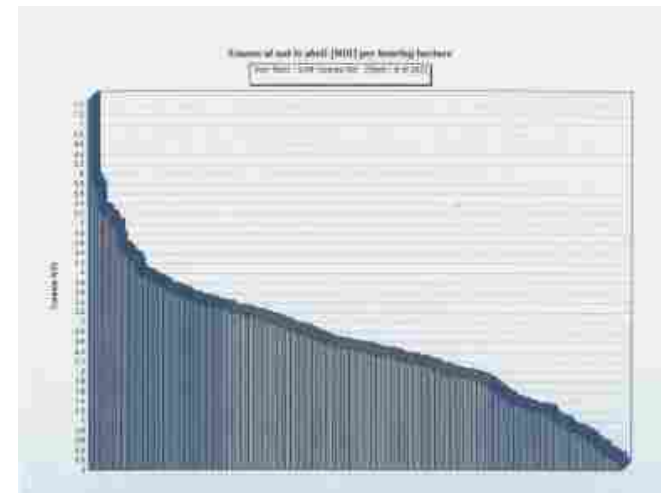




Department of
Primary Industries

The benefits of benchmarking – the macadamia experience

Jeremy Bright –
Macadamia Development Officer



Benchmarking team

- Shane Mulo, Grant Bignell and Ingrid Jenkins – QDAF
- Jeremy Bright - NSW DPI
- Geoff Slaughter - USQ



The Industry in numbers

- \$285M Farm-gate value (approx.)
- 25,000 hectares planted (6.9million trees)
- 750 growers from Mareeba to Macksville
- \$700M retail value
- 70% exported of this 30% production sold as in shell (to China)
- 48000T volume of Aust crop @3.5% MC

The basics (great circle of life)

Flowering

Nutset

Nut sizing

Oil accumulation

Nut drop



Flowering



Nutset, development and oil accumulation





Harvest



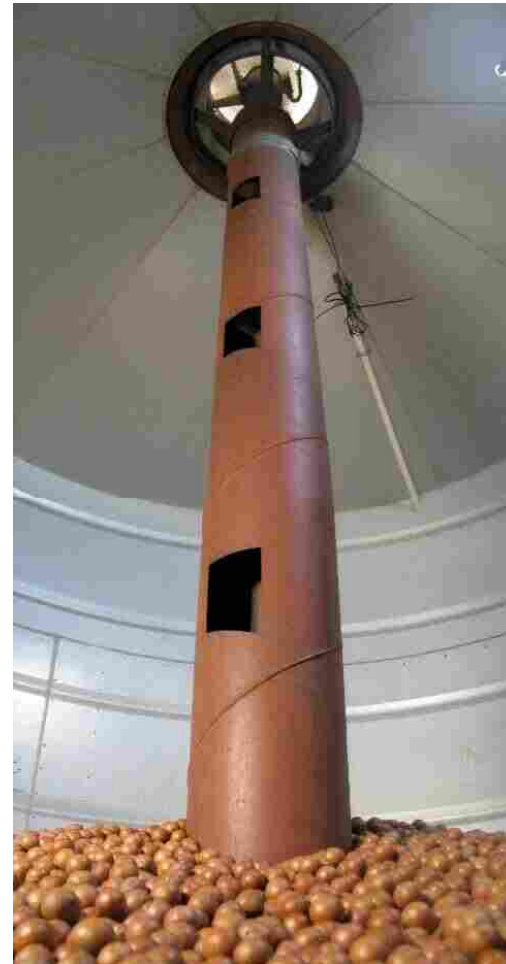
Load to shed



Sorting



Drying Silo



Drier



Kernel sorting



Kernel sorting





Growing regions

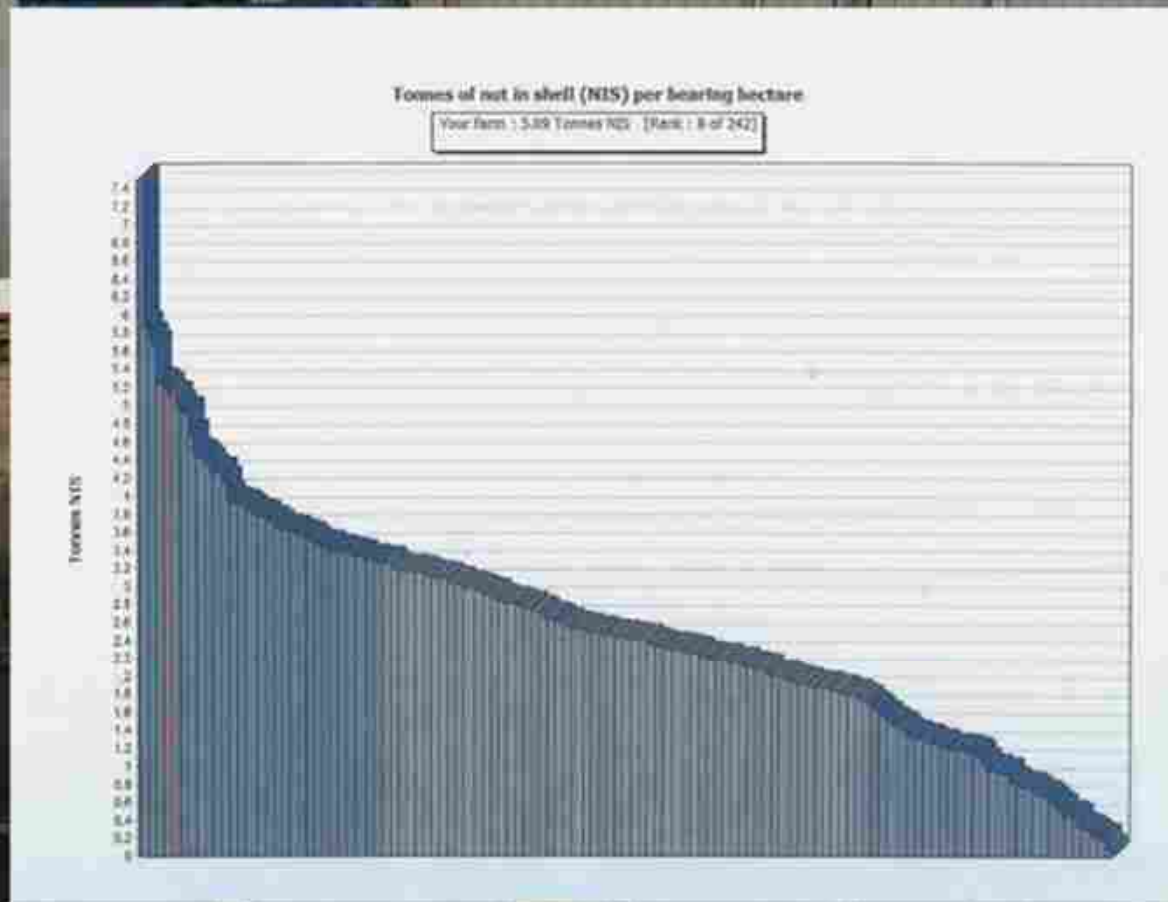


Benchmark the industry

- Benchmarking started 10 years ago
- Benchmarking currently has 270 farms
- 60 percent of Australian production by size
- Good representation of industry
- Allows industry to objectively look at state of the industry
- Comparative data has meant ensuring we have standard measure of production and costs



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What benchmark tells us

Many small farms

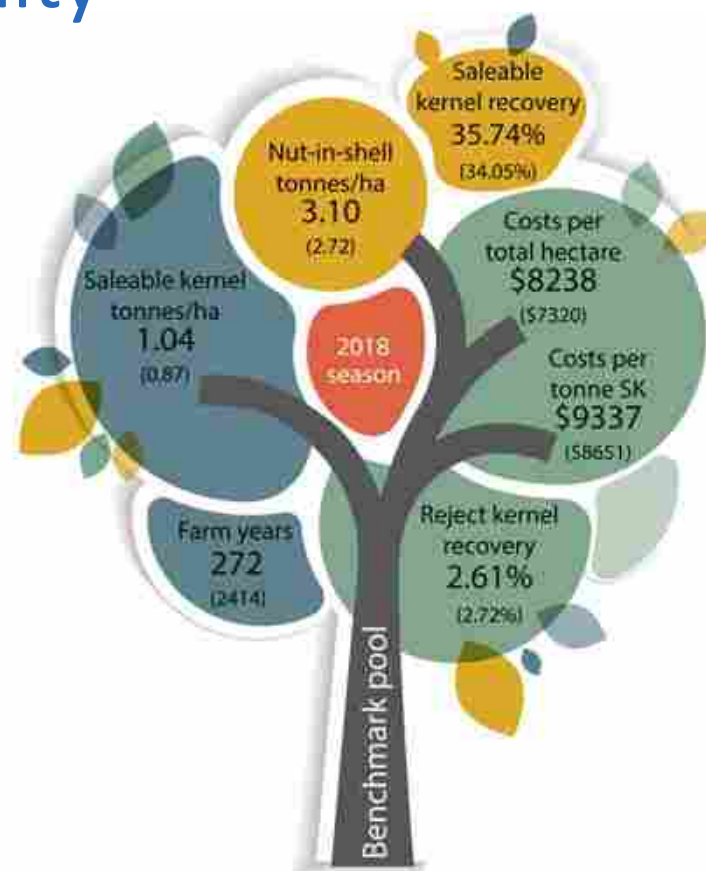
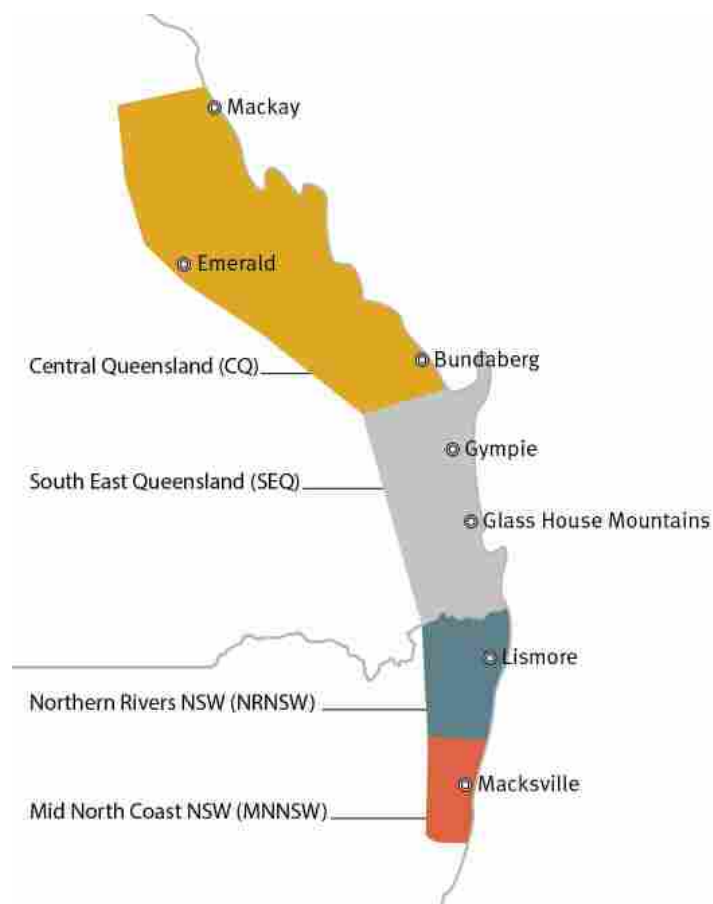
A few farms

Region	Northern Rivers	Nambucca	South-east Queensland	Gympie	Bundaberg
Av ha/farm	16	9	12	12	60
Av tree age	24	19	23	23	14
Tonnes in shell	18,000	2,500	2,500	3,500	21,000
% of total	38%	5%	6%	7%	43%

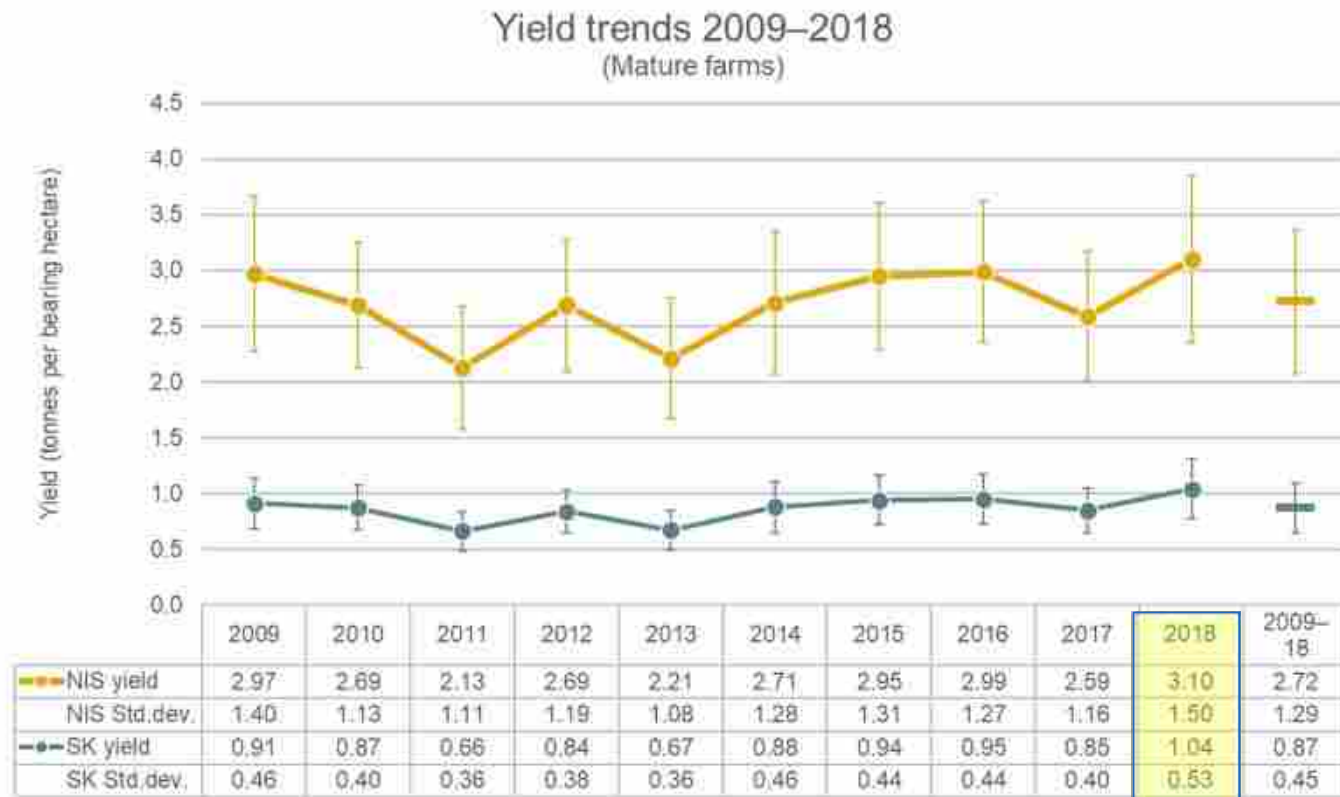
Production Figures 2013-2018

Production year	In shell production volume MT (at 10% moisture)	In shell average price \$/kg (at 10% moisture)*	SKR% (weighted avg)	USKR% (weighted avg)
2018	52,900	~ 5.80	35.74	2.61
2017	46,000	5.62	34.33	2.8
2016	52,000	5.51	33.32	3.14
2015	48,300	5.09	33.64	2.46
2014	43,600	3.83	33.66	3.16
2013	35,200	3	31.81	3.47

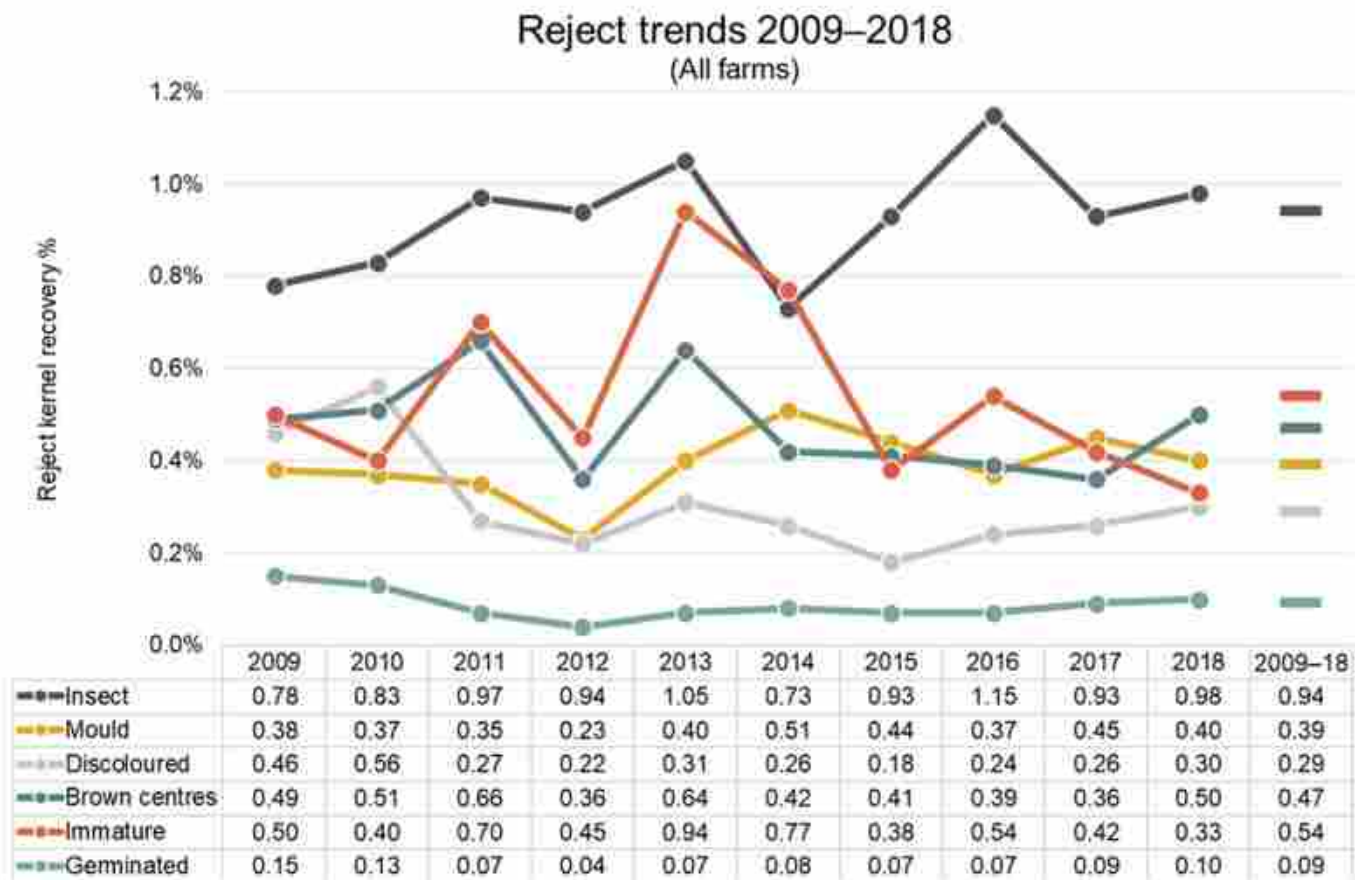
2018 season yield and quality



Seasonal yield and quality data.



Seasonal yield and quality



Pests

Fruit spotting bug



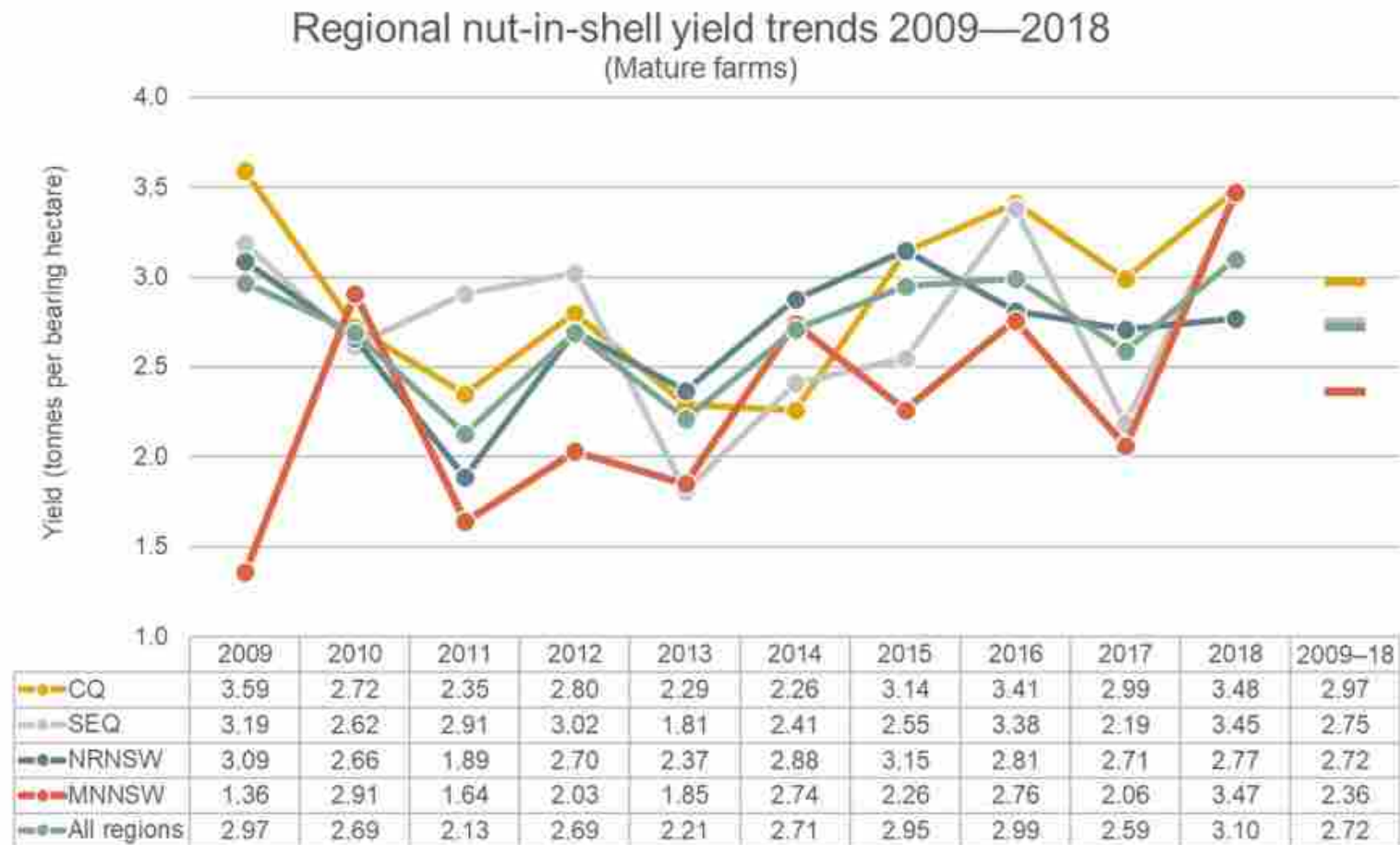
Pests

Fruit spotting bug





Seasonal yield and quality

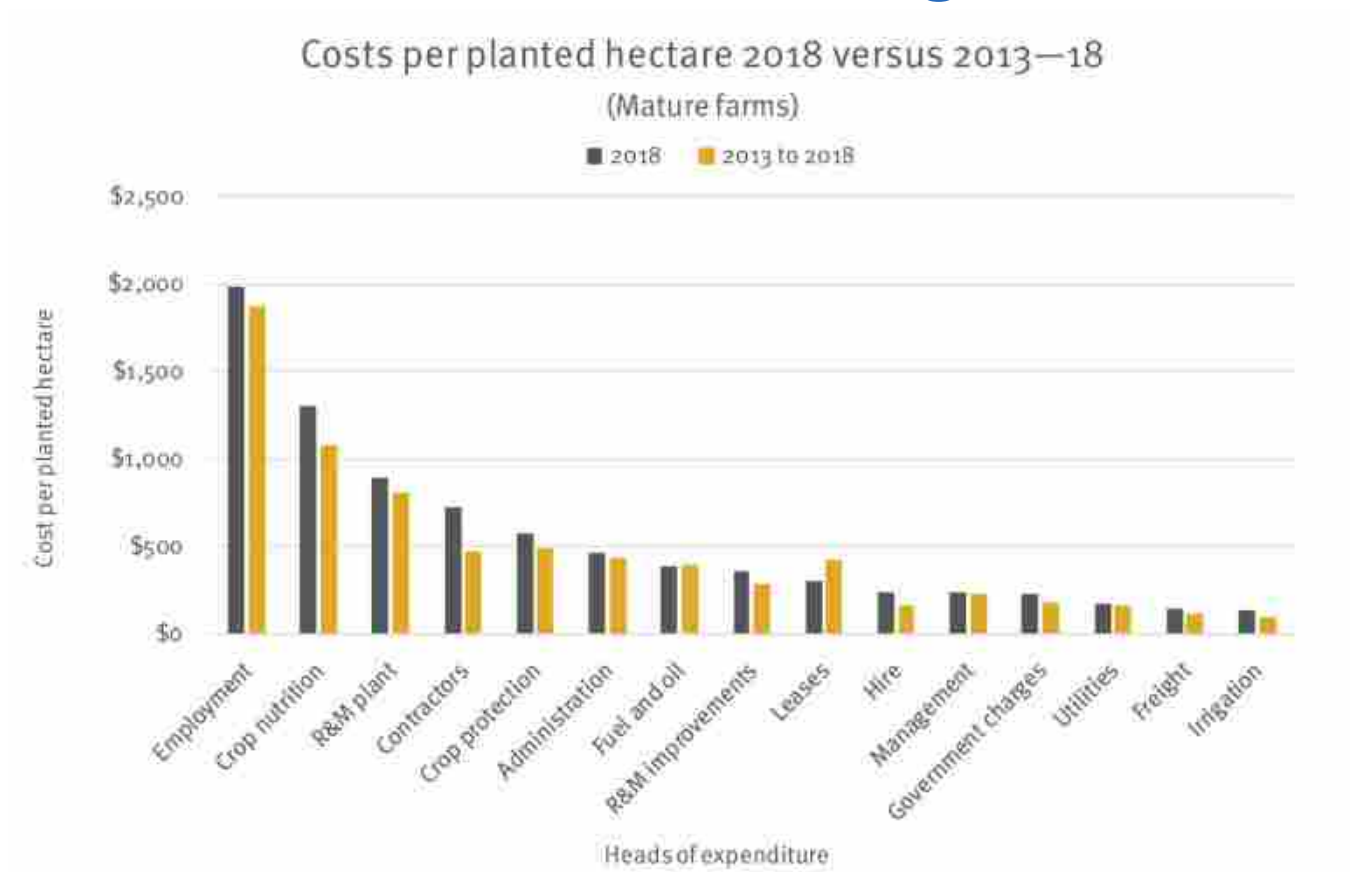


How we can use benchmarking

- Data is used by investors, real estate agents and financial institutions
- Enquiries to me about purchasing macadamia farms “ask for benchmark report as that is a good indicator for value of property’
- Data especially useful to corporate businesses that are not on farm
- Breakdown of costs of production assists in decision making.

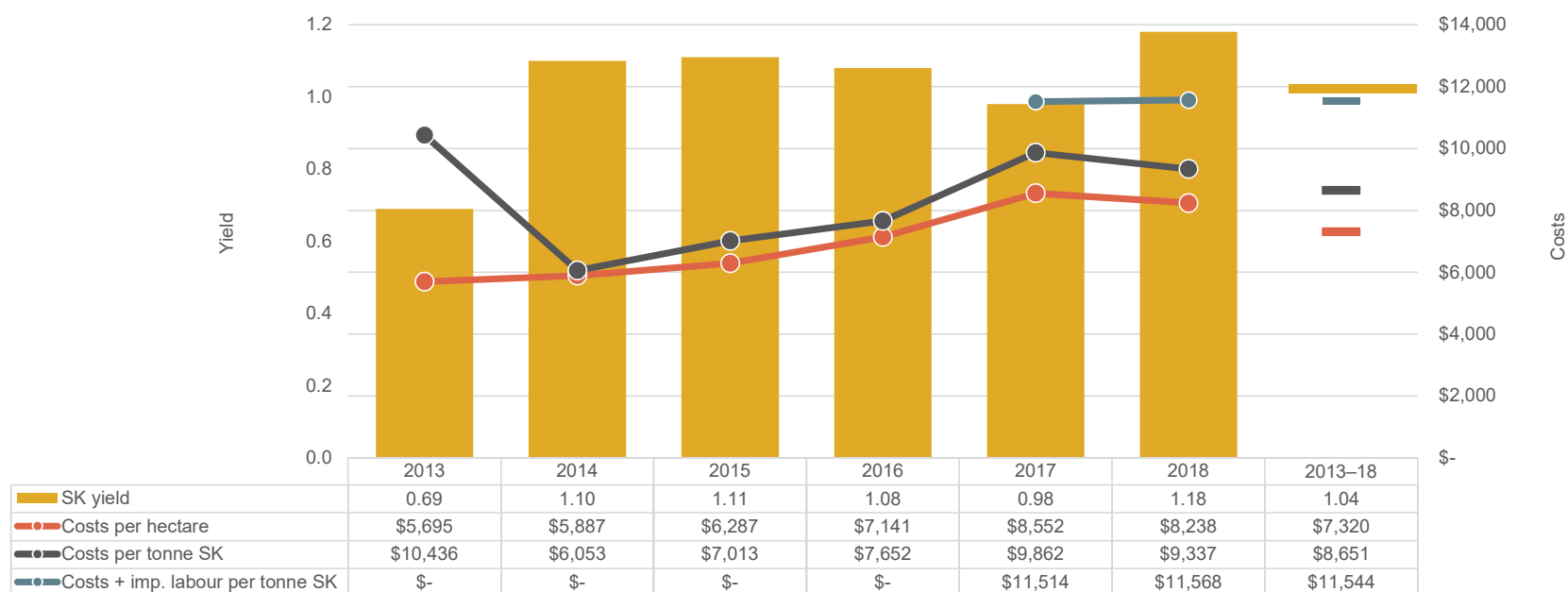


How we can use benchmarking

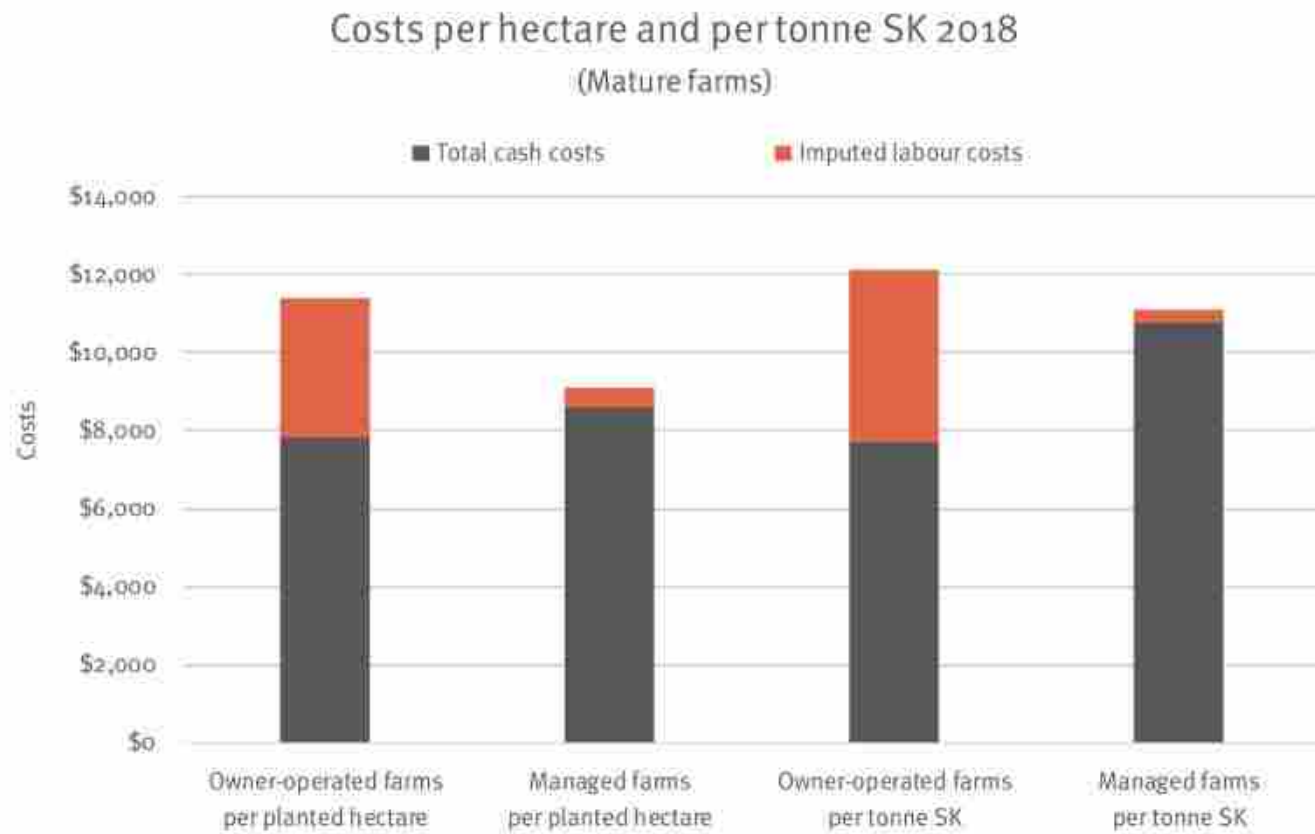


Production costs

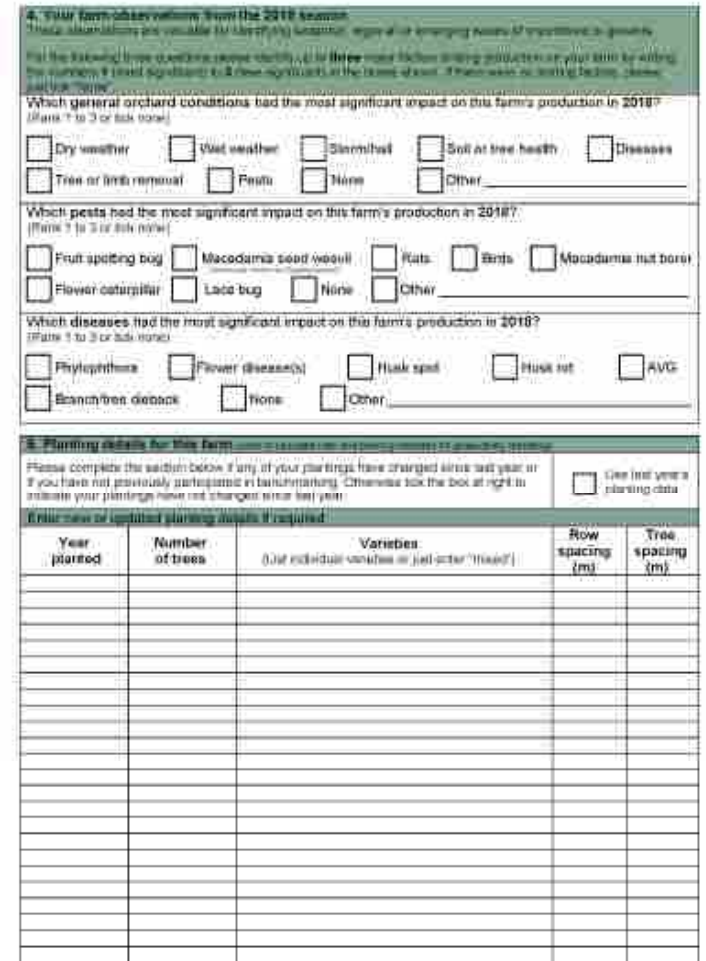
Average SK yield and production costs 2013—2018
(Mature farms providing cost data)



Production costs



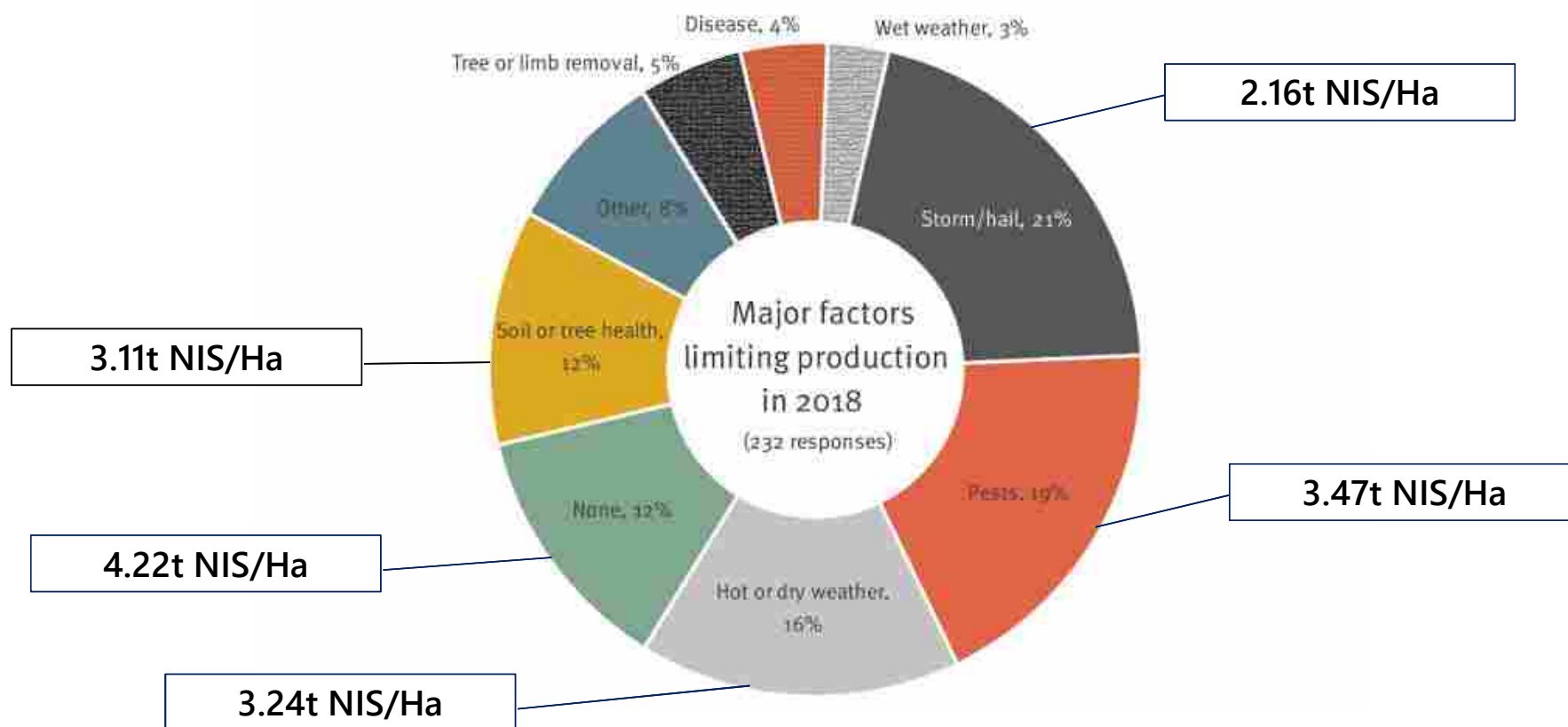
- How we measure the bad and the good
- What contributed to seasonal result
- Opportunity to get information from all, of industry
- Limit to a few questions.



Page 2 of 4

Yield limitations

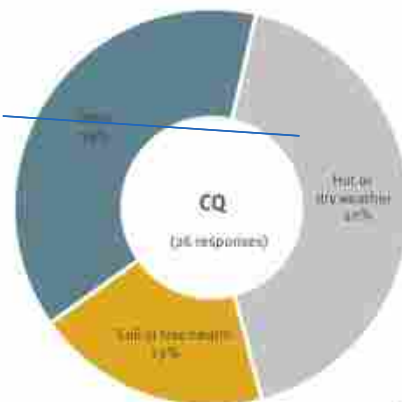
3.10t NIS/Ha



Yield limitations

3.10t NIS/Ha

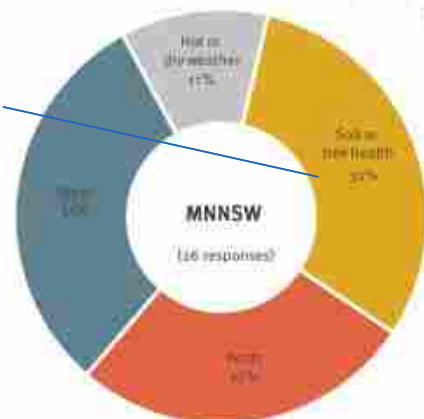
3.31t NIS/Ha
(long-term 2.65)



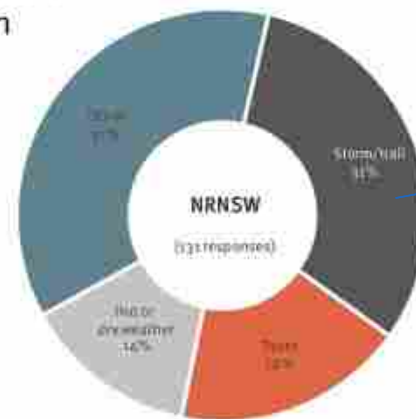
4.16t NIS/Ha
(long-term 3.15)



3.47t NIS/Ha
(long-term 2.36)



2.02t NIS/Ha
(long-term 2.64)



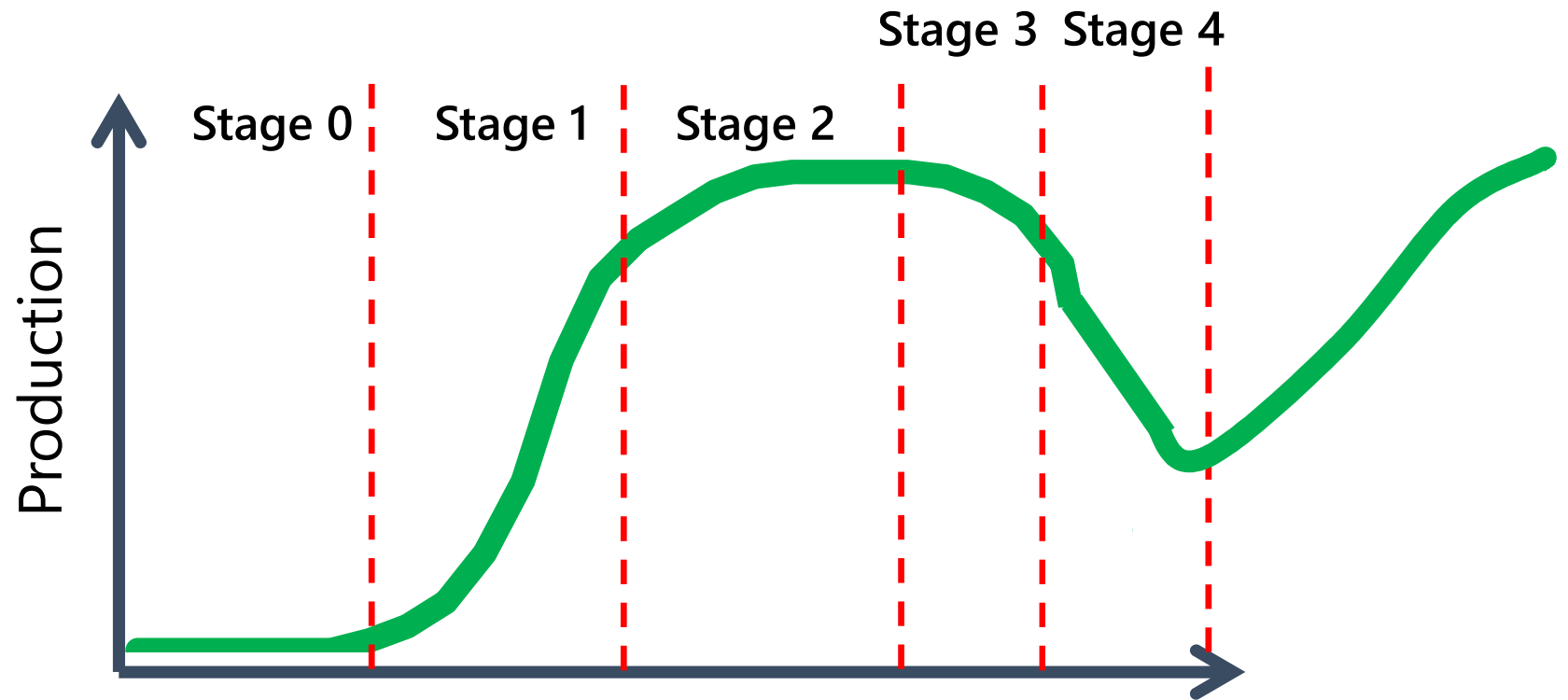
Major factors
limiting production
by region

Use of benchmarking in directing projects

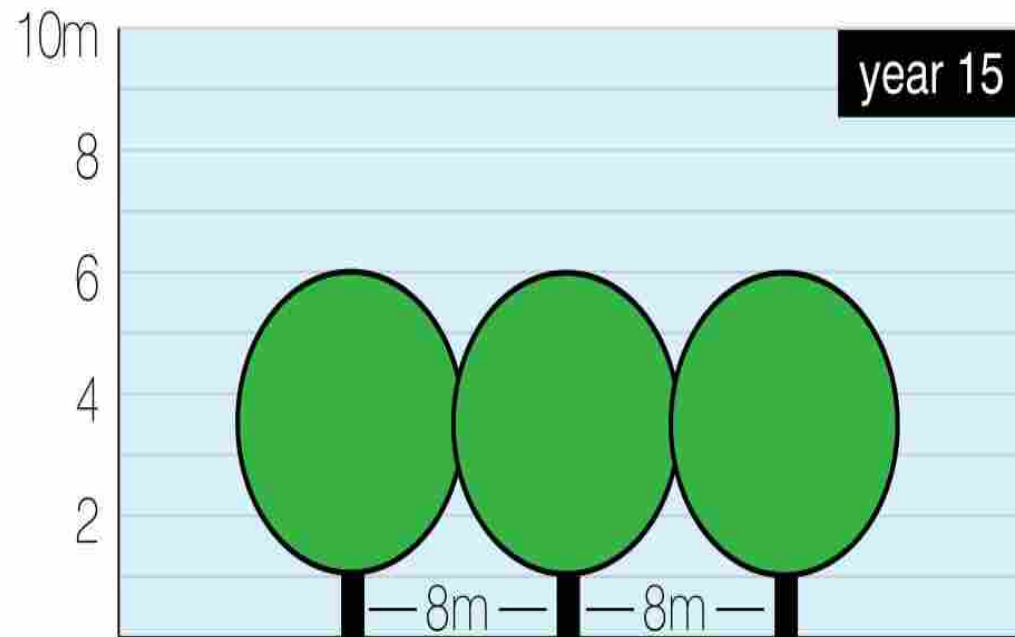
- Integrated Orchard Management (IOM).
- Consistently in top 25% for 5 years
- Understand management systems and inputs
- Key influencing factors affecting orchard management.



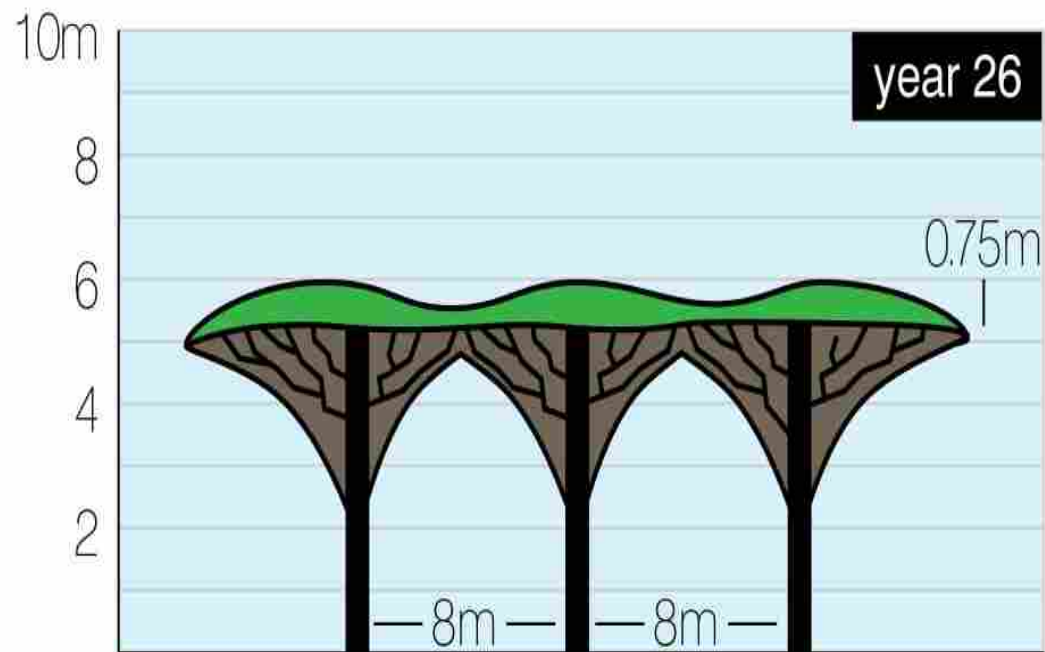
Orchard stages old tree less production



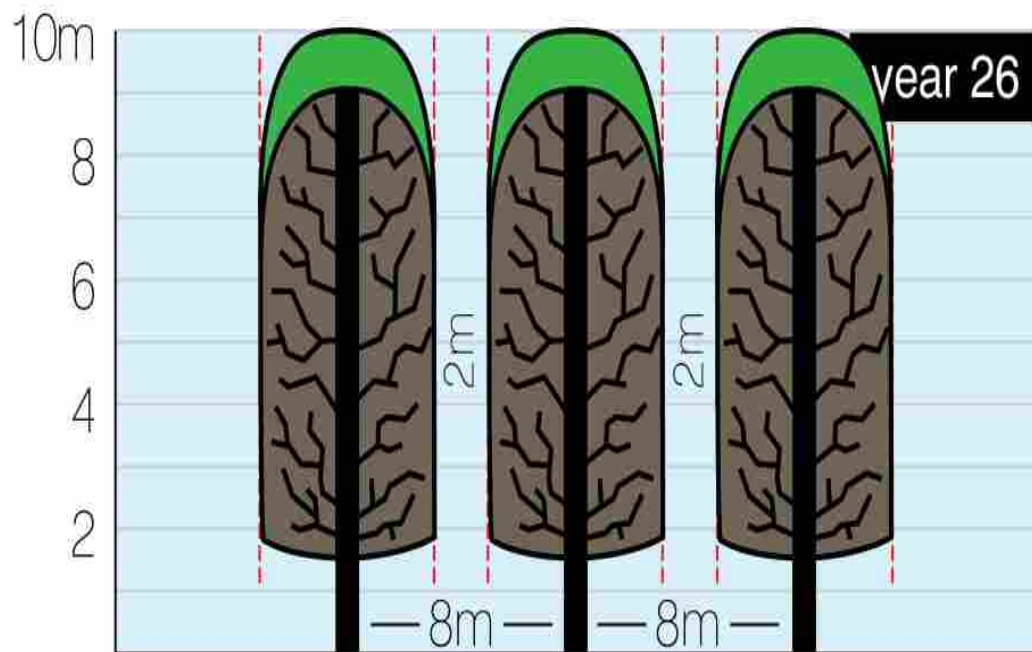
Trees up to 15yo



Canopied Over



Hedging



Stage 2 canopy



Versus

Stage 4 canopy



How we can use benchmarking

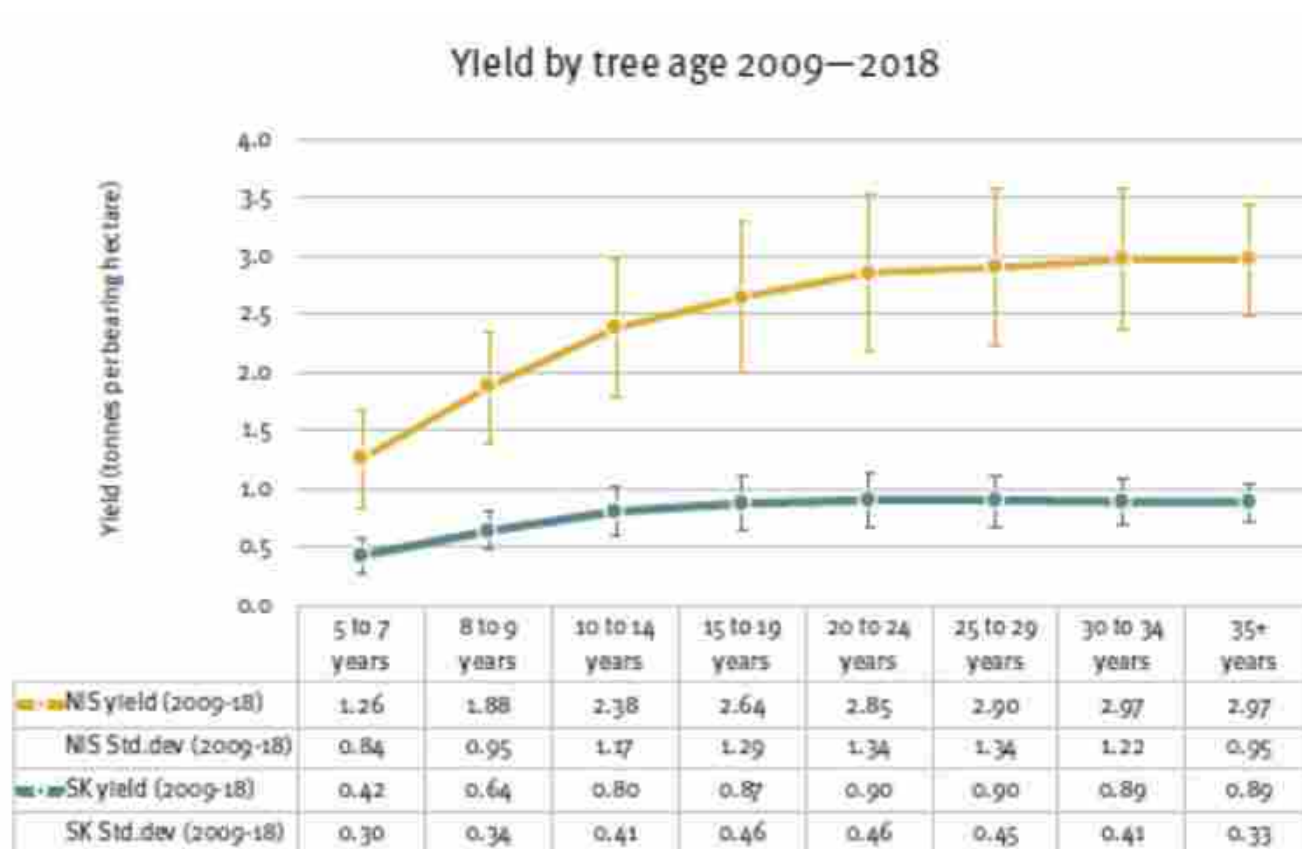
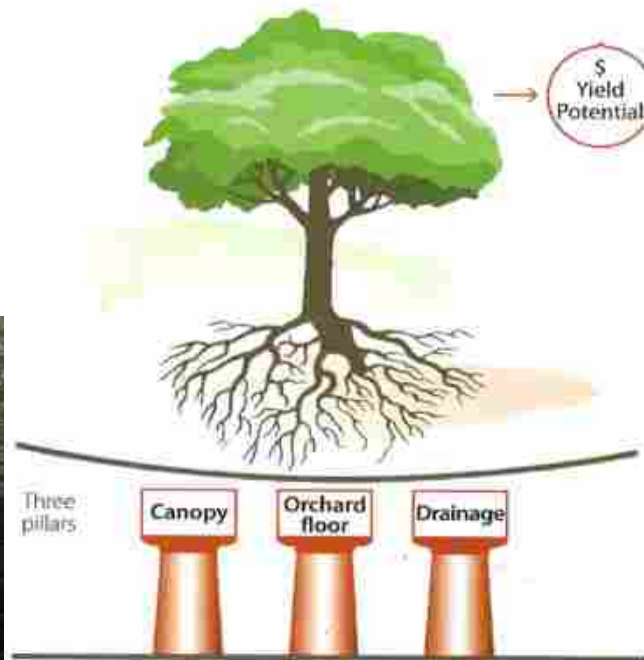


Figure 41: Average yield of nut-in-shell and saleable kernel across tree age groups 2009–2018

Integrated Orchard Management

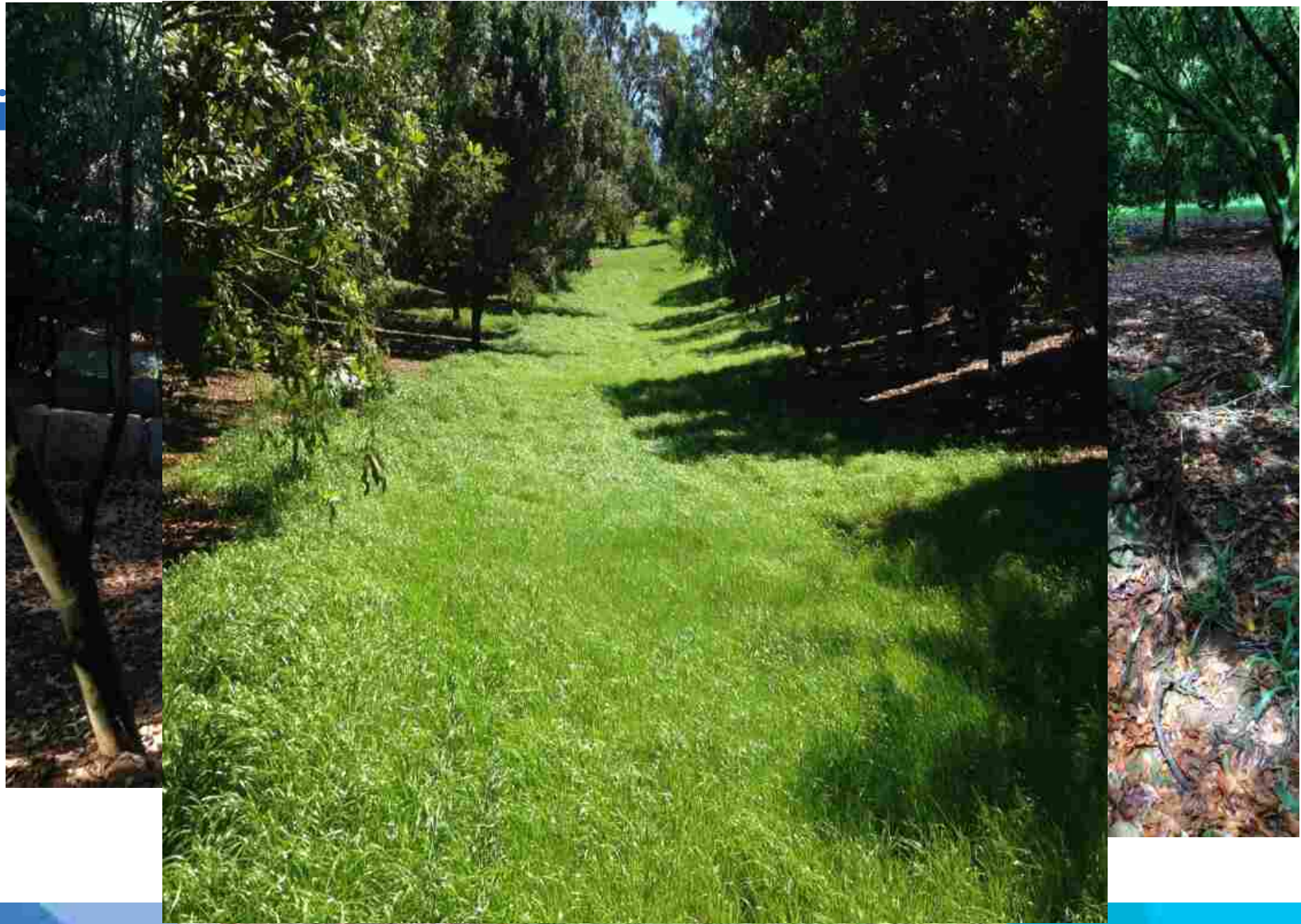


Drainage

Protect blocks from run on
Stable watercourse
Slope specific management



Drai

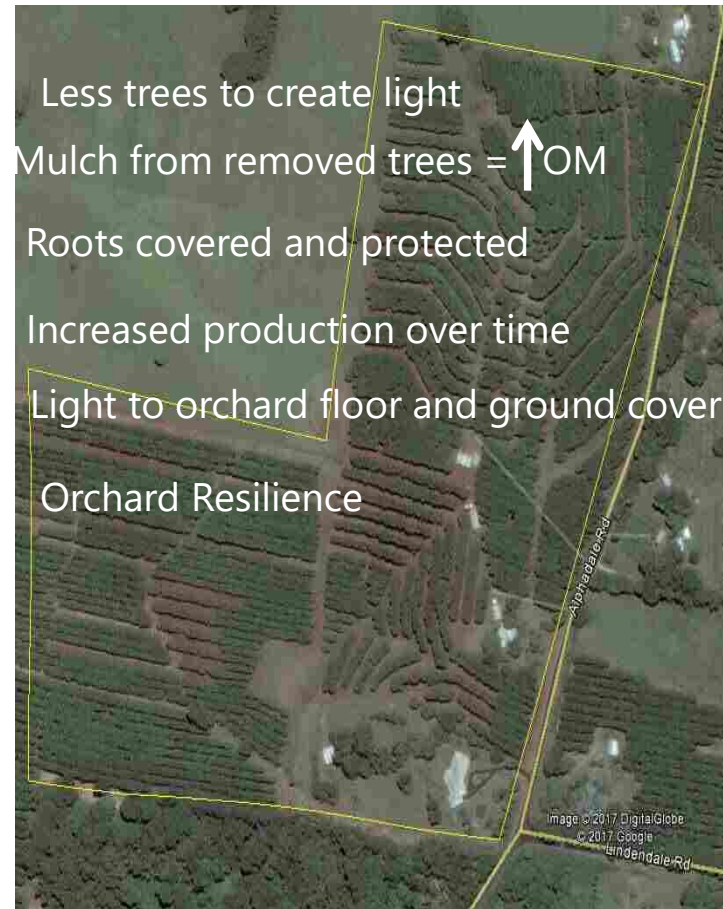


Orchard Floor

- Protect soil
- Develop feeder roots
- Harvestability
- Access after rain



Orch



Use of benchmarking in directing projects

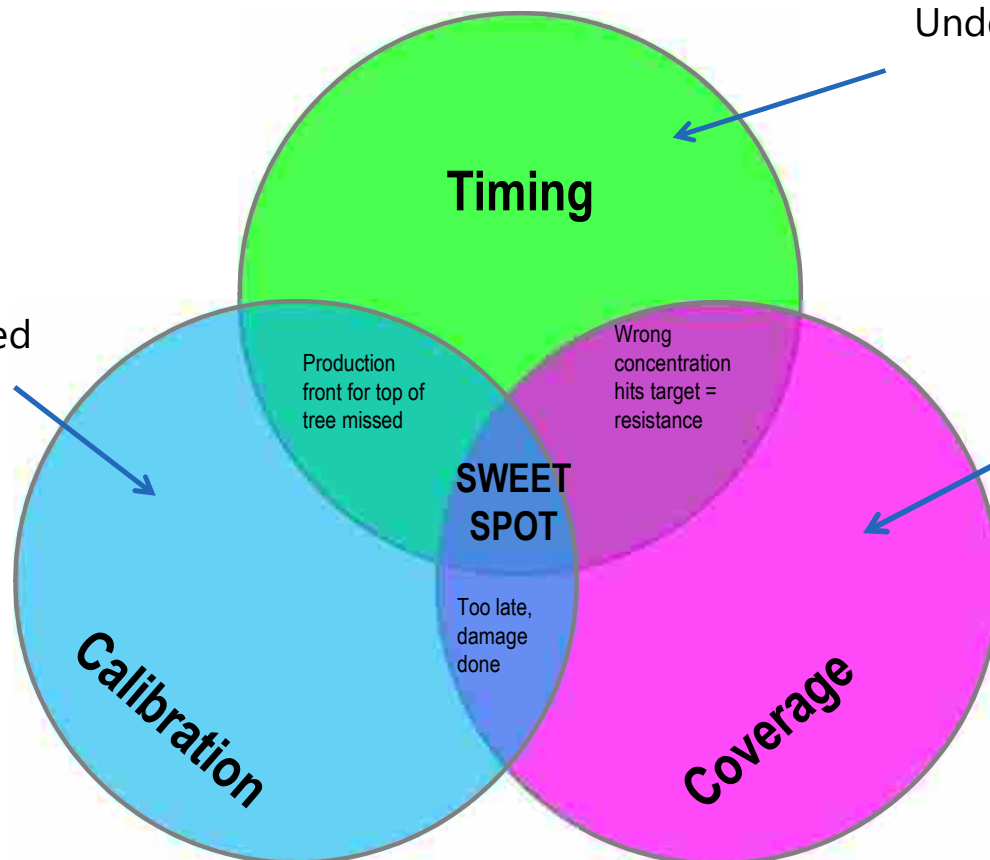
- Used benchmarking to identify [leading mature orchards](#)
- Benchmarking revealed spray coverage issues
- Benchmarking led to a run of workshops involving spray efficiency
- Identified lace bug as pest of significant concern
- Those that had calibrated equipment were able to control lace bug
- Lace bug will destroy 100% of flowers in a week if left unchecked.



Skukuza 2015

Understanding life cycle IPDM

Right rate delivered



Tree manageable IOM
Efficient spray unit

COVERAGE
COVERAGE
COVERAGE
COVERAGE
COVERAGE!!!

Efficiency spraying

IOM: tree height = row width = efficient coverage

More production with less spray volume

Covering 100% of 8m tree versus top 50% of 13m tree

Closely interlinked with IOM and IPDM

MPC / NSW DPI spray day
2013 Victoria Park.

Swirl plates removed

Designed for 6m trees and does a
great job to 6m

Nozzles off



K.Quinlan

Top - 11 m —————> Bottom

Modified setup - good coverage

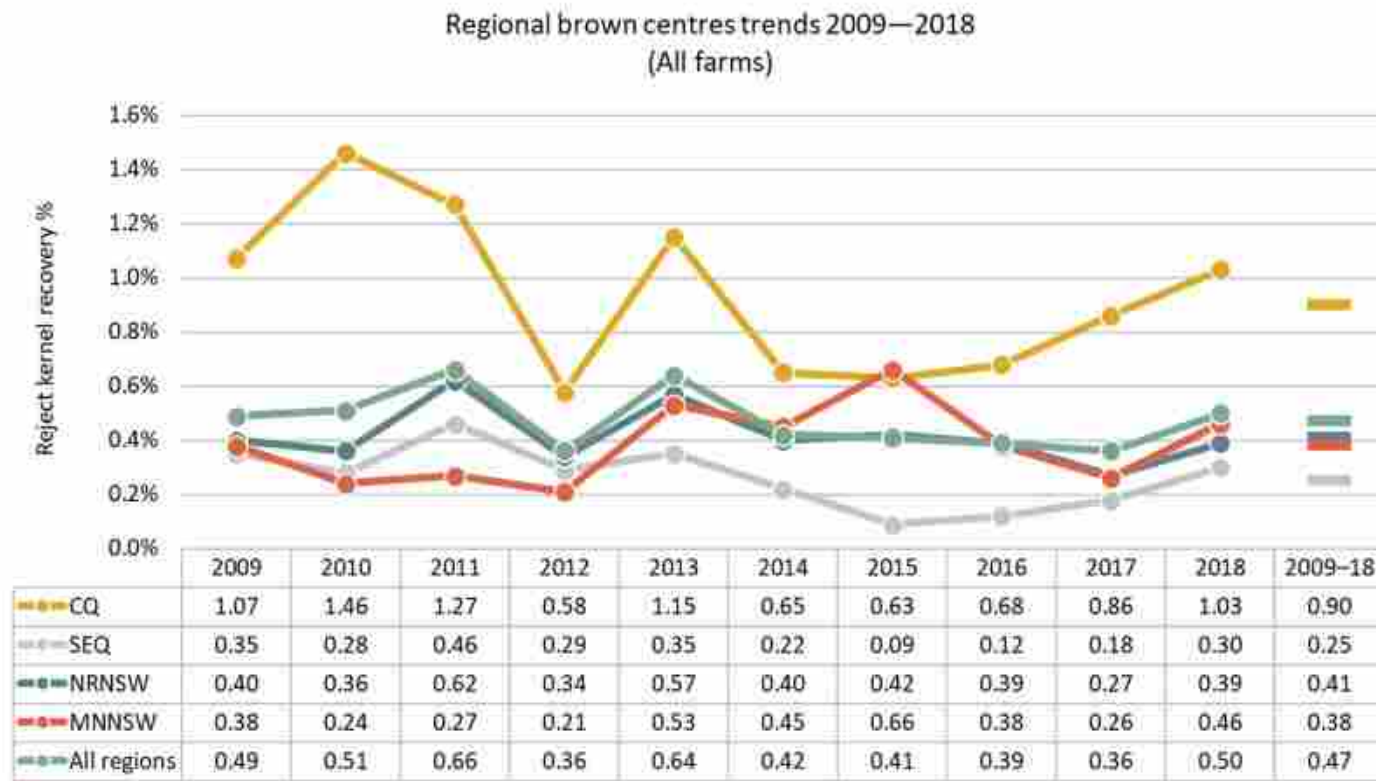


K.Quinlan

Top - 8 m —————> Bottom

Standard setup - average coverage

Use of benchmarking in directing projects - Brown centres



Use of benchmarking in directing projects - Brown centres

- Brown centres high in young orchards But young orchard mainly in CQ
- Brown centres high correlation with large farm. Larger farm size in CQ
- Recent research shows that brown centres incidence increased with increasing farm size, maximum silo size and storage bed depth.
- Research has developed recommendations to minimise





Use of benchmarking in directing projects - Brown centres

- Once drop, macadamia starts to deteriorate
- 5 years ago macadamia farms belt sorted to send quality to processors
- Recently processors have said to “just send as is”.
- Quality improved and growers got better price
- Capacity of processor had to increase to be able to do this.

[Do we want another video??](#)



Use of benchmarking in directing projects – Brown centres

- Potential for benchmarking to assist with oil quality issues
- Identify areas of limitation through benchmarking olive industry
- Refine research investigations to focus on limitations
- Develop packages of solutions
- Publications, workshops, YouTube videos etc.

Benchmarking awards

Benchmarking also allows macadamia industry to create awards for:

- Highest production NIS
- Lowest rejects
- Highest sound kernel recovery
- Awards highly valued by industry
- Independent as processor results



