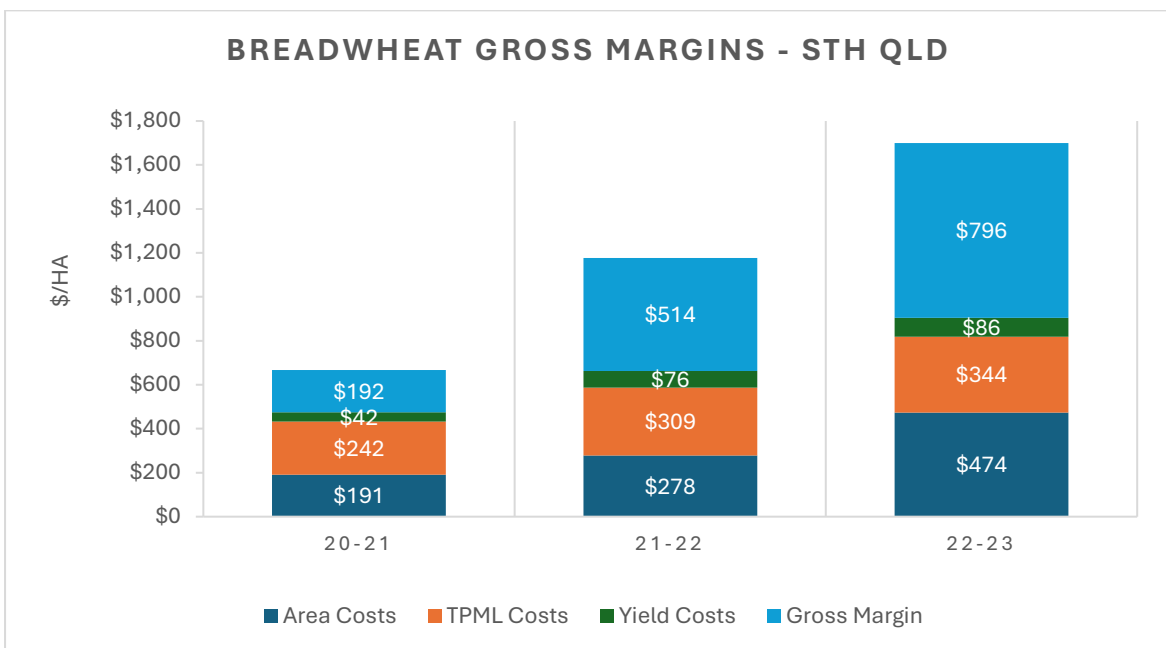


**Figure 3.** Average gross margin, costs and yields for bread wheat (short fallow) – Liverpool Plains

There is a large variation between the various components of total costs between farms. The best gross margins are the result of generating an efficient level of income relative to the costs incurred.

- Average TPML was \$254/ha or 38% of costs
- Average area costs were \$345/ha or 51% of costs
- Average yield costs were \$78/ha or 11% of costs
- Average gross margin was \$409/ha
- Average crop yield was 3.68 t/ha

Figure 4 shows the short-fallow bread wheat enterprise gross margin for Southern QLD over three consecutive years to 2022.



**Figure 4.** Average gross margin & costs for bread wheat (short fallow) – Southern QLD



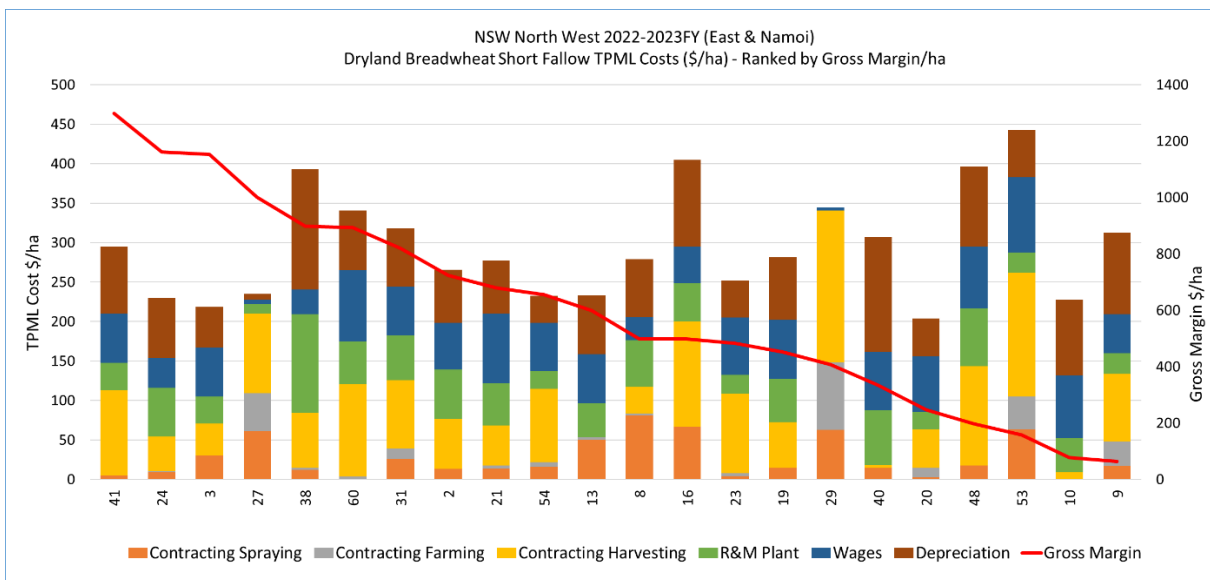
- TPML and area costs have increased significantly in the past 3 years. TPML has risen by 105% and area cost have risen by 148%.
- Fortunately, gross income and margins have sustained the increased cost base in this period. However, the new cost base has raised risk and the challenge to generate sufficient income going forward in the new environment.

The components within TPML vary significantly between farms. This is influenced by a number of factors (e.g. farm size, farm area, labour availability, age of machinery and availability of contractors). TPML costs can also vary for the same farm between years depending on the relative operational needs of crop activities and cropping intensity.

Figure 5 & 6 show the various components of total TPML costs for the short fallow bread wheat enterprise in the East and Namoi sub-regions of NW NSW.

- Each column in figure 5 represents an individual farm.
- The coloured segments within the columns show the relative cost of each TPML component. They are stacked to show the total TPML cost for each farm.
- Costs refers to the left axis.
- The farms are ranked by gross margin as indicated by the red line. Gross margin refers to the right axis.

Figure 5 reflects the same components of total TPML cost but as a proportion of total.

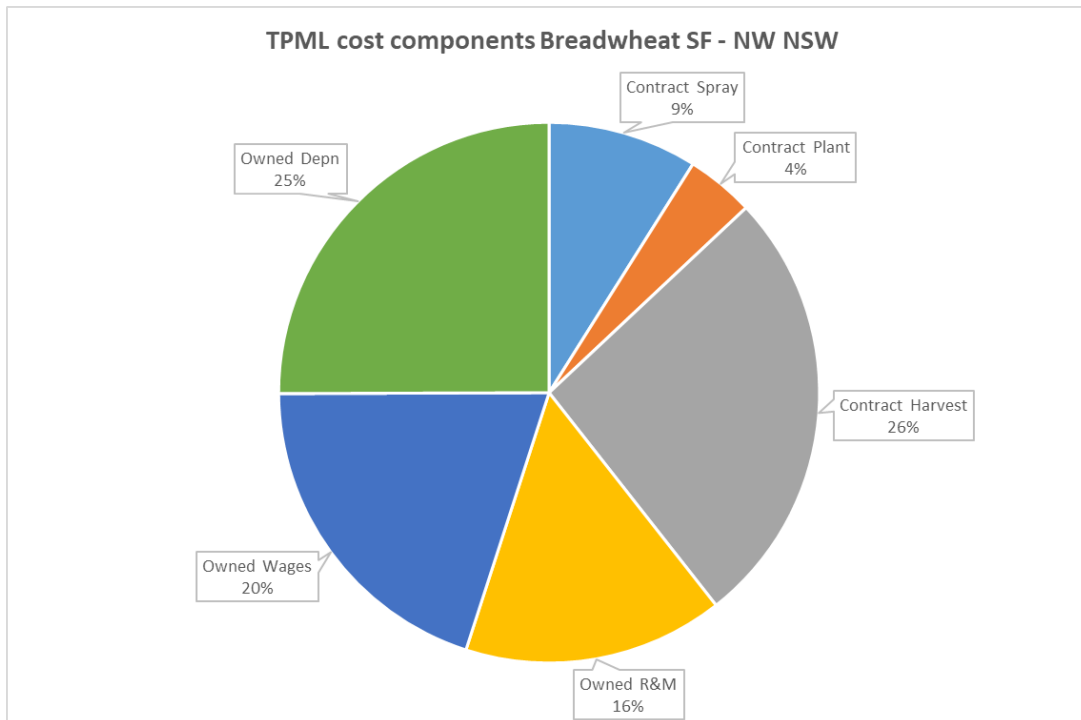


**Figure 5.** TPML costs and gross margin for Bread wheat short fallow – NW NSW (East & Namoi)

- TPML averaged \$295/ha across the dataset. There was a large range around the average (\$204/ha - \$442/ha).
- Each farm has their own unique make-up of total TPML, though much of total TPML is represented by ownership costs such as depreciation and wage costs in this example.



- The majority of contracting costs were for harvesting. For many, these costs were high in this particular year and additional to their existing ownership costs.



**Figure 6.** TPML costs (%) for Bread wheat short fallow – NW NSW (East & Namoi)

- In this example, 39% of the total TPML is attributable to contracting and 61% machinery ownership.
- As Agripath long-term data typically shows and what is observed in this example, there is no strong correlation between TPML and gross margin.
- TPML is ultimately a driver of overall cost efficiency. The key is to utilise TPML efficiently and integrate these costs in a manner that optimises not only the return on TPML costs but use them to enhance the return on investment of area and yield cost components in system.



### Key observations about TPML yield, profit

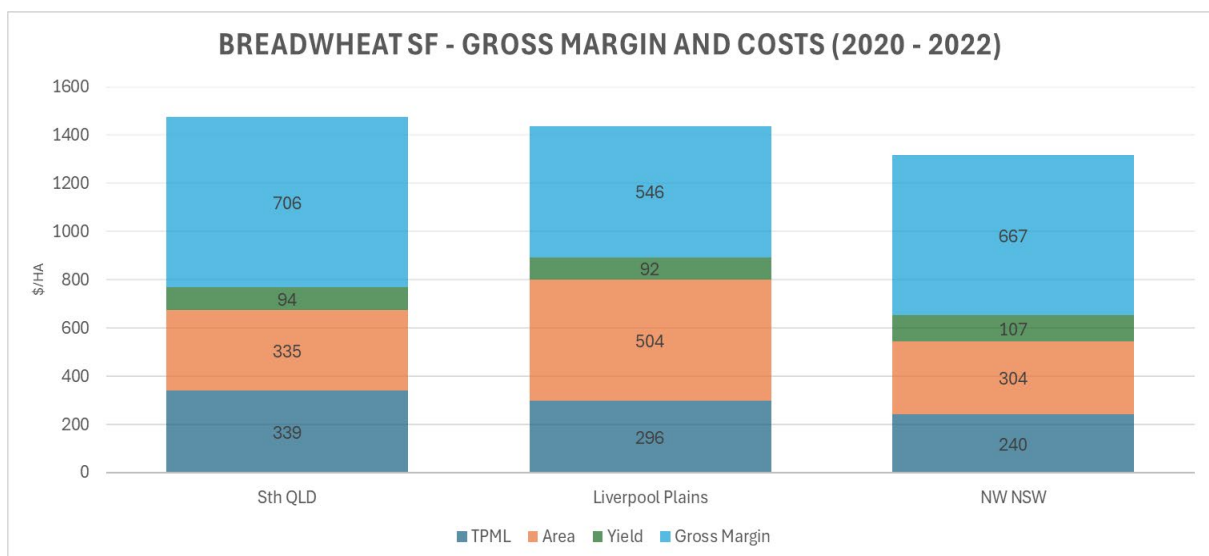
- Gross margin is highly correlated to operating return on dryland crop assets.
- In turn, yield is highly correlated to gross margin and therefore the primary driver of both margin and asset profitability.
- Timeliness of operations continues to underpin the ability to execute optimal yields and therefore profitability. The kit and people in our business represent our ability to execute operations.
- If your farm consistently produces high levels of operating profit, then the balance of machinery ownership and use of contractors is most likely okay.
- If your farm is consistently performing at the lower end of profitability, then building an understanding of whether machinery/labour and contracting costs are causing leakage of potential income is important. Equally, assessing and refining all costs should also be done to identify any area of poor direct cost efficiency.

### 3. Key metrics

A survey conducted by Kondinin Group in 2021 found that ‘Accounting for machinery, labour, contracting, repairs and maintenance, the ratio of machinery-related expenditure to gross farm income was about **0.34 to 1** on a national basis’ (White, B. Research Report 144: Machinery Investment, Kondinin Group (2022))

The long-term historical Agripath data also shows that TPML expenditure to gross crop income can range from 20 - 30%. It is influenced by season, location and the range of crops grown.

Figure 7 shows the variation in costs and gross margin between the regions in the three years to 2022.



**Figure 7.** Crop gross margin and cost comparison for Bread wheat short fallow (2020 – 2022)



#### 4. Timeliness of operations and efficiencies

As discussed, rising costs have increase the risk profile of farming. However there are also hidden and opportunity costs related to sub-optimal timeliness of executing operations. The key operational activities that need to be done on time are spraying, planting and harvesting.

There are a number of strategic management considerations that influence the timeliness of operations:

- **Crop rotation** – the choice of crops and the balance of summer and winter crops can be important to spread the workload and peak demand periods on machinery. It can also change the flexibility in being able to choose between different sizes, capacities and costs of equipment to adequately cater for peak demands.
- **Crop choice** – having a spread of crops and a spread of varieties with different maturity windows can also reduce the critical demand for labour and machinery at planting and harvest.
- **Preparation and planning** – having a rigorous maintenance & replacement program, including lead times, leading into key events such as planting and harvesting.
- **Good planting equipment** – having planting equipment that can contend with zero tillage stubble loads or even moisture seeking capacity in drier years can extend the optimum planting window and maintain high end yield potentials.
- **Harvest management** – having enough capacity execute the crop harvest in a prescribed time. This also includes sufficient chaser bin capacity, field storage, cartage capacity from paddock to store, sufficient storage capacity on farm, capacity to dry grain. These needs and priorities tend to differ between regions and location.
- **Spraying capacity** – continually assessing whether there is enough spraying capacity to cover the needs of fallows (including double knocking) and peak crop demands (which is influenced by crop intensity and crop choice) within an acceptable timeframe.
- **Contractors** – Having the capacity to engage and increase the punctuality of contractors to support all crop operations when required. This is even more critical where farm machinery models are contracting oriented.

Figure 8 shows an example of diminishing wheat yields as time of sowing becomes later for Lancer and Coolah wheat in 2021.

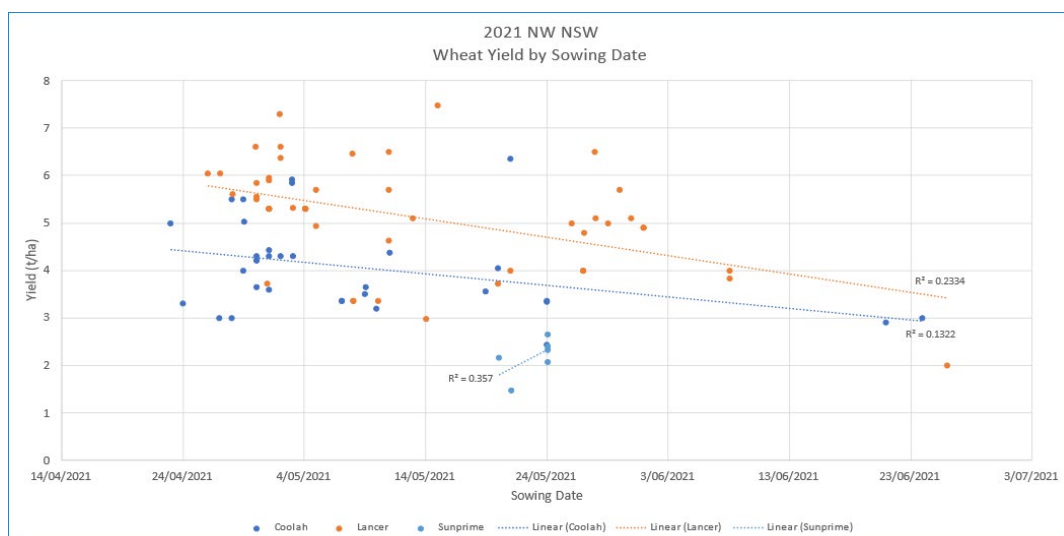


Figure 8. Wheat crop yield compared with planting date – NW NSW 2021



Based on measured data there is evidence that there can be an average yield loss of 50 kg/ha/day in winter crops for each day past the recommended planting window. (this can vary from 20 – 100 kg/ha/day depending on the variety and the season).

Example:        2000 ha wheat crop planted 10 days late with a wheat price of \$350/t  
Yield loss = 2000 ha x 10 days x 50kg/ha = 1000 tons  
Income loss = 1000 tons x \$350/t = \$350,000

## 5. Technology and innovation

How old are your various plant and machinery items? Are you keeping up with latest technology and innovation? Do you need to or this costing you yield and profitability? Can I afford to upgrade?

These are the questions most farmers continue to grapple with, especially in the presence of the increasing cost base.

Here are some considerations:

- Build a cost–benefit analysis or a Discounted Cashflow (DCF) – the key components of these analysis are:
  - ✓ Cost to purchase the new item/machine (less trade in price on existing item).
  - ✓ Life of the machine (years).
  - ✓ Projected cashflows or benefits of using the machine.
  - ✓ Discount or interest rate – how much you would earn if you invested the money elsewhere.
  - ✓ Terminal value – expected value at the time of sale.

If this analysis is positive then it could be a signal to upgrade. However, beware that some new technology may not be cost effective at the time and you may have to find other ways to modify and upgrade existing plant. In some instances there may benefit to wait for the technology to become more accessible or cheaper.

- The additional cost for new plant & machinery can be partially offset in a number of ways:
  - ✓ Executing superior profit enhancing operations that lead to optimal yields and maximise direct cost efficiency compared to the current situation.
  - ✓ Competing operations quicker and more efficiently with less labour hours.
  - ✓ Increased time efficiencies may enable more area to be farmed. This could be achieved via leasing, sharefarming or purchasing additional land. These steps can also result in a cheaper TPML cost on a per hectare basis where the capacity of existing plant is more often utilised (economies of scale).
  - ✓ Contracting the machine out to other farmers. This can be done on a ‘dry hire’ basis or an operated basis depending on labour availability. The idea is that machinery can generate income to offset its cost.

Some examples of new technology that are improving efficiency, increasing returns and reducing costs are:

- Camera sprayers – these have been very popular for fallow management. Their benefits come in decreased chemical volumes and therefore cost. They can also provide targeted



precision in controlling harder to kill weeds. There are numerous long-term systems benefits in this scenario.

- Autonomous equipment – Swarrobot sprayers are an example of an autonomous equipment that is gaining popularity, particularly in the more western regions where the farms have larger areas and the availability of staff is getting harder to maintain.
- New planters – there has been some major development in the amount of precision and control in planters in recent years. There is now more precision in the planting operation across a greater range of environmental conditions. Ultimately newer planters have lifted the flexibility in planting and therefore increased yield potential at the start of the season.

## 6. Machinery financing

### 1. Interest rates are a major consideration:

- Dealer arrangements can be cheaper at times in comparison to banks.
- Equipment finance interest rates have risen steeply in the past 18 months (>7%).
- Existing bank loan facilities may be cheaper.
- Check cashflow implications on your budget.

### 2. Equipment purchased that has been written off under the 100% instant asset write off rule will be deemed taxable income when sold. Please consult your accountant prior to sale.

### 3. Chattel mortgages are common. The equipment is the security for the loan, however despite this lenders still take chattel mortgages into account when looking at balance sheets for future borrowing.

- Generally the GST component of the purchase is claimable as an input tax credit up front.
- Because you own the equipment it appears on your asset sheet.
- Depreciation and interest are claimable for primary production.

### 4. What is a balloon/residual payment?

A balloon payment is on equipment finance and a residual payment is on a lease.

A balloon amount that is left not paid on the equipment at the end of the loan. Whilst it increases the amount of interest you pay, a balloon payment reduces the principal component you have to pay at each installment leading to a lower annual payment.

The balloon % should be conservative to ensure that the sale market value of the tractor/item covers the balloon.

**Table 2.** Example: Equipment finance with & without a balloon

Details	Fully financed	40% balloon
Loan amount	\$600,000	\$600,000
Term (years)	5	5
Rate (%)	6%	6%
Residual/balloon (\$)	0	\$240,000
Annual repayments (\$)	\$142,438	\$99,863
Total cost (\$)	\$712,189	\$739,314



- There is an annual cashflow saving in repayments of ~ \$42,000/yr or ~ \$210,000 over 5 years.
- However the balloon payment of \$240,000 would be payable at the end of the loan.
- If you expect to own and use an item for > 5 years it may be better to pay off the item and own it fully rather than have a balloon.
- For short lifetimes (<5yrs) & high annual hours items such as tractors, it may be appropriate to use a balloon that reflects the change in value from new to used.
- The repayments then only reflect the depreciation over the period of the loan. The market value of the tractor at the end of the loan covers this payment. and you upgrade to a new machine.
- It is always advisable to discuss this with your accountant before making a purchase.
- If you would like any further information, feel free to contact us.

### Why working on this could be great for your farming business

- Farm costs in general have increase the risk of farming businesses to critical levels. There is a need to have awareness of machinery costs and benefits.
- Understand the concept of total plant machinery and labour (TPML), compare it other farms and understand whether it is efficient in delivering profitability to your business..
- Do a cost-benefit analysis to determine whether new machinery purchases are justified.

### Self-evaluation

	High – doing this well	Medium – room to improve	Low – need to implement actions to improve
Where do I start to get a handle on what my plant & machinery is costing me?			
What decisions are within my control regarding machinery ownership & the use of contractors?			
Are contractors cheaper or dearer than owning your own equipment?			
Are you getting your key operations completed on time, if not, what is it costing you?			

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

- If you want to analyse your own figures use some of the guidelines in this report to help you to get started.
- Contact Agripath to join our benchmarking program to get a good handle on your data and to compare it with other farmers in your region.







### More about Simon and Kim...

Simon Fritsch is founder of Agripath, Simon has over 20 years experience in agriculture with his client base encompassing irrigation, dry land farming and grazing operations.

He has Southern, Central, and Northern NSW farming systems experience. Simon's particular strengths have been in financial analysis and planning to deliver profitable outcomes for client businesses. Simon has worked as an irrigation agronomist for Twynam Cotton at Warren, a dry land consultant agronomist for Hassall & Associates and team leader Farm Business Consulting for Hassall & Associates.



Simon has worked in many parts of Australia, giving him a broad understanding of all facets of farming in diverse environments and an excellent network of skilled land managers/farm advisors.

Kim Bowman Kim is originally from a farming family in WA but has been working and consulting with farm families and businesses in southern QLD & northern NSW for over 20 years. Kim joined Agripath in 2016 where the main focus has been around benchmarking farm production and financial performance. Kim's main drive is to assist individual businesses to achieve their goals and to improve their overall profitability and sustainability.

### Contact details

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### Notes

