



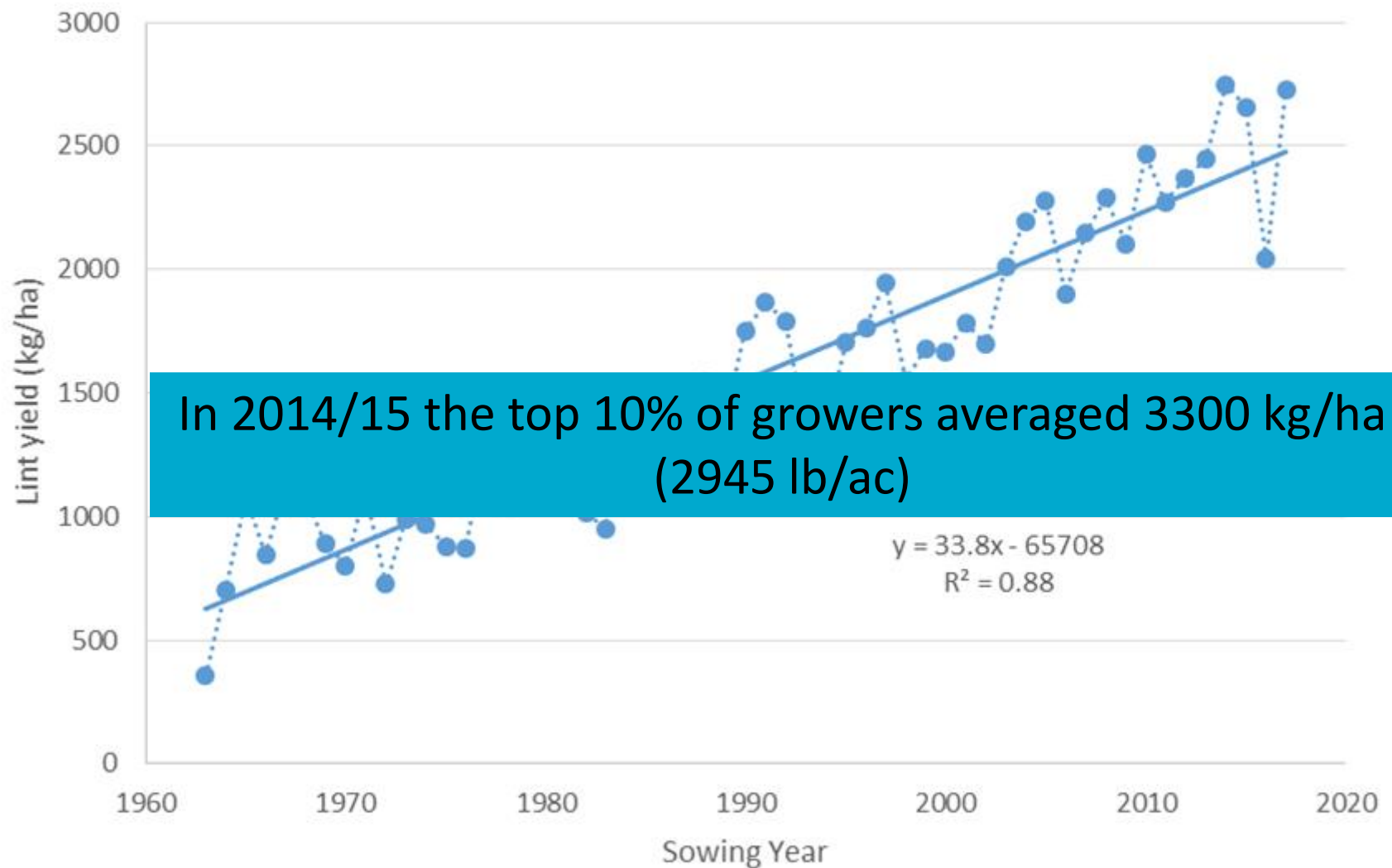
Seed quality traits – the Australian experience

July 2019

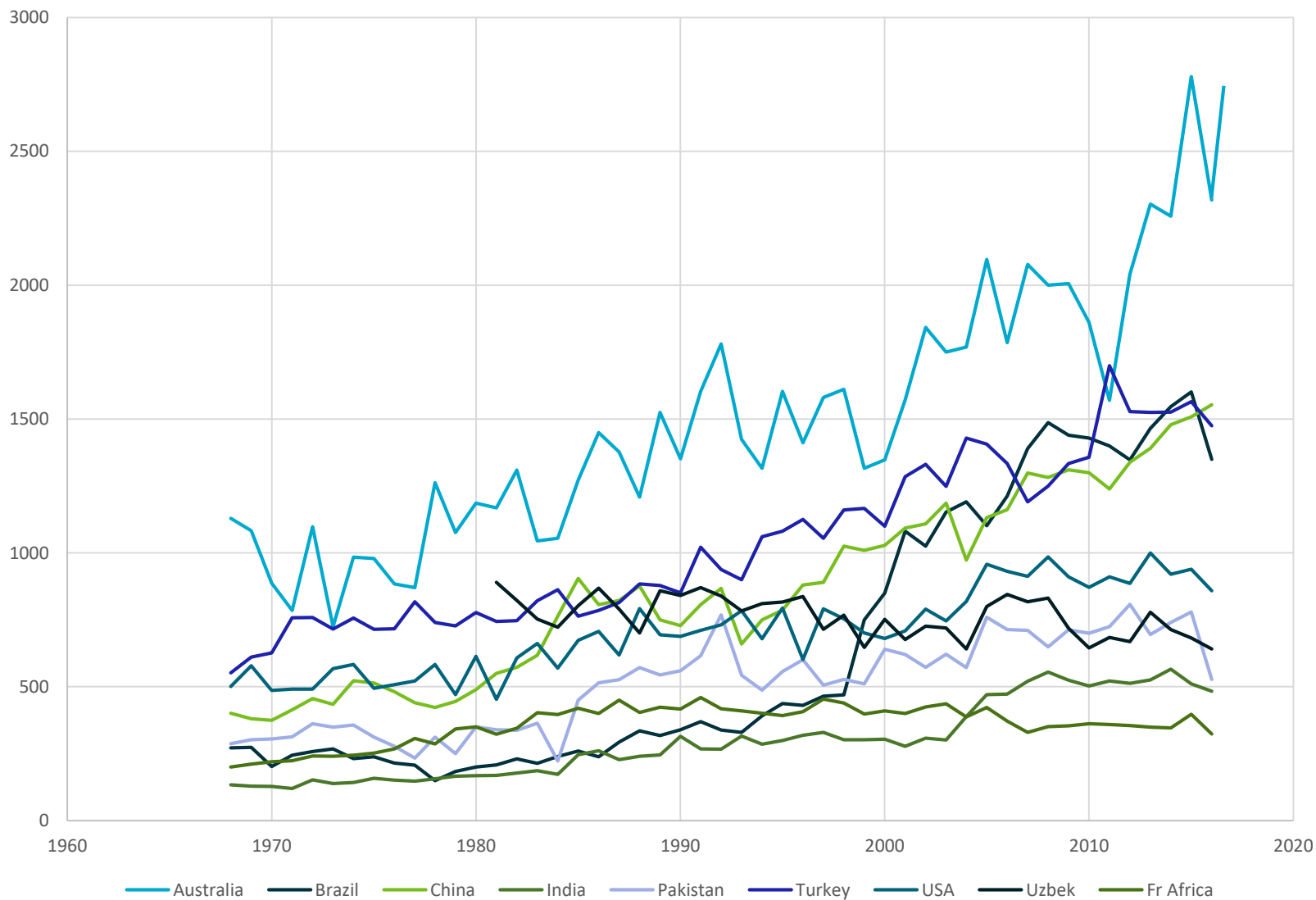
WARWICK STILLER
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Australian Irrigated yield

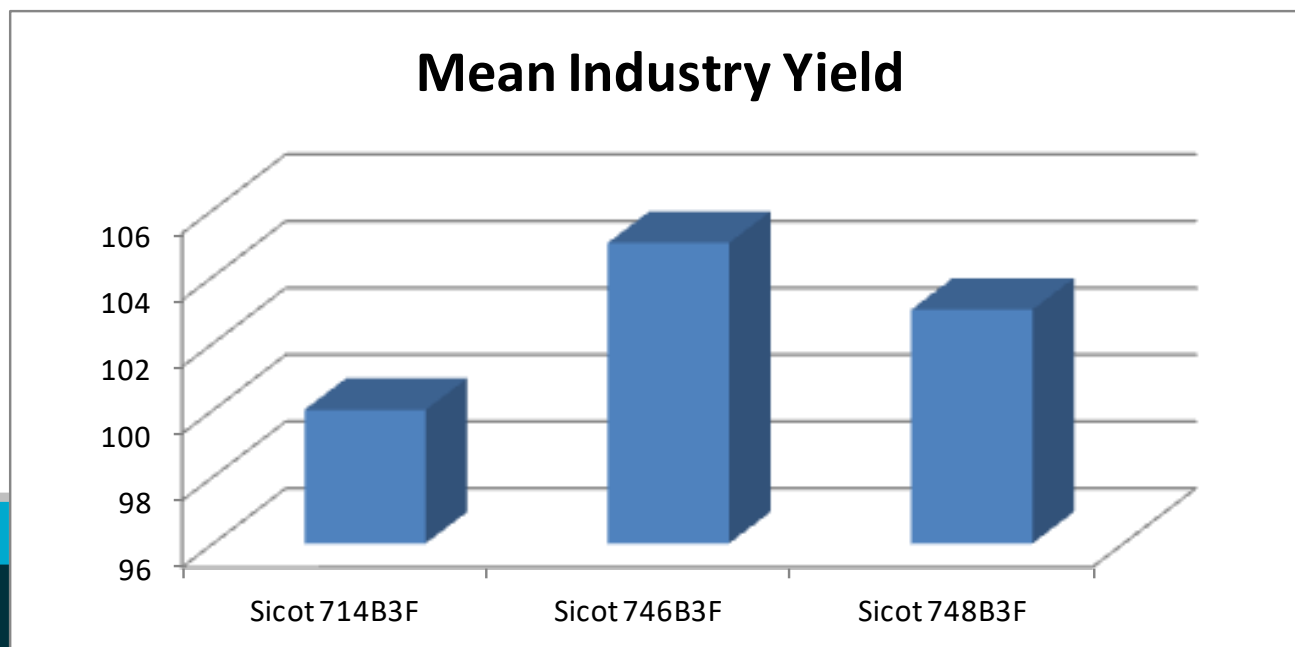


Global trends in Cotton Yield

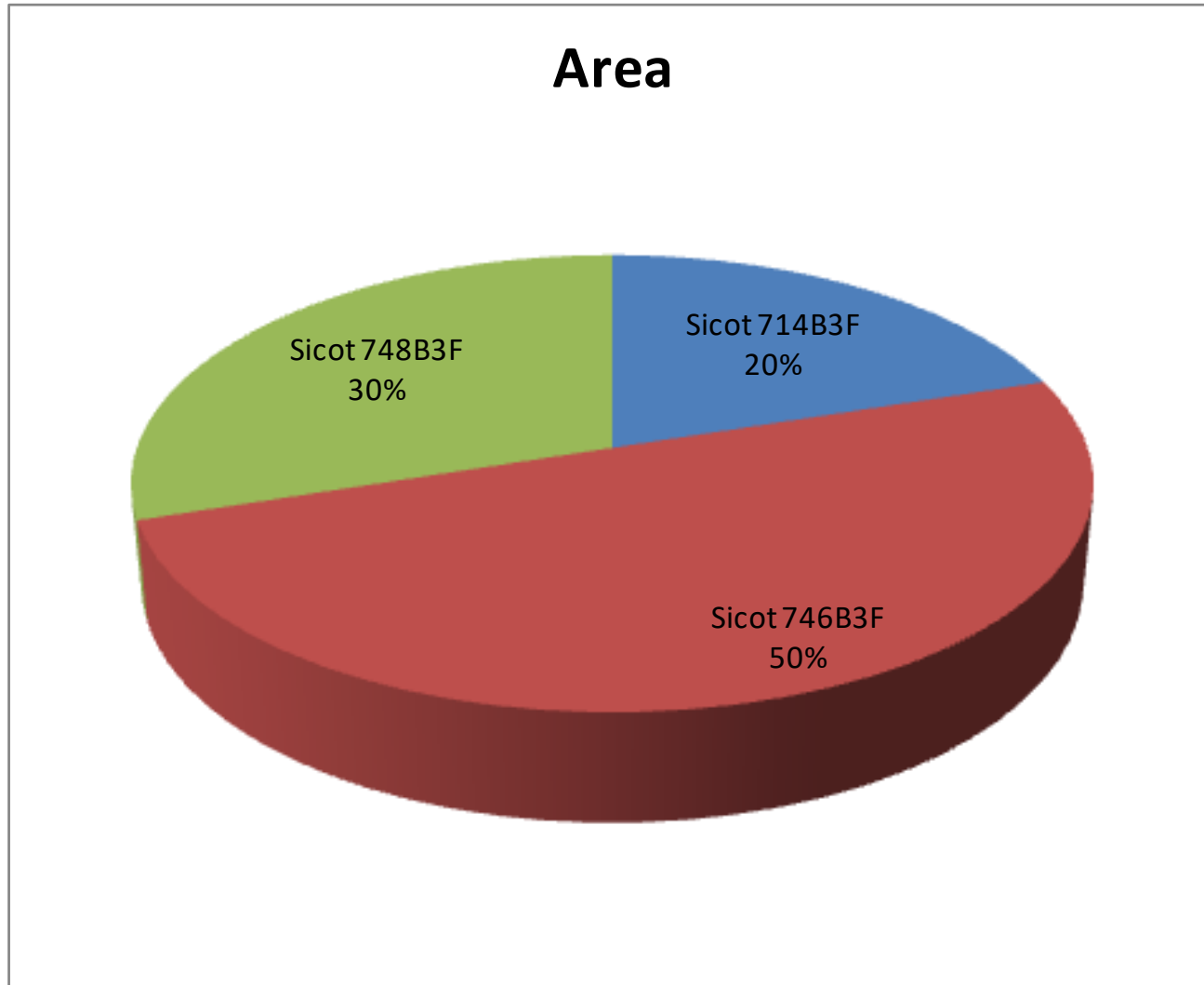


Gin turnout and seed size (density)

	Gin turnout	Seed Index	seeds/kg
Sicot 714B3F	40.8	10.8	9300
Sicot 746B3F	44.4	8.3	12040
Sicot 748B3F	43.0	9.0	11140



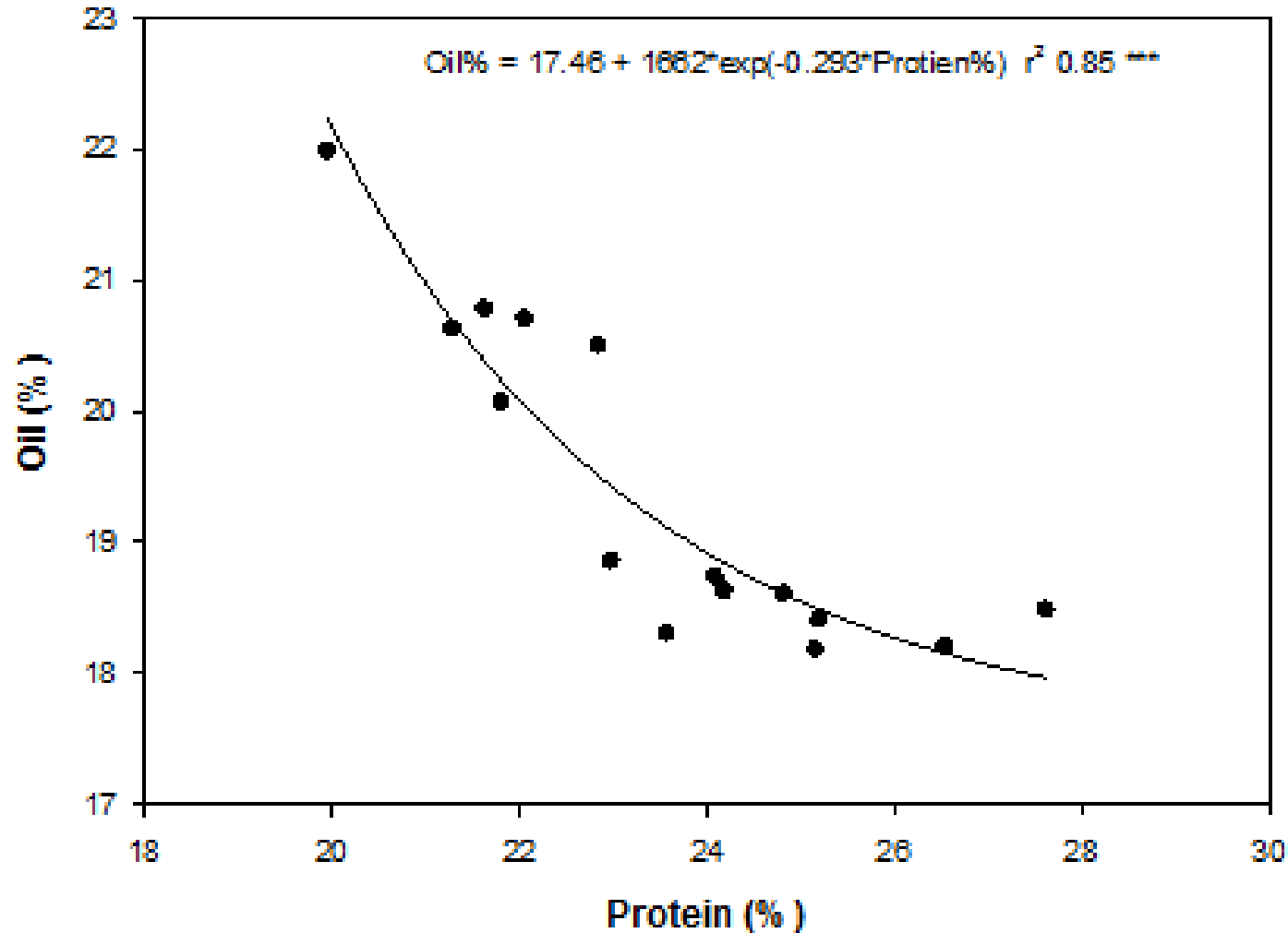
Gin turnout and seed size (density)



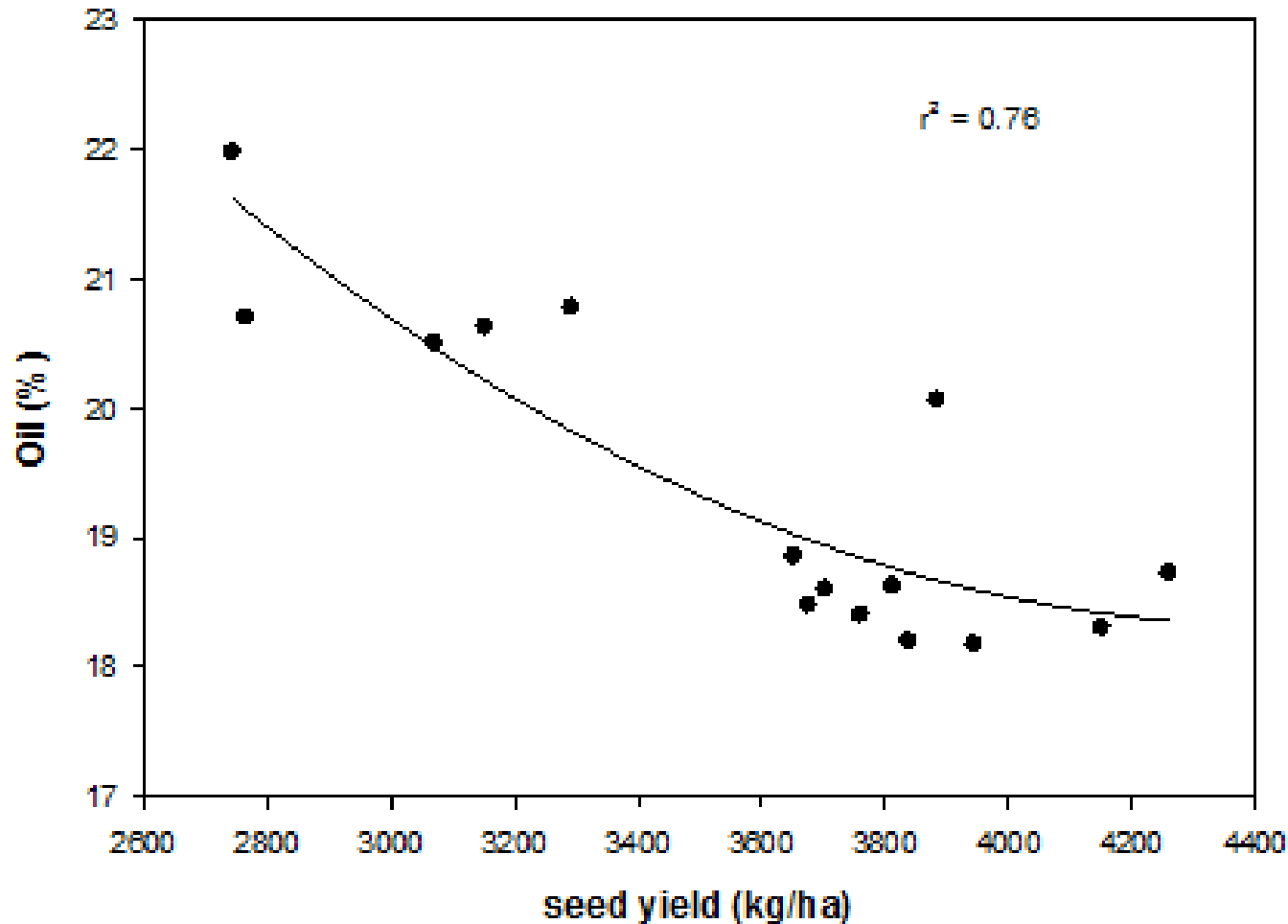
Seed size

- Increased gin turnout has resulted in reductions in seed index (size vs density)
- When first introduced, some difficulties with establishment, but largely overcome with education.
- We did offer to withdraw the varieties, which almost caused a revolt in the industry.
- Given a choice, growers will always choose yield.
 - If an Australian farmer plants cotton they will always aim for the highest productivity (no Farm Bill).
- Significant discussions around increased oil – highest value commodity will win every time.

Relationship between oil and protein



Relationship between oil and seed yield



What is Australian cottonseed used for

		Domestic	Domestic	Export
Year	Crushing	Feedlot	Grazing	Feedlot
2016	20%	40%	10%	30%
2017	15%	40%	25%	20%
2018	10%	35%	40%	15%
2019	-	50%	40%	10%

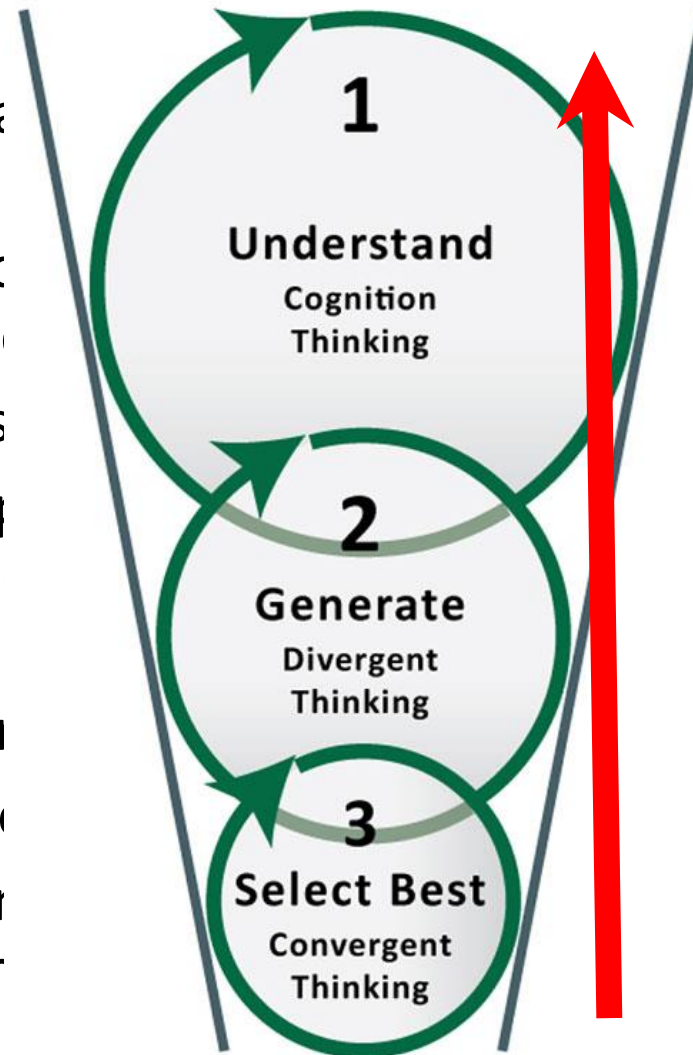
What is Australian cottonseed used for

Wholesale price of oil in \$AUD

- Soybean – BASE
 - Canola + \$200
 - Cottonseed + \$400
-
- Although landscape has changed regarding consumers ie healthy oils, cottonseed oil still commands a premium in the market.

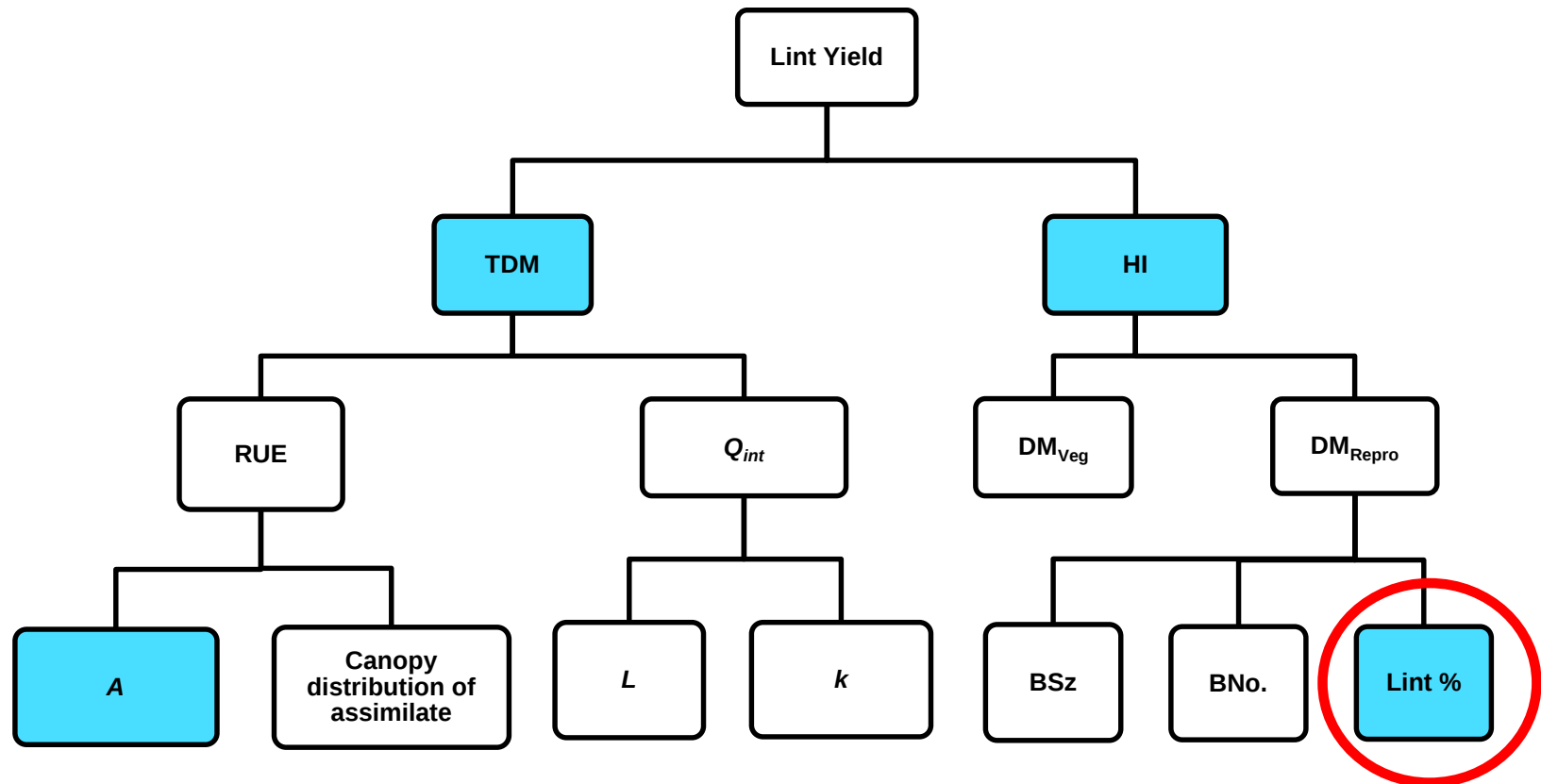
Case study - Modified cottonseed oil

- Between 1994 and 2000 - MonoCott
- low in saturated and high in oleic
- Aimed at food sector
- Assuming 10% of the industry
- Due to significant investment would be required
- Marketing – two
- Project was terminated commercial partner



a new GM cottonseed
low propenoic fatty acids,
opportunity in stockfeed
added ~3% to gross value
national approach
or commodity
of interest by possible

Case study – analysis of 20 years of varieties



Summary

1. Lint yield will drive variety uptake and industry profitability.
2. Care must be taken when continually selecting for increased turnout.
3. There is some evidence that gin turnout can be increased while maintaining seed index – but it is difficult.
4. No evidence that oil and lint yield can be simultaneously improved (yet)
 - Will require step change in Assimilation, Canopy distribution of assimilate and Assimilate partitioning.

Thank you

Dr Warwick Stiller

CSIRO Agriculture and Food



Cotton Breeding – Objectives

Through novel research and applied plant breeding develop Australian cotton varieties with the package of:

- increased yield
- fibre quality preferred by international spinners
- resistance to all important diseases
- widely adapted
- with GM traits of importance.

Achieved through the integration of traditional breeding and modern tools

