Machinery replacement economics

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Key Messages

- Do you know what your machinery and plant is costing you?
- Timeliness of operations should be the No1 priority.
- Consider the ‘opportunity cost’ of not upgrading
- What will machinery replacement cost?

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Machinery & plant questions for farmers

- 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 that you own?
- Are you getting your jobs done on time?
- Is your technology and precision up to date?
- Are contractors an option for some jobs or a viable alternative?

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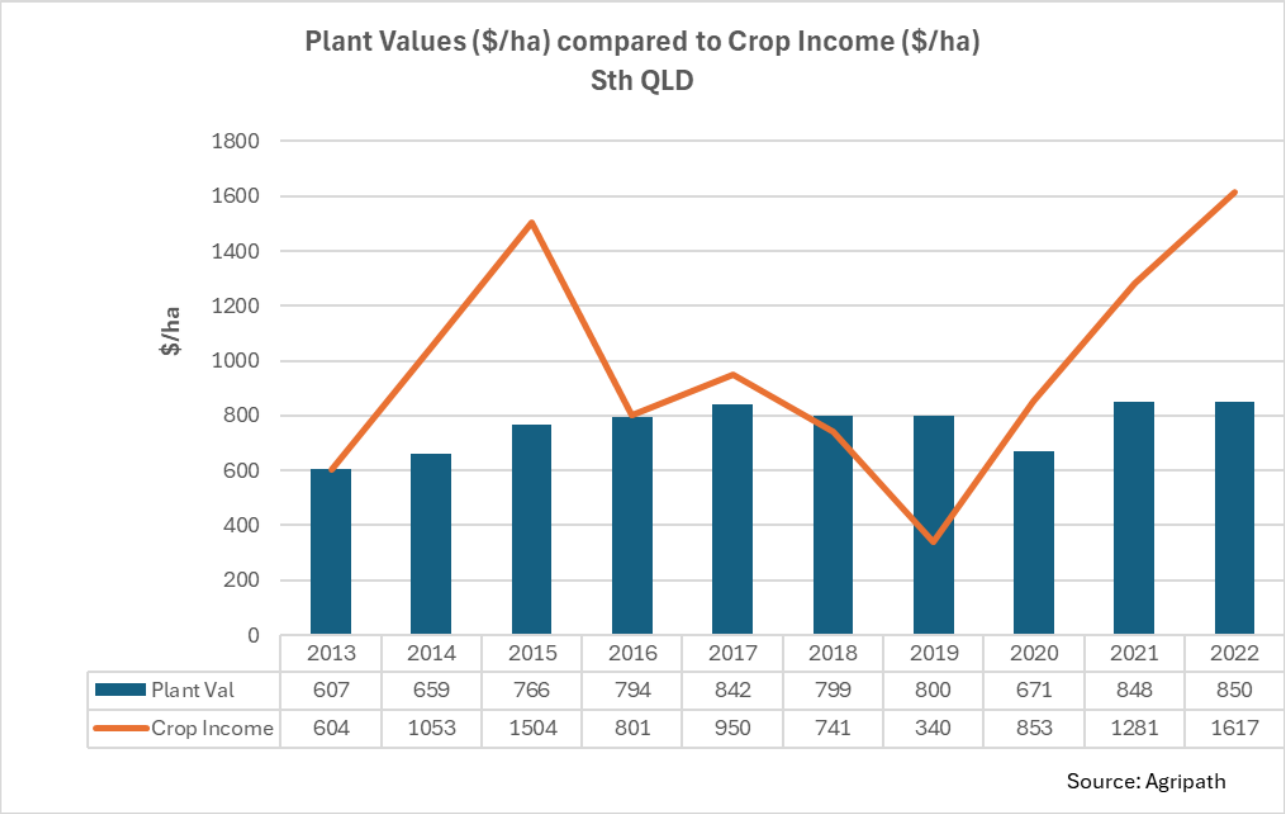
What does the historical data tell us?



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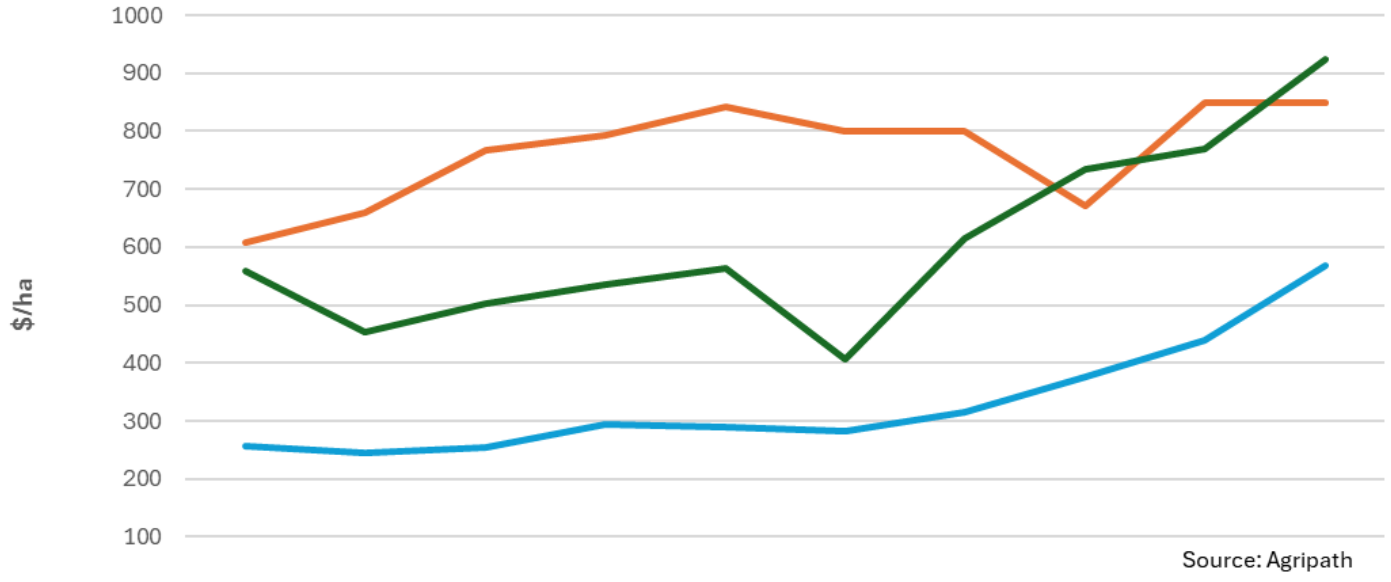
Plant & Machinery Value ($/ha) for Dryland Crops
QLD, Liverpool Plains & NW NSW



Source: Agripath

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
QLD	607	659	766	794	842	799	800	671	848	850
LPP	559	454	503	535	564	406	614	734	769	924
NW NSW	257	246	255	293	290	282	315	377	440	568

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Plant & machinery data 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%

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Key farm cost areas

1. Area Costs

- Seed, fertiliser, chemicals, fuel & oil and agronomy

2. Total Plant, Machinery & Labour (TPML) costs

- Depreciation @ 15%, R&M, labour & contracting costs

3. Yield Costs

- Freight, selling costs, marketing & crop insurance

4. Overhead Costs

- Normal fixed costs

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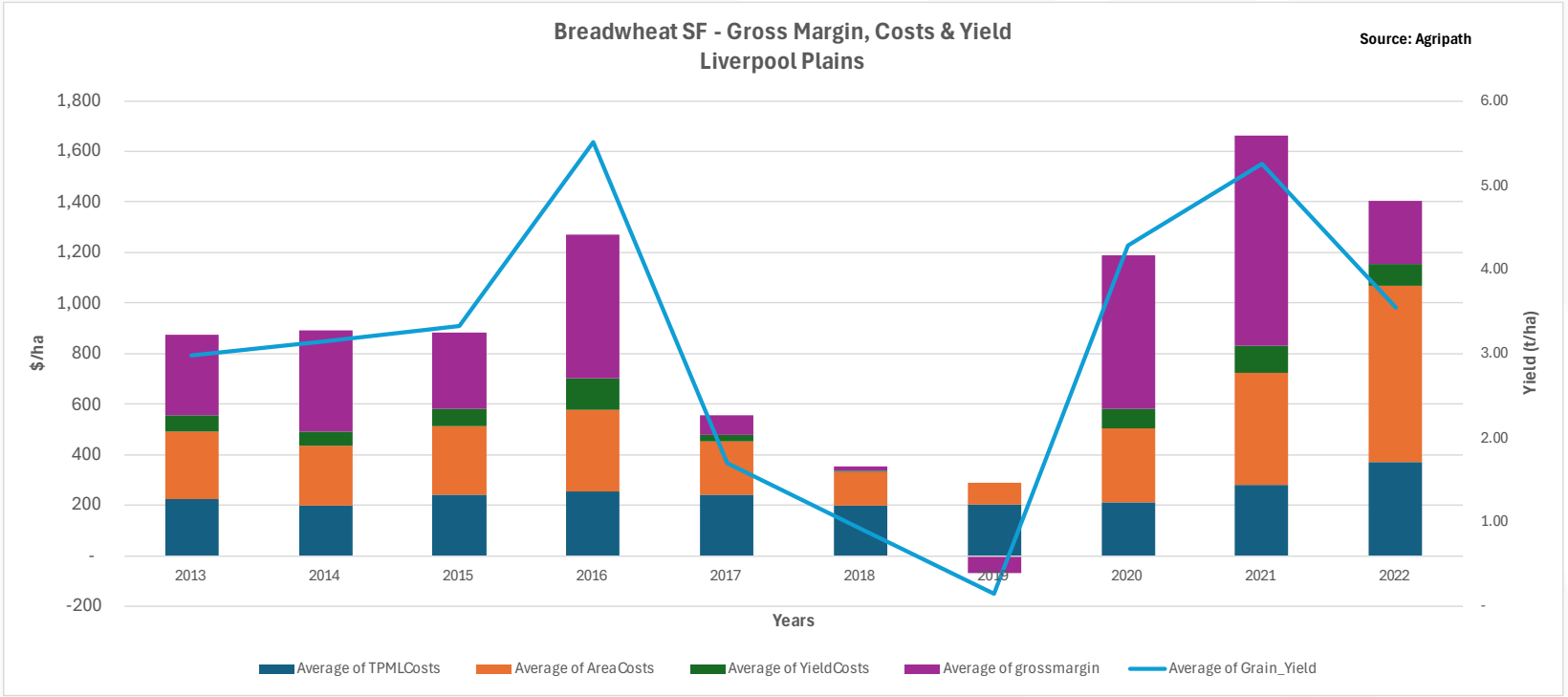
Costs, Yield & Margin – Liverpool Plains (10 years)



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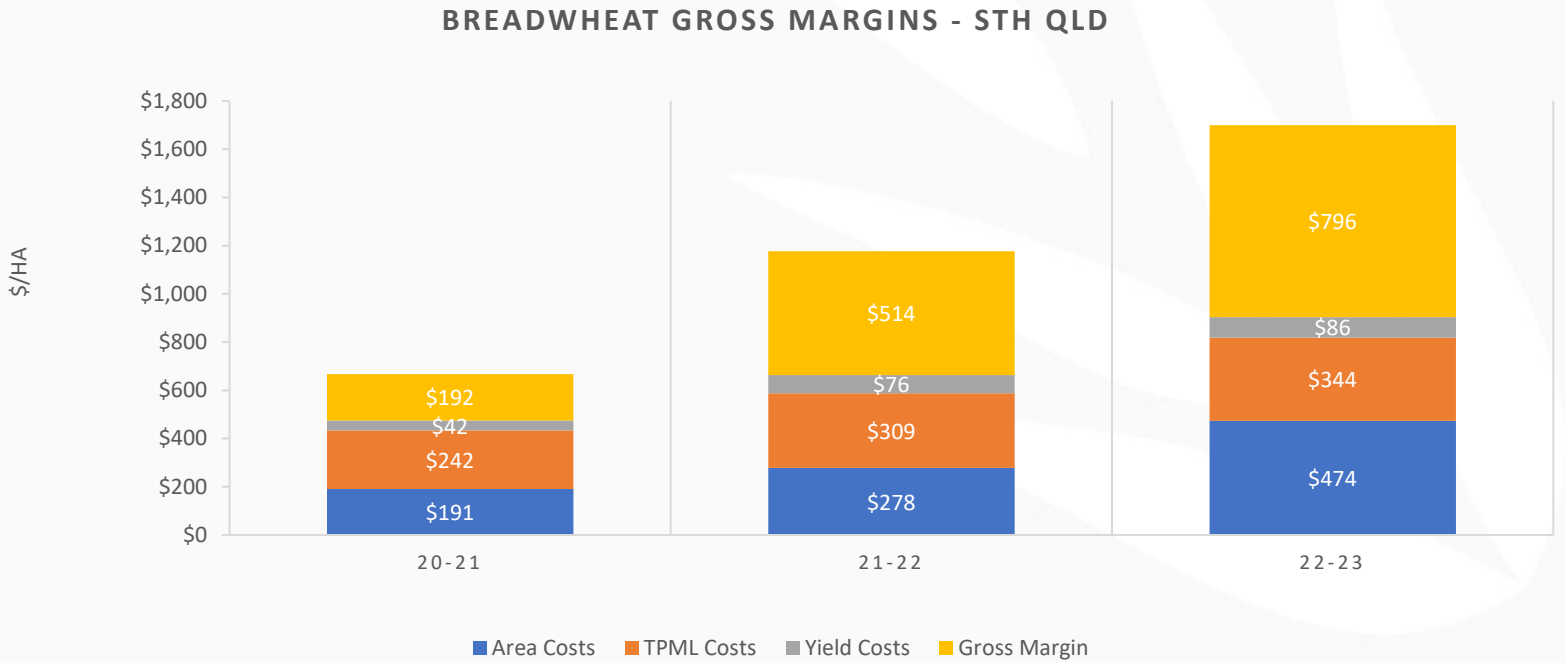
Costs, Yield & Margin – Darling Downs (3 years)



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What is TPML?

1. The cost of getting the ‘job done’

- Planting, spraying & harvesting

2. Machinery ownership

- Depreciation – 15% of machinery value per annum
- Repairs & maintenance – the cost of maintaining equipment

3. Labour

- The cost of permanent & casual staff

4. Contractors

- The cost of any contractors used on the farm

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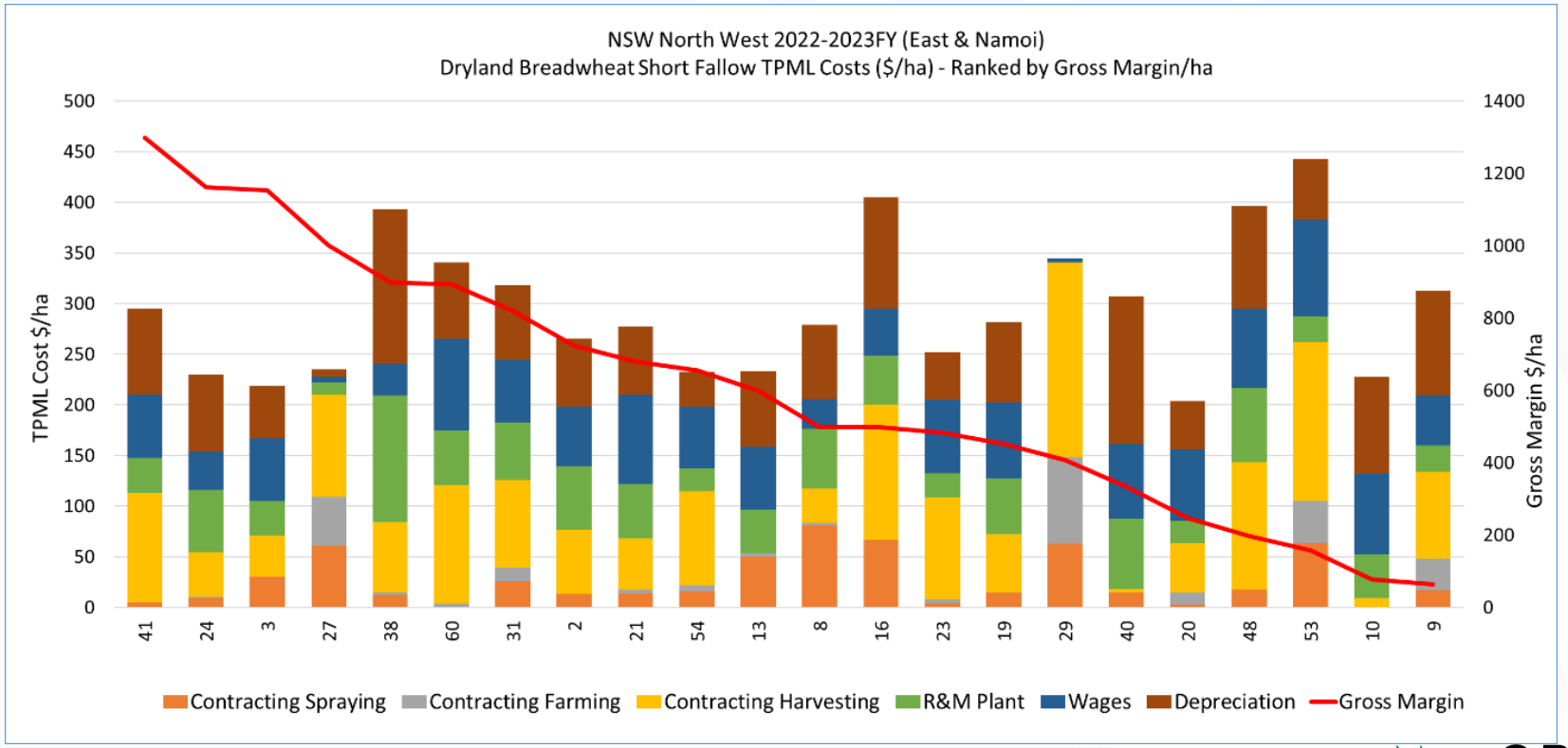
TPML costs & margin for Wheat SF – NW NSW (2022-23)



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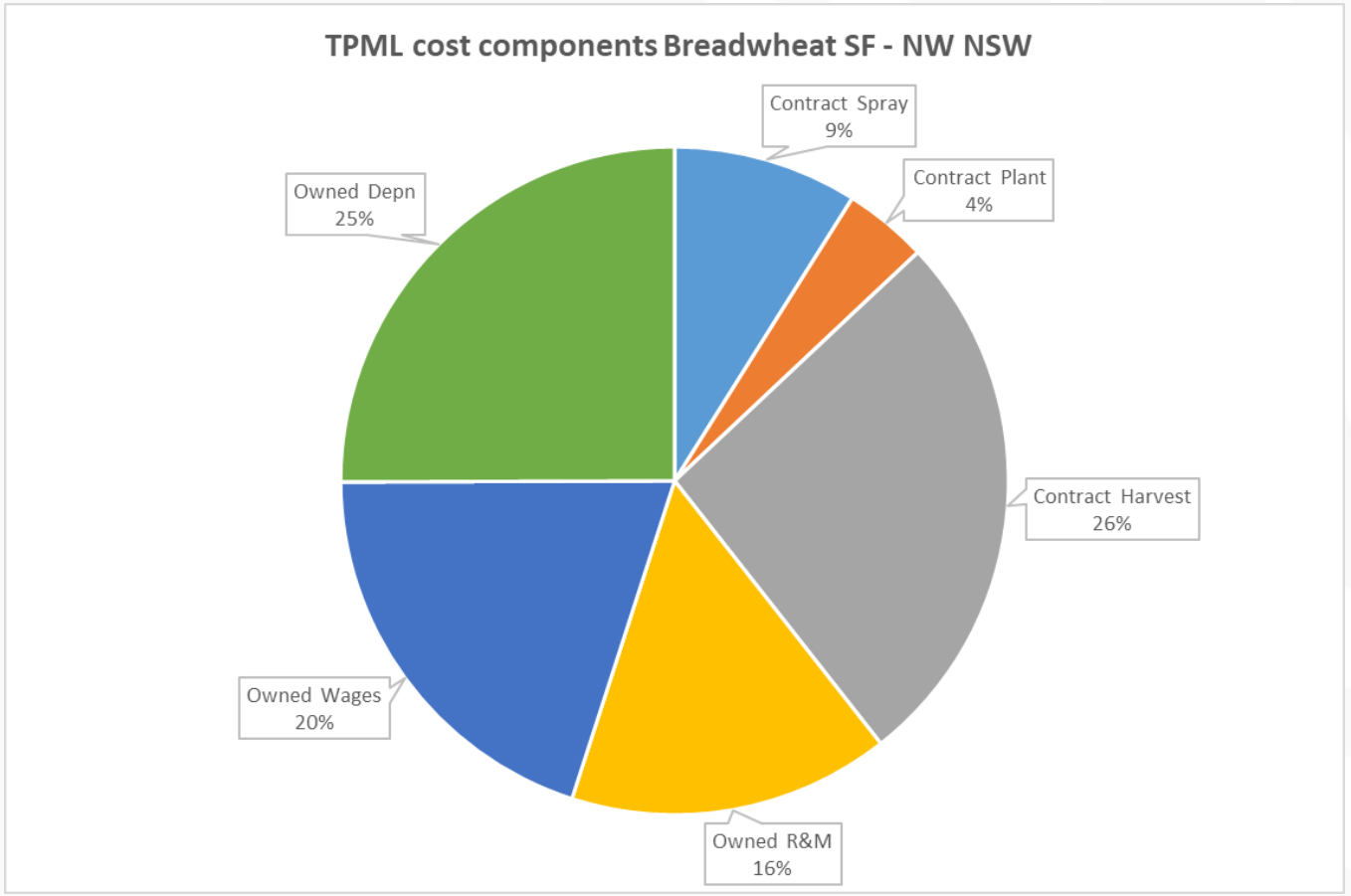
TPML costs % for Wheat SF – NW NSW (2022-23)



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Observations about TPML, yield & profit

1. Gross Margin is highly correlated to Return on Assets Managed (ROAM)

2. Yield is highly correlated to Gross Margin

3. Timeliness of operations underpins yield & profitability

4. TPML costs as % of crop income = 20 – 30%

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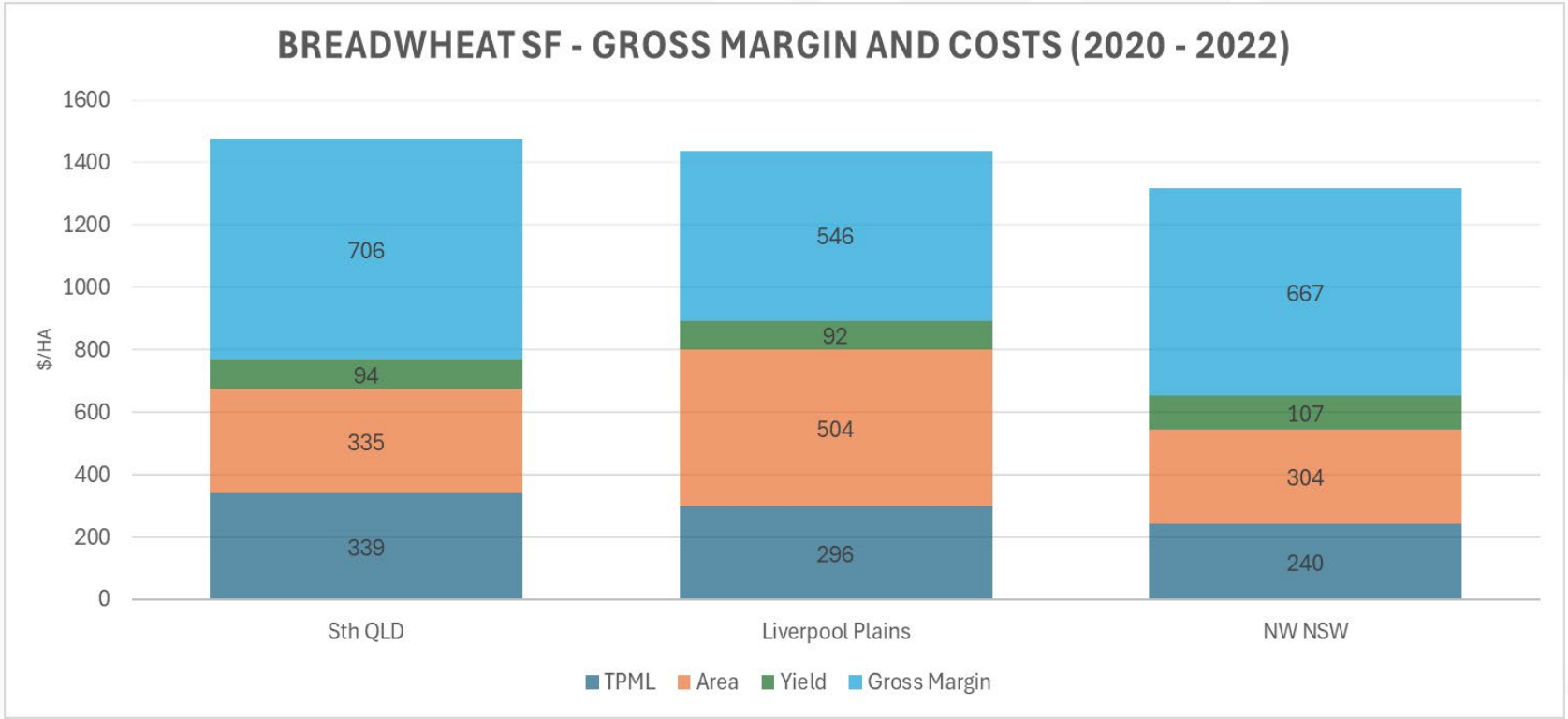
Costs & Margin for Wheat SF – 3 Regions (2020 - 2022)



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Timeliness of Operations & Efficiencies

1. Crop Rotation & Crop Choice – spread workload, machinery size & scale
2. Preparation - Regular R&M program in off season
3. Planting Equipment – precision, manage stubble loads, moisture seek
4. Harvest Management – capacity to harvest & store grain in the ‘window’
5. Spraying Capacity – capacity to spray weeds in the ‘optimal window’
6. Contractors – can you get them when you need them

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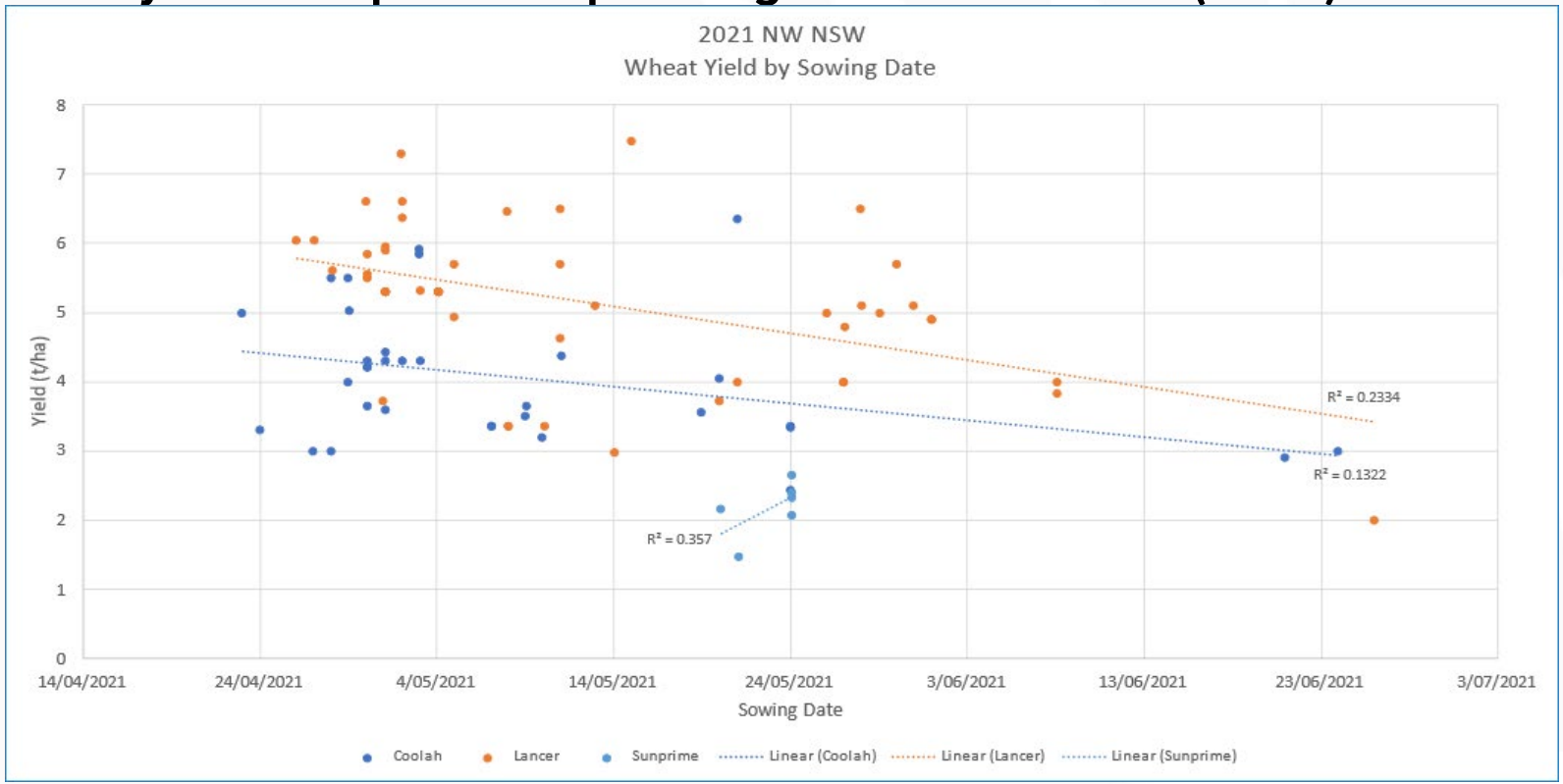
Wheat yield compared to planting date – NW NSW (2021)



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The estimated cost of delayed planting

1. Average yield loss of planting outside the window

- Range from 20 – 100 kg/ha/day
- Average 50 kg/ha/day

2. Farm example

- Area – 2000 ha
- Days late – 10 days
- Yield loss – 50 kg/ha/day
- Wheat value - $350/t

3. Opportunity Cost

- Yield loss = 2000 ha x 10 days x 50 kg/day = 1000 ton
- Income loss = 1000 ton @ $350/ton
- **Potential income loss = $350,000**

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Technology & innovation

1. How old are your various plant & machinery items?
2. Are you keeping up with technology & innovation?
3. Is there an opportunity cost in not upgrading?
4. Can you afford to upgrade?
5. Cutting edge v bleeding edge?

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Cost Benefit Analysis or Discounted Cashflow (DCF)

Key data required:

1. Cost to purchase – purchase cost of item
2. Life of machine – expected useful time frame to sale date
3. Projected cashflows – costs & benefits
4. Discount rate – the potential investment interest rate
5. Terminal value– expected value at the time of sale.

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Discounted Cashflow (DCF) Example

			Year 1	Year 2	Year 3	Year 4	Year 5
Purchase Item	2nd Hand Header						
Purchase Price	$500,000						
Residual Value (est)	$250,000						
Life of Machine	5	Yrs					
Cost of Capital	5.50%						
Area to Harvest	2000	Ha	2000	2000	2000	2000	2000
Speed	8	Ha/hr	8	8	8	8	8
Hrs/Year (own)	250	Hrs	250	250	250	250	250
Contract work	50	Hrs/yr	50	50	50	50	50
Cashflows							
R&M	(100)	$/hr	(30,000)	(30,000)	(30,000)	(30,000)	(30,000)
Labour	(50)	$/hr	(15,000)	(15,000)	(15,000)	(15,000)	(15,000)
Previous Contract costs	65	$/hr	130,000	130,000	130,000	130,000	130,000
Contract Income	65	$/hr	26,000	26,000	26,000	26,000	26,000
Cashflow (pre tax)			**111,000**	**111,000**	**111,000**	**111,000**	**111,000**
Tax Depreciation Rate	3.50%		5,250	5,250	5,250	5,250	5,250
Tax Rate	30.00%		(33,300)	(33,300)	(33,300)	(33,300)	(33,300)
Net Cashflows after tax			#####	**82,950**	**82,950**	**82,950**	**82,950**	**332,950**

NPV	**45,504**	
ROI	**8.08%**	**Per Annum**
Payback	**6.03**	**Years**

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Machinery Financing

1. Interest rates

- Rates have risen sharply in the past 3 years.
- Check between bank & dealer for best rate.
- Check cashflow implications.

2. Instant Asset Write Off

- During 21/22 & 22/23 FY – 100% tax write off on machinery purchases.
- Speak with accountant when considering sale of machinery.

3. Chattel mortgages.

- GST is claimable upfront.
- Purchaser owns the item & is on the balance sheet.
- Depreciation & interest are claimable deductions.

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Balloon and residual payments

- Balloon payment on equipment finance.
- Residual payment on leased items.
- Concept is to reduce cashflow commitments over the term of the finance.
- The balance is normally aligned with expected sale value.
- The interest and overall cost is slightly higher than not having a residual/balloon.

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Equipment finance with and 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

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