



WATER

PRICE DRIVERS AND SOURCES

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PRESENTATION OVERVIEW

- Economic drivers of the water price
- Comparison of different water entitlements/sources
- Surface water costs versus groundwater costs



ECONOMIC DRIVERS OF WATER PRICE

- Government buybacks
- Supply and demand
 - Scarcity - allocations
 - Crop returns

SUPPLY - HOW BIG IS THE BUCKET?

■ Irrigation entitlements (GL)

Valley	High Security	General Security	Supplementary	Groundwater
Murrumbidgee	352	1,660	182GL	268
Murray	172	1,343	253GL	83

- Excludes CEWH entitlements which are:
 - 12% of GS in Murrumbidgee
 - 20% of GS in Murray

SCARCITY - ALLOCATIONS

- **Water availability subject to allocation (GL)**

General Security Allocation	20%	50%	70%
Murrumbidgee	941	1,439	1,771
Murray	517	920	1,188

These figures do not include Supplementary water

10% general security allocation is:

- **166GL in the Murrumbidgee**
- **134GL in the Murray**

WATER USE IN 2014/15 (GL)

	Murrumbidgee	Murray (NSW)
▪ High Security	304	101
▪ General Security	1,089	875
▪ Supplementary	62	12
▪ Groundwater	<u>280</u>	<u>58</u>
Total:	1,735	1,046
▪ Conveyance	246	258
▪ Town, domestic & stock	62	28

Source: NSW Office of Water

DEMAND - WHO USED THE WATER IN THE MURRUMBIDGEE IN 2014/15?

Crop	Ha	ML/Ha	Total GL
Tree Nuts	5,000	12	60
Citrus	8,000	5	40
Winegrapes	19,000	4	75
Cotton	35,000	11	385
Rice	38,500	14	469
Other summer crops & horticulture			125
Winter crops			250
Other/CEWH			331
Total			1,735

Total high security entitlements at 95% = 342GL

Permanent plantings use 200GL in total

Does not vary much year to year



RETURNS - CROP PROFITABILITY

- Tree nuts – Gross margin \$1,000 - \$2,000/ML
– payback 10 – 12 years
- Summer crop gross margins

Crop	Yield	Price	\$/ML	System \$/ML
Rice	12t/ha	\$360/t	213	366
Cotton	11b/ha	\$500/b	287	385
Maize	11t/ha	\$300/t	189	323



RETURN ON ASSETS

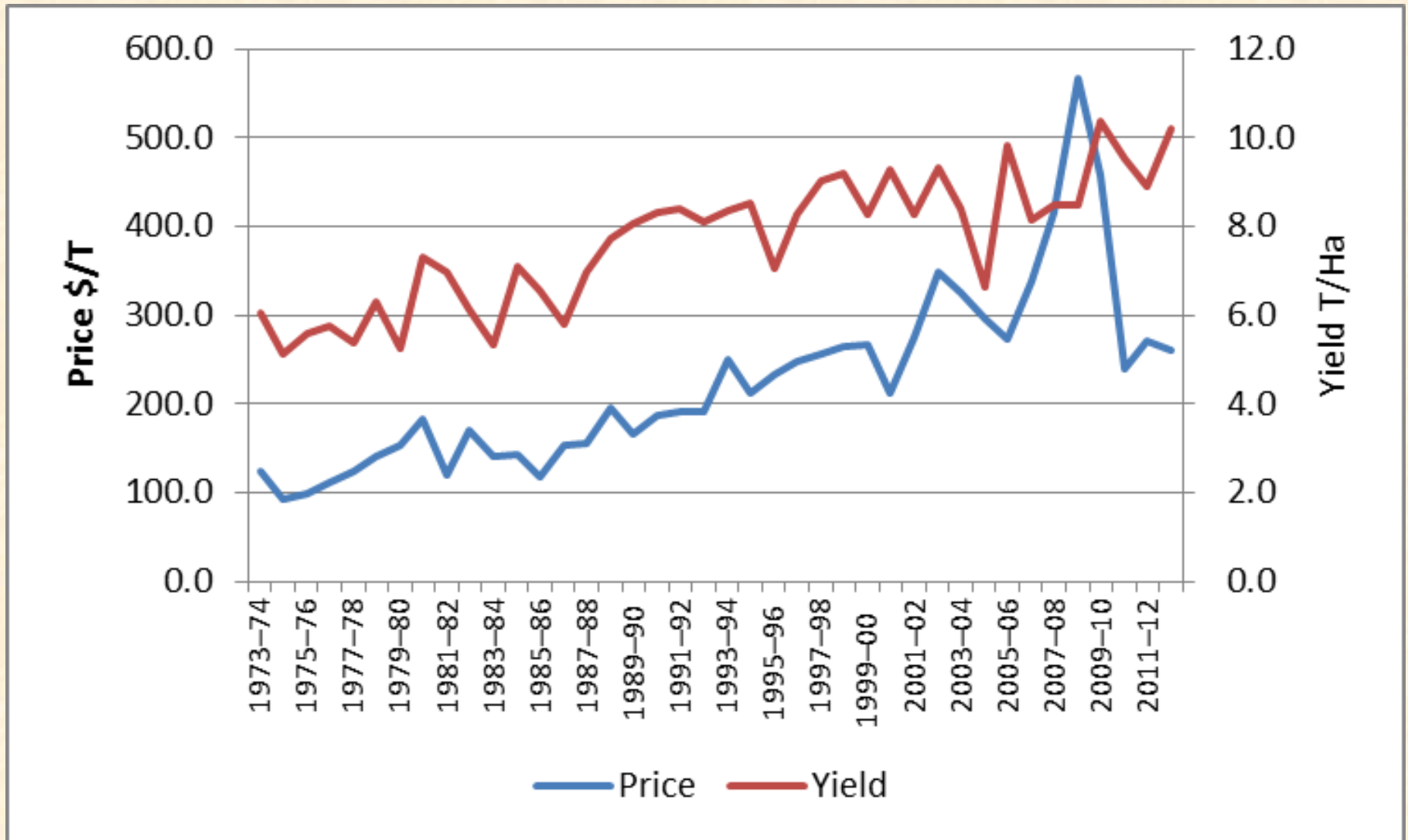
- EBIT YIELD (Earnings Before Interest and Tax)
- Debt free profit divided by total capital employed
- Aim for $>5\%$



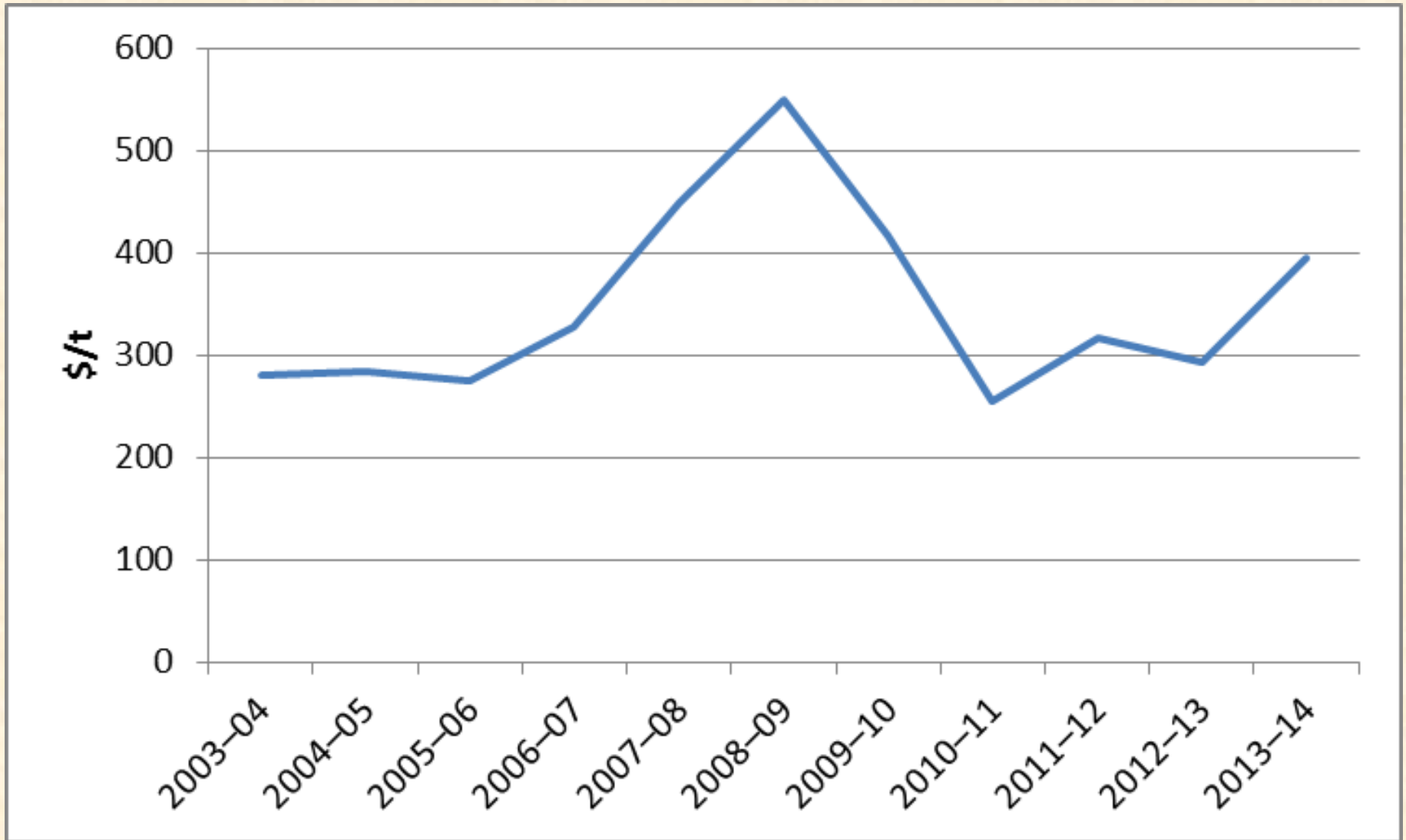
RETURNS

- Function of Yield x Price – Costs
- Be careful with assumptions
- Price is the key variable beyond the farm gate

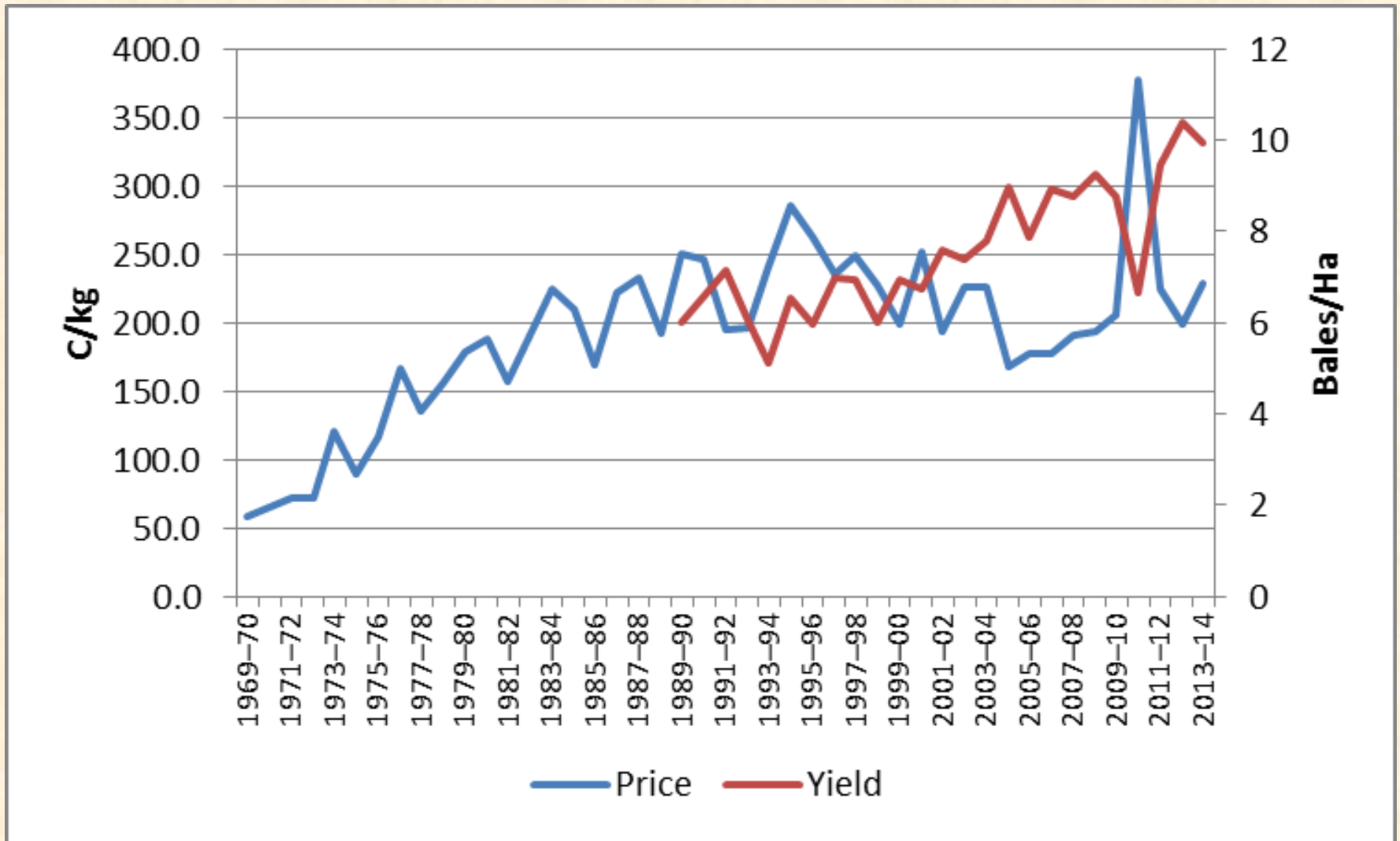
RICE PRICE AND YIELD



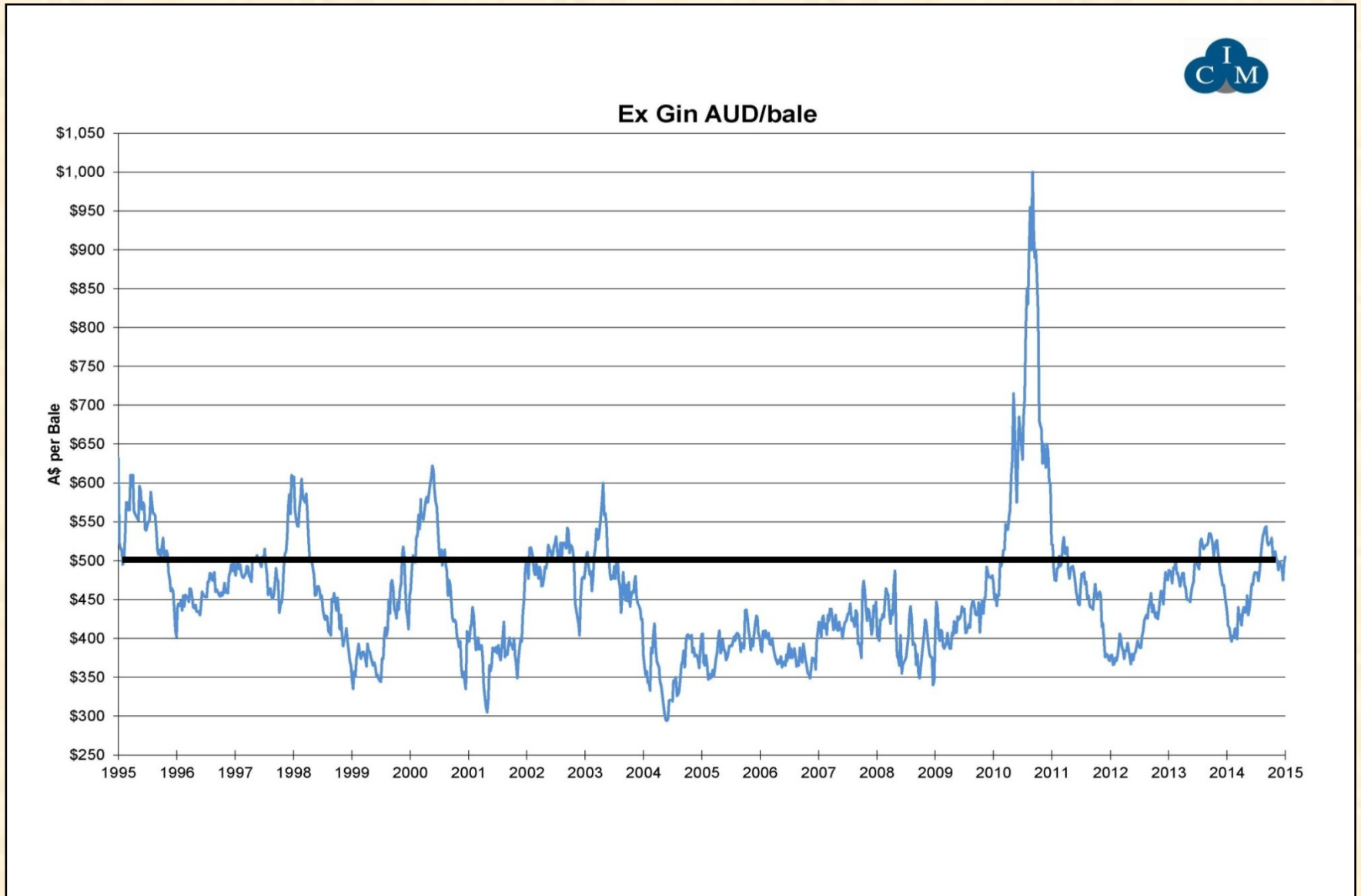
RICE PRICE LAST 10 YEARS



COTTON PRICE AND YIELD

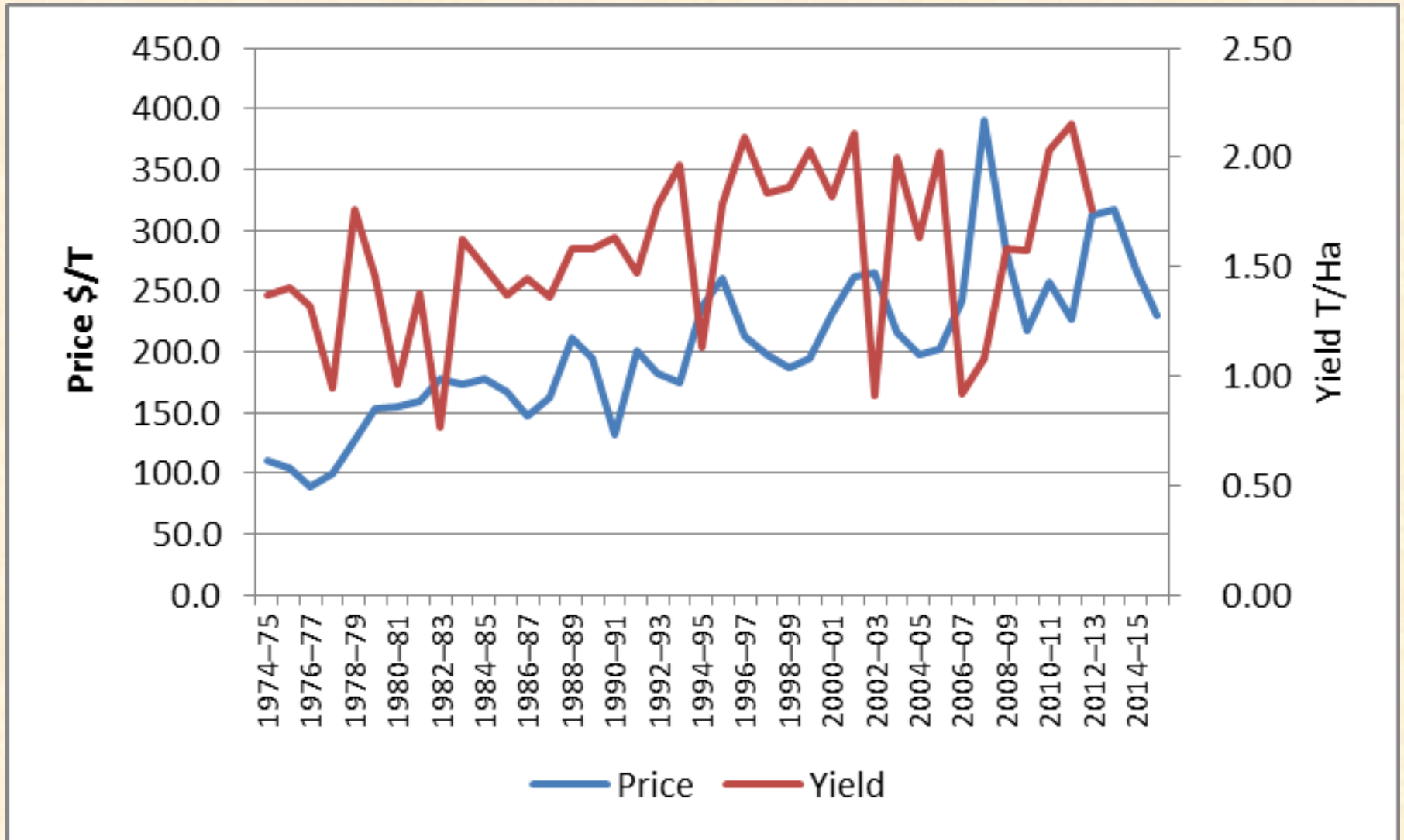


COTTON BALE PRICE LAST 20 YEARS

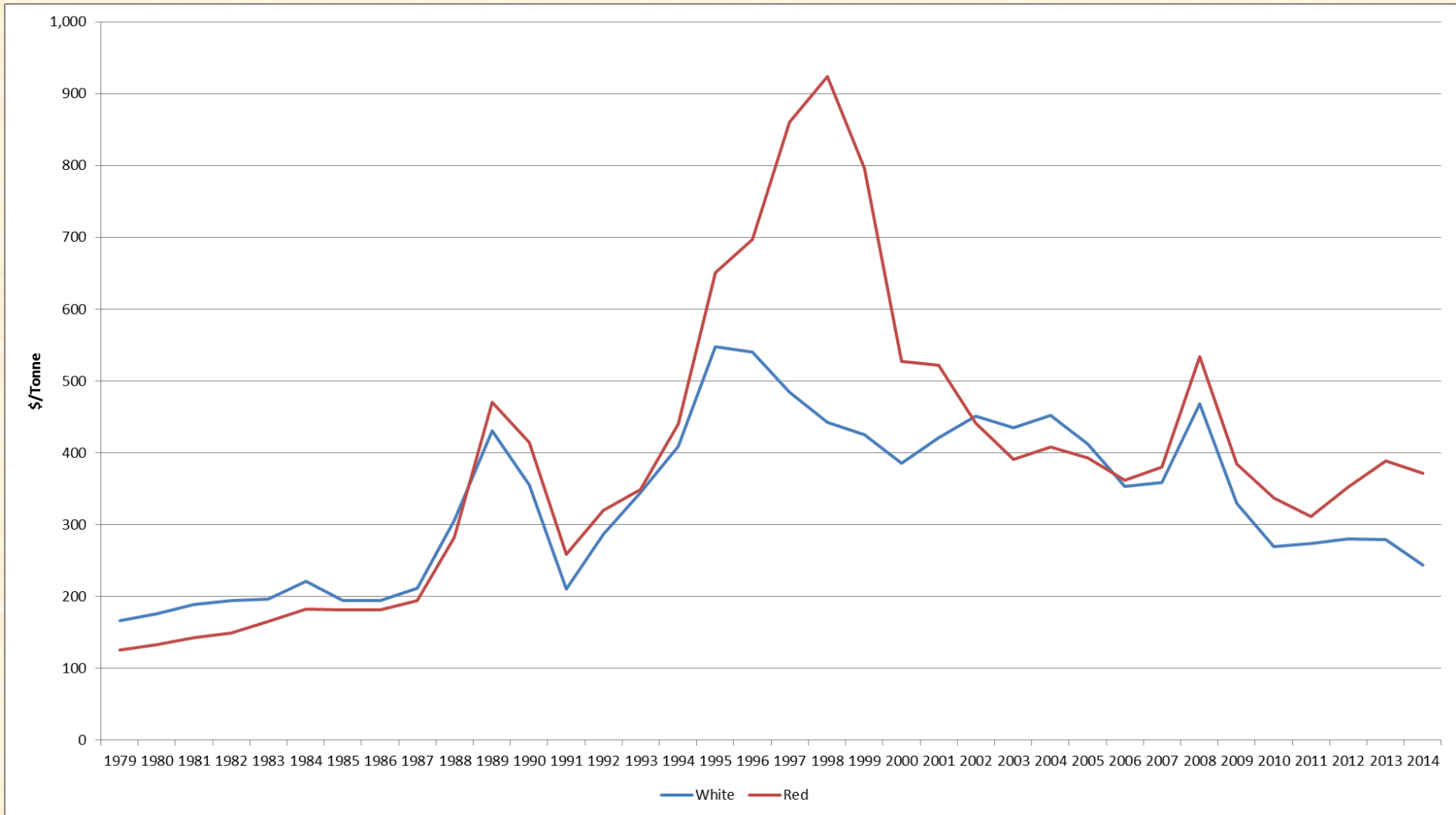


Source: Independent Commodity Management

WHEAT PRICE AND YIELD



WINEGRAPE PRICE LAST 35 YEARS



Source: WGMB and Booth Associates

DAIRY YIELDS AND PRICES



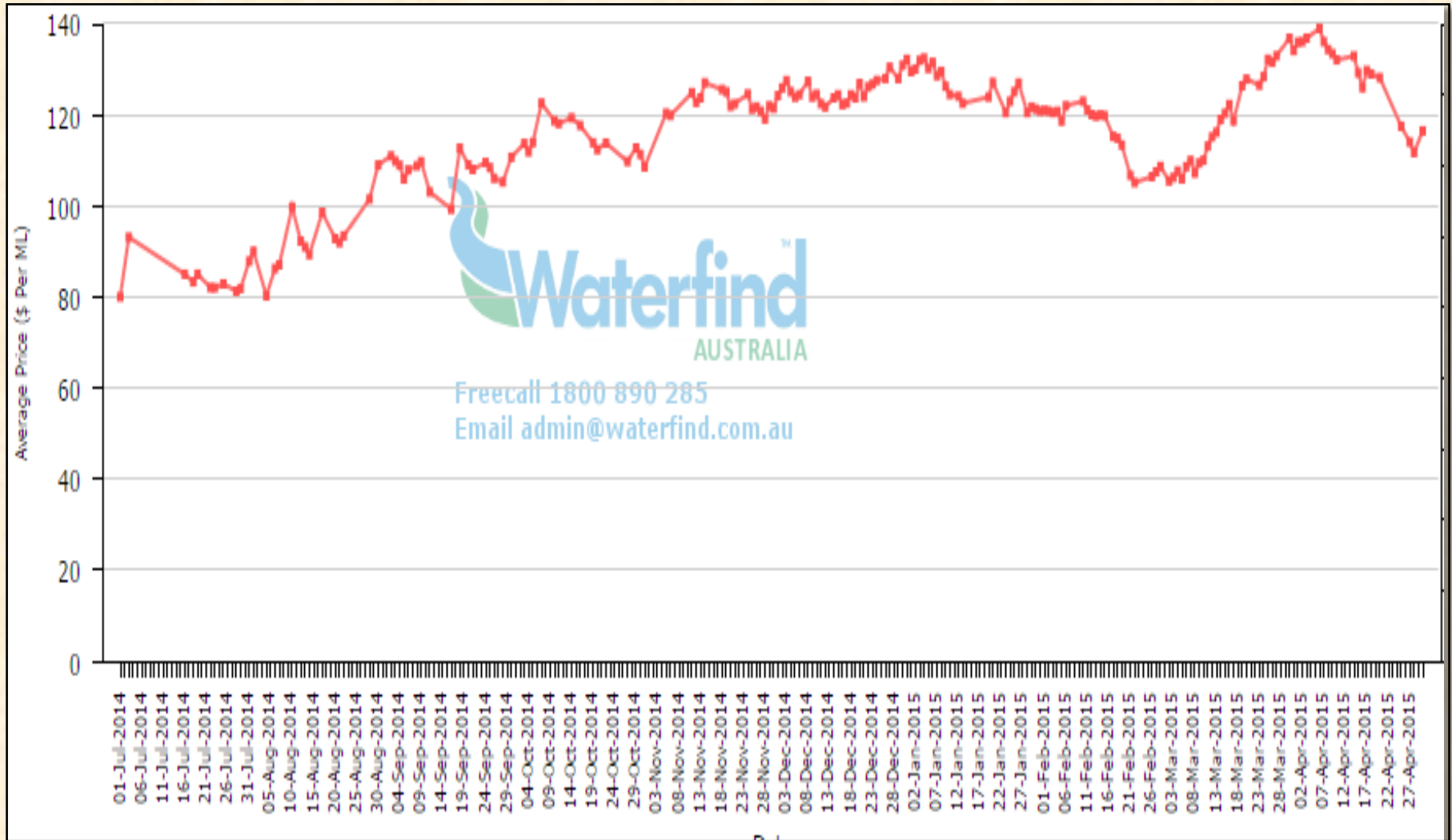
TEMPORARY WATER PRICE 2014/15

	Q1 & 2	Q3		Q1 & 2	Q3
Murrumbidgee	103	119	Border Rivers	149	237
Murray	108	120	Gwydir	255	306
LMGS	11	30	Namoi	194	253
			Macquarie	216	254

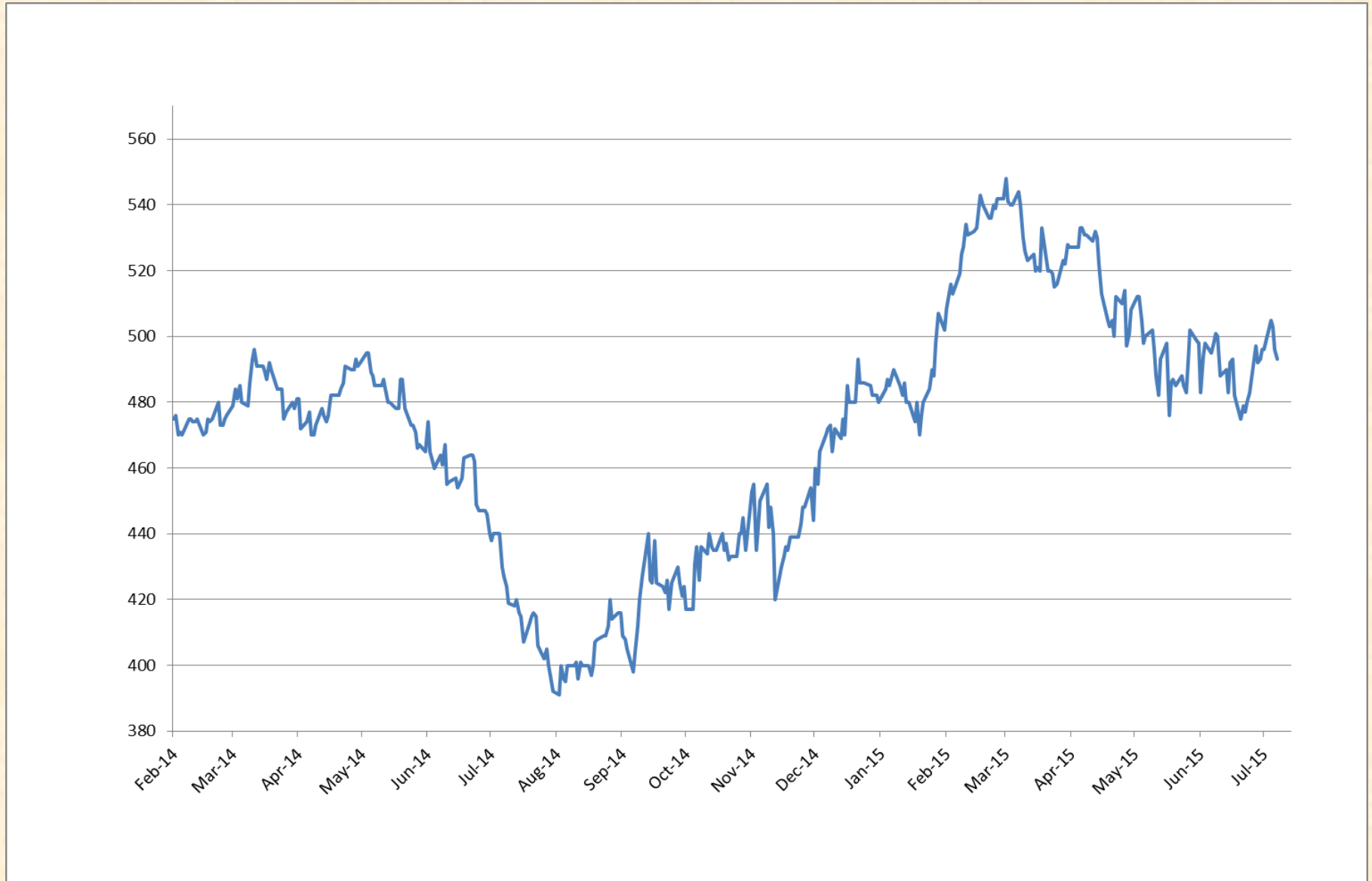
Note: LMGS is Lower Murrumbidgee Groundwater Source

Source: Waterfind CEO Report

SOUTHERN CONNECTED TEMPORARY WATER PRICE 2014/15



COTTON CASH PRICE 2014 - 2015



Source: Independent Commodity Management



CURRENT TEMPORARY MARKET

- \$200/ML

Who is driving this market?

Scarcity

- Not CEWH
- Not horticulture
- El Nino?
- Cotton price

WHAT WILL DRIVE THE WATER MARKET?

- Allocations and crop returns
- Gross margins

	Price	GM \$/ML		GM \$/ML
Cotton at 11b/ha	\$400/b	169	Cotton at 12b/ha	200
	\$450/b	218		253
	\$500/b	267		307
Rice at 12t/ha	\$300/t	162	Rice at 13t/ha	181
	\$350/t	204		227
	\$400/t	247		272



2014/15 SCENARIOS

	<u>20%</u>	<u>40%</u>
▪ GS Allocation	941GL	1,273GL
▪ GS Carryover	344GL	344GL
Total Available	1,285GL	1,617GL



WHO WILL USE THE WATER?

GS ALLOCATION

	<u>20%</u>	<u>40%</u>
▪ Horticulture	200GL	200GL
▪ Cotton	385GL	400GL
▪ Rice	470GL	500GL
▪ Winter crops/other	230GL	250GL
▪ Carryover	<u>0GL</u>	<u>267GL</u>
	1,285GL	1,617GL



SOURCES OF WATER

- High Security
- General Security
- Groundwater
- Supplementary
- Temporary Purchase
- Carryover
- Lease
- Rainfall

ENTITLEMENT COMPARISON

Water Entitlement	Total GL	Current Price \$/ML	Allocation Reliability	Capital Invested per Delivered ML
High Security	352GL	2,900	95%	\$3,050
General Security	1,660GL	1,400	60%	\$2,330
Groundwater (Lower Murrumbidgee)	268GL	1,200	100%	\$1,200
Supplementary	180GL	300	40%	



ENTITLEMENT COMPARISON

- General security appears to be good value compared to high security but allocation risk
- Groundwater can pump and/or carryover up to 200%.
Expensive infrastructure and high energy costs
- Supplementary announcements are episodic. Usage over past 11 years:
 - <1% in 3 years
 - 70-80% in 4 years
 - Average annual usage of 44%



CARRYOVER

- Up to 30% of general security entitlements
- Allocated before high security
- Allows irrigators to manage own allocation risk



RAINFALL

- 400mm pa = 4ML/ha
- Capture and reuse runoff
- Overland flows



BUY IT -v- OWN IT

- Interest cost (@ 5%) on general security = \$70/ML pa
- Fixed costs \$12/ML
- Allocation @50% ownership cost is \$164/ML
- Less than current temporary market but now only 12% allocation
- Lease general security is an option for \$60 - \$65/ML



GENERAL SECURITY COSTS

Average costs per ML for general security is subject to allocation

	DELIVERED COST /ML						
Allocation	20%	30%	40%	50%	60%	70%	100%
MI (\$/ML)	85.70	62.60	51.05	44.12	39.50	36.20	30.26
CICL(\$/ML)	118.68	79.97	60.86	49.60	42.26	37.17	28.60

- Plus temporary water purchases if applicable
- Riparian irrigators have energy and infrastructure renewal costs



WHAT IS THE TRUE COST OF BORE WATER?

- Capital invested \$1,200/ML for the water entitlement
- Infrastructure – new bore say \$0.5M, lifespan 25 years
- Capital renewal is \$20,000 per annum
- Energy and R & M costs \$70/ML
- Government charges \$5/ML
- If pump, say 1,000ML per annum, cost is
 - $\$20,000 \div 1,000 = \$20/\text{ML}$
 - + energy and R & M + Gov't charges = \$95/ML



SUMMARY

- Allocations and crop returns drive the water market
- Annual crops and allocations are the key drivers of the temporary market – commodity prices are high
- Water provides return on capital and balance sheet growth
- Make decisions aligned with your business goals for best returns (return on assets)