Economic Development,
Jobs, Transport
and Resources

DA-Meter protocols in the field, Observations and Results

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Stonefruit Field Laboratory fruit maturity

Hort Innovation
Strategic levy investment

SUMMERFRUIT FUND

VICTORIA State Government

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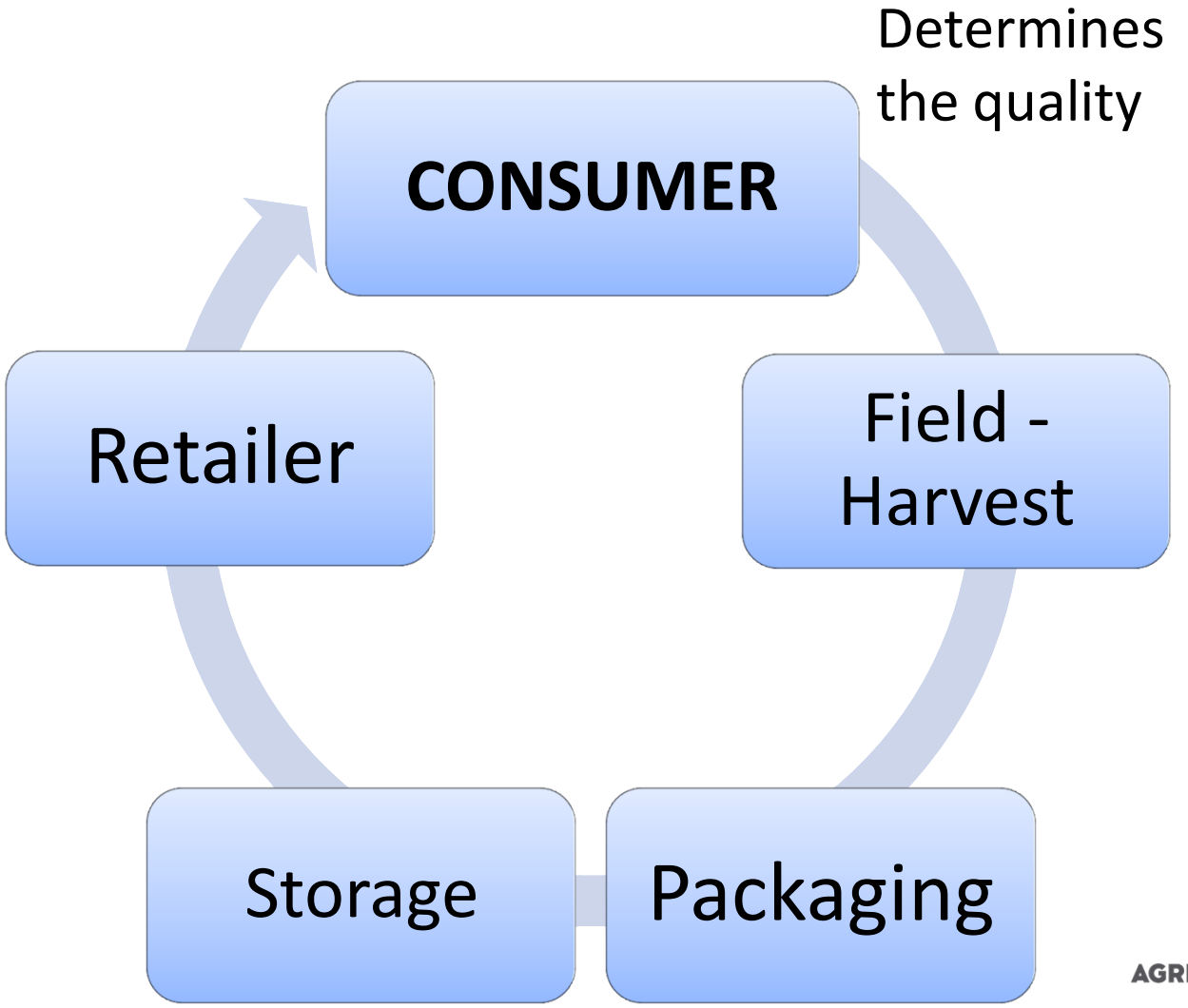
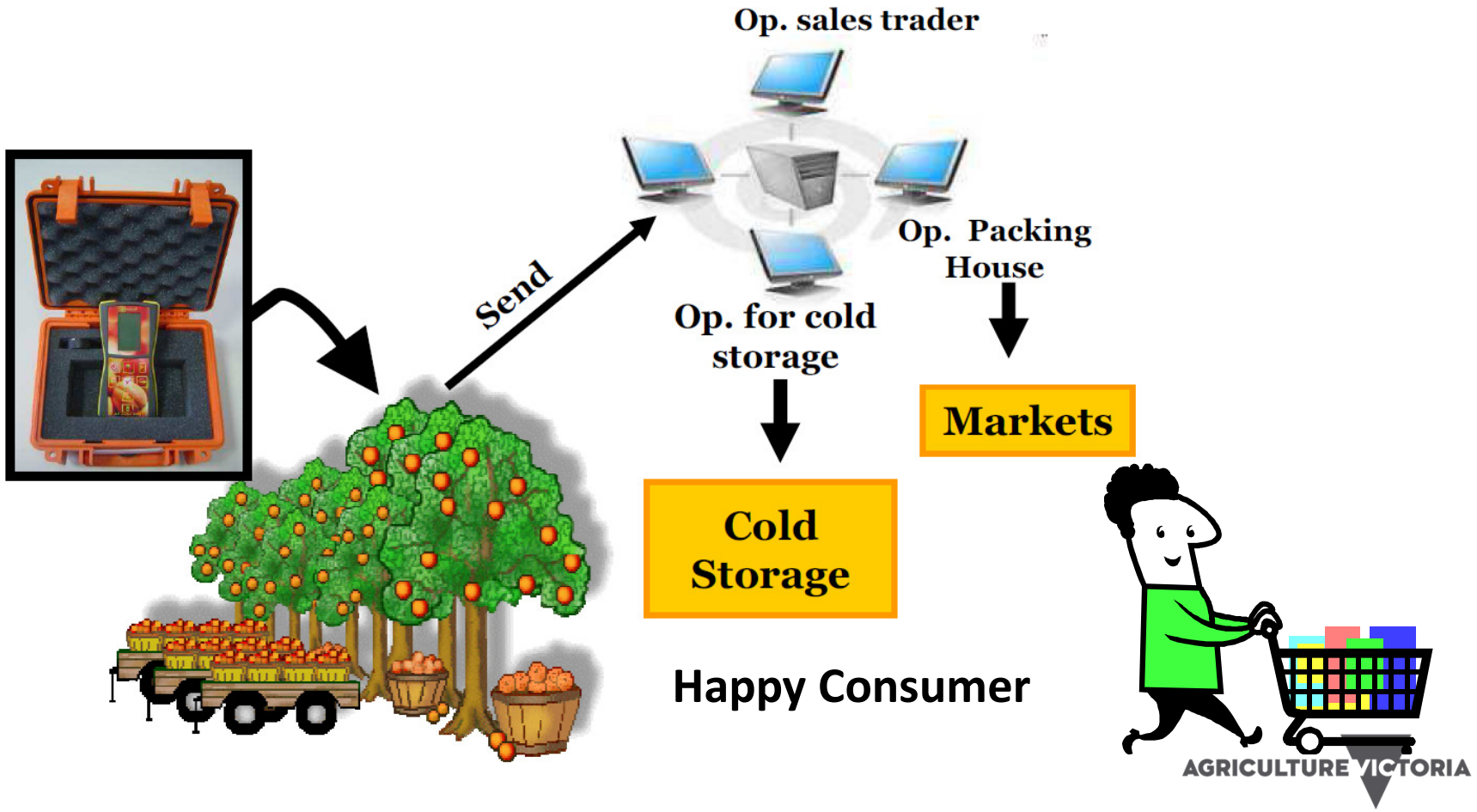
Value Chain System approach to Quality



Fruit maturity (I_{AD}) as common denominator to monitor quality and determine next step in the chain (market of choice)



DA Technology

- Allows rapid and accurate indexing of fruit maturity along the whole chain providing consistent quality fruit that meets consumer expectations and improves **profitability**

    - Allows to build a brand of guaranteed quality

Usefulness along the value chain

- Pre-Harvest
  - Understand the orchard
  - Optimise agronomic practices (time sensitive sprays)
  - Reduce number of picks
  - Reduce fruit variability
  - Identify harvest windows (prediction tool)
  - Harvest at the correct time for the chosen market

Usefulness along the value chain

- Post-Harvest
  - Monitor maturity of stored fruit
  - Determine shelf-life potential
  - Determine length of storage depending on the chosen market
  - Sort fruit according to maturity (suitability of postharvest treatments – 1-MCP, maturity retardants)
  - Increased market flexibility
  - Reduced variability and therefore losses
  - Increased consumer satisfaction

I_{AD} in Pre- and Post-Harvest
Optimal functionality with identification of maturity classes

Correlation with ethylene

Maturity classes (optimal harvest – Market Specific)

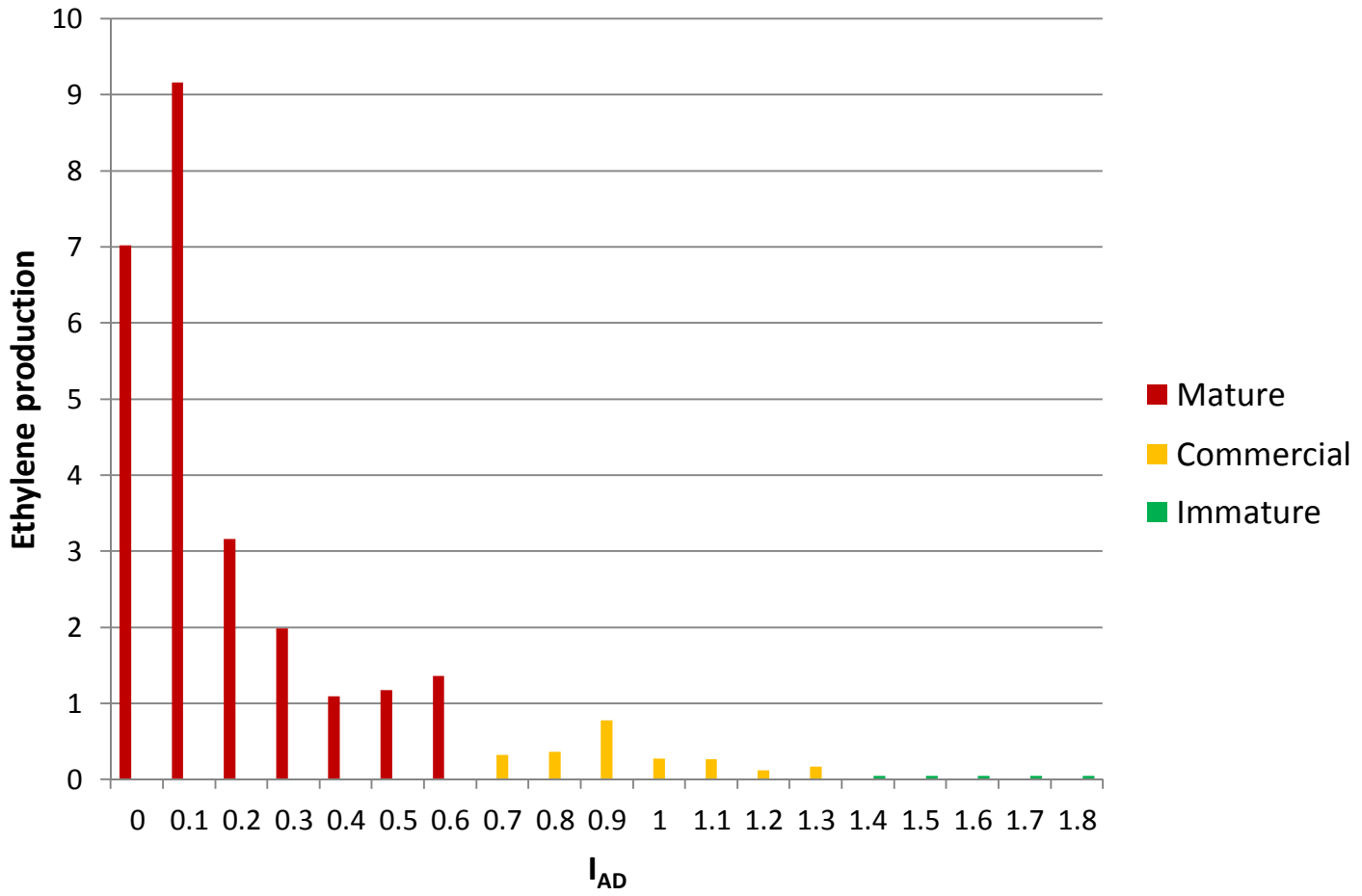
Variety Specific

Can be done in the field or shed

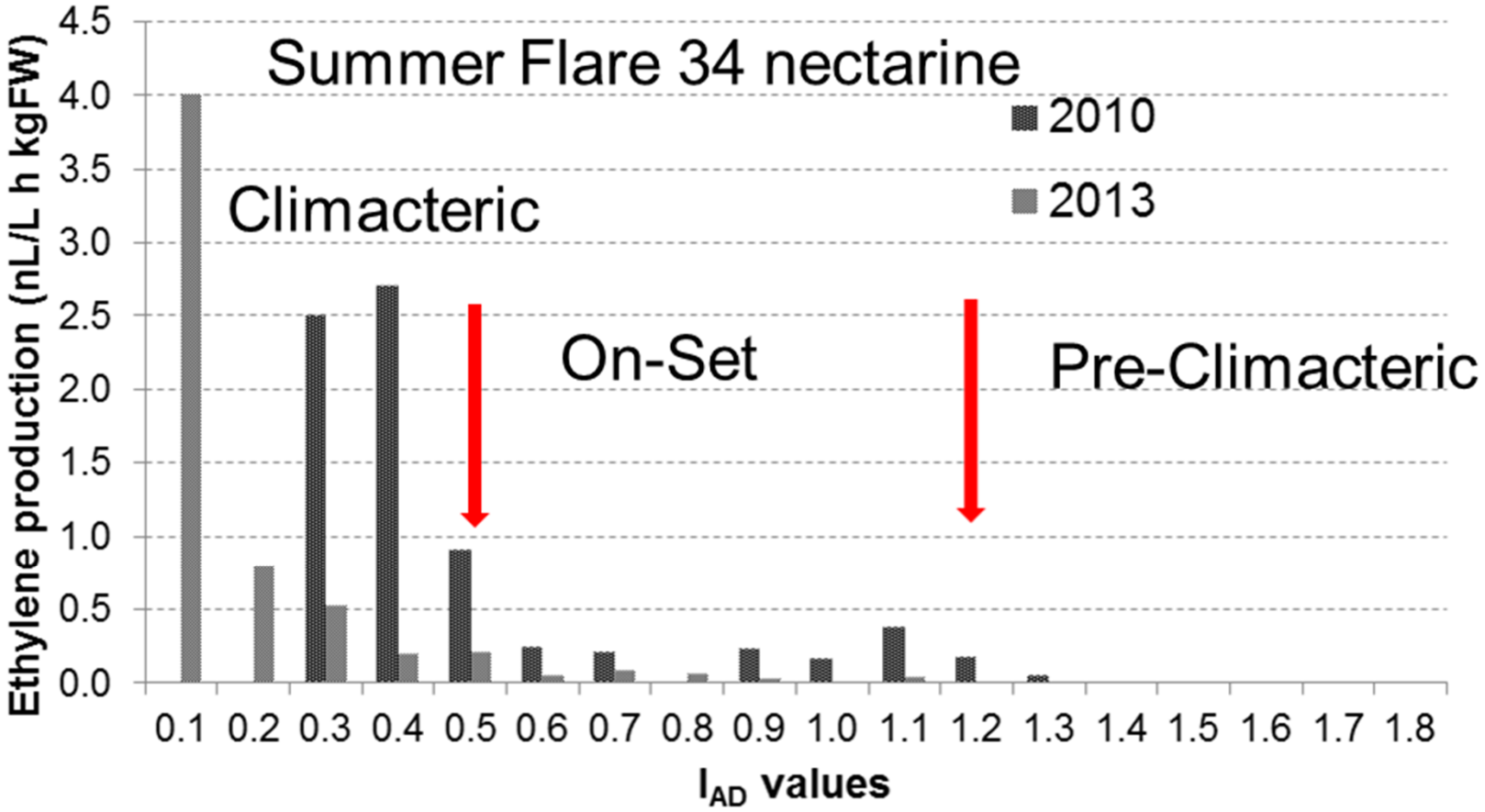
New protocol in Australian Stonefruit Grower – August 2016

http://www.hin.com.au/projects/stonefruit-field-laboratory/da-meter/ethylene-sampling-protocols/_nocache

Autumn Bright I_{AD}-Ethylene correlation



Multiple year ethylene production



Preliminary results on I_{AD} Maturity classes for selected Stonefruit

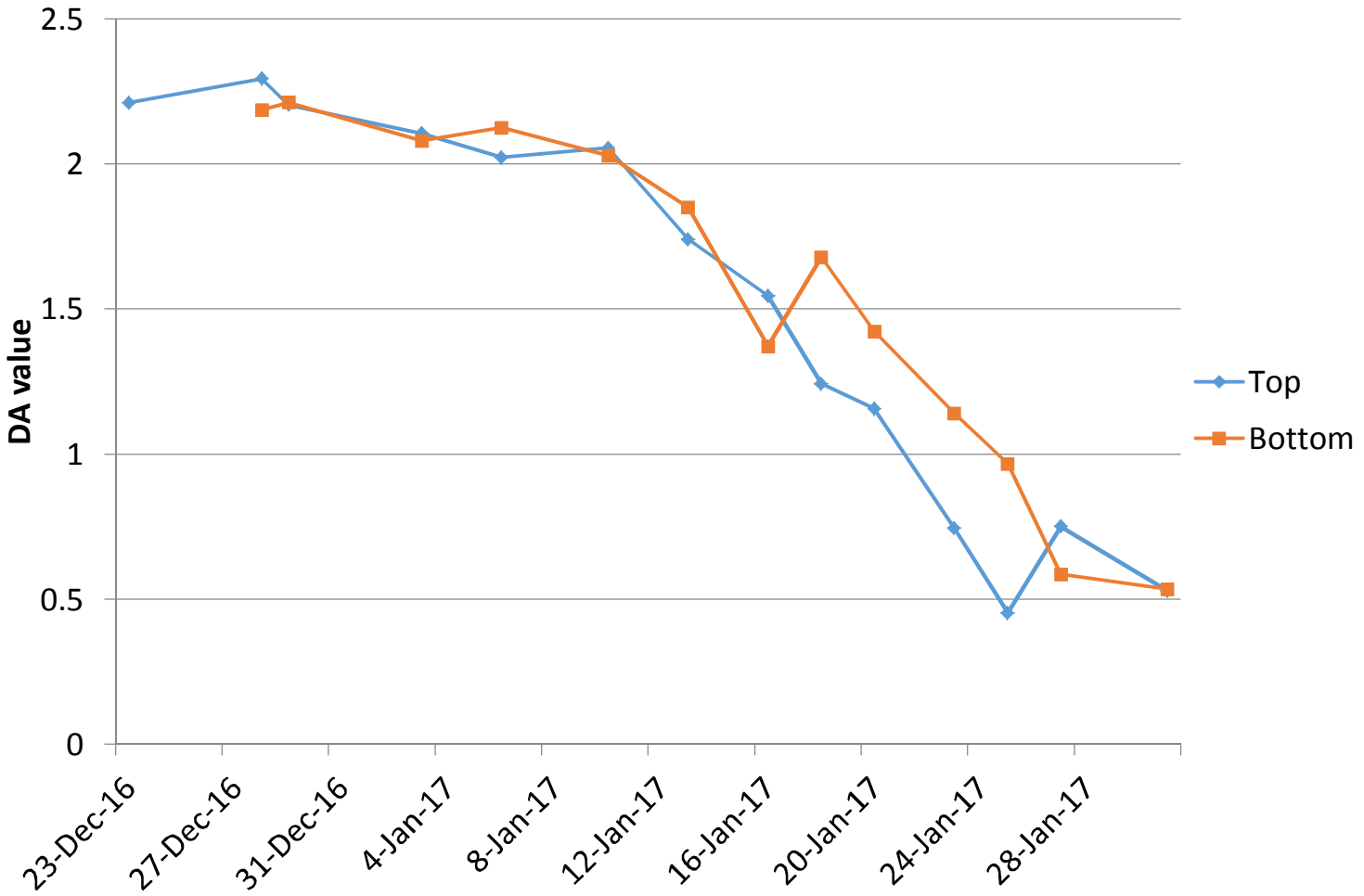
Cultivar	Seasonality	Immature (no ethylene, not to be harvested)	Harvest ready (on-set climacteric, suitable for export and domestic)	Mature (climacteric peak, suitable for domestic)
Golden May	Apricot - Mid	>1.20	1.19 – 0.60	< 0.59
Angeleno	Plum - Late	>1.30	1.29 – 1.0	< 0.99
Rose Bright	Nectarine - Early	> 0.90	0.89 – 0.50	< 0.49
Snow Flame 23	Peach - Early	> 1.0	0.99 – 0.50	< 0.49
Snow Flame 25	Peach - Mid	> 1.10	1.09 – 0.60	< 0.59
Summer Bright	Nectarine - Mid	> 0.70	0.69 – 0.30	< 0.29
Fire Sweet	Nectarine - Mid	> 1.0	0.99 – 0.50	< 0.49
Summer Flare 26	Nectarine - Mid	> 1.0	0.99 – 0.60	< 0.59
Summer Flare 34	Nectarine - Mid	> 1.20	1.19– 0.60	< 0.59
August Fire	Nectarine - Late	> 1.0	0.99 – 0.50	< 0.49
Autumn Bright	Nectarine - Late	> 1.50	1.49 – 0.90	< 0.89
September Red	Nectarine - Late	> 1.10	1.09 – 0.60	< 0.59
September Bright	Nectarine - Late	> 1.60	1.59 – 1.0	< 0.99
August Flame	Peach - Late	> 1.40	1.39 – 0.90	< 0.89
September Sun	Peach - Late	> 1.50	1.49 – 1.0	< 0.99

Maturity field monitoring with DA-Meter

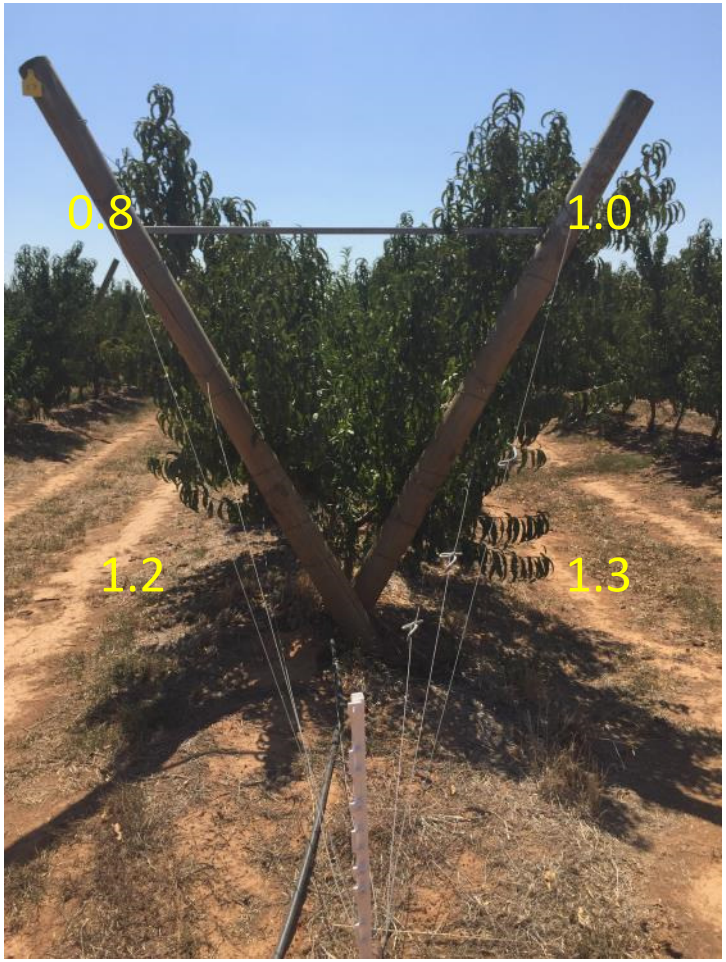
- Started 6-7 weeks prior to harvest
  - Weekly measurements (minimum)
  - 80-100 fruit random from whole orchard by canopy system
- 4 weeks prior to harvest
  - Increased frequency, if possible (3-5 days)
  - Separation top, bottom
  - Separation by crop load
  - Separation by block
  - Separation by irrigation volumes

http://www.hin.com.au/projects/stonefruit-field-laboratory/da-meter

T204 peach I_{AD} field development

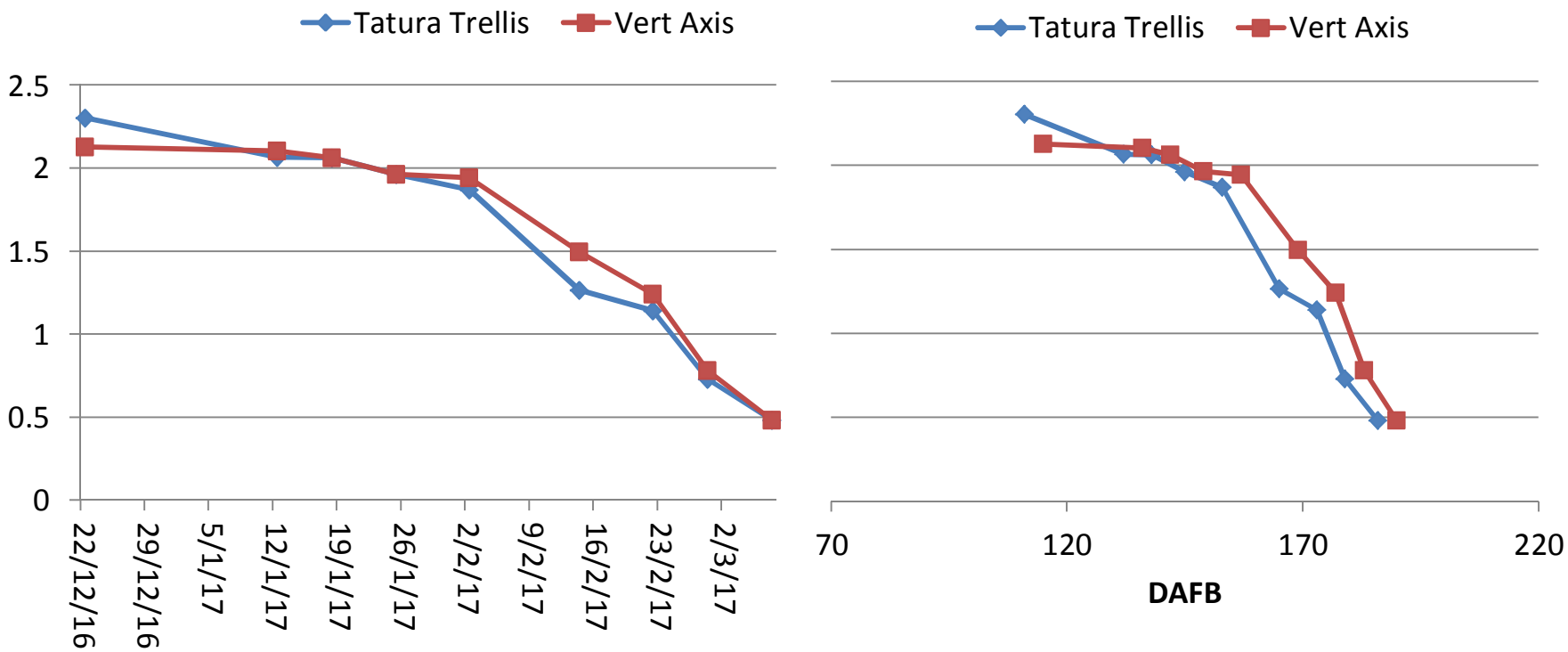


Position x Canopy experiment

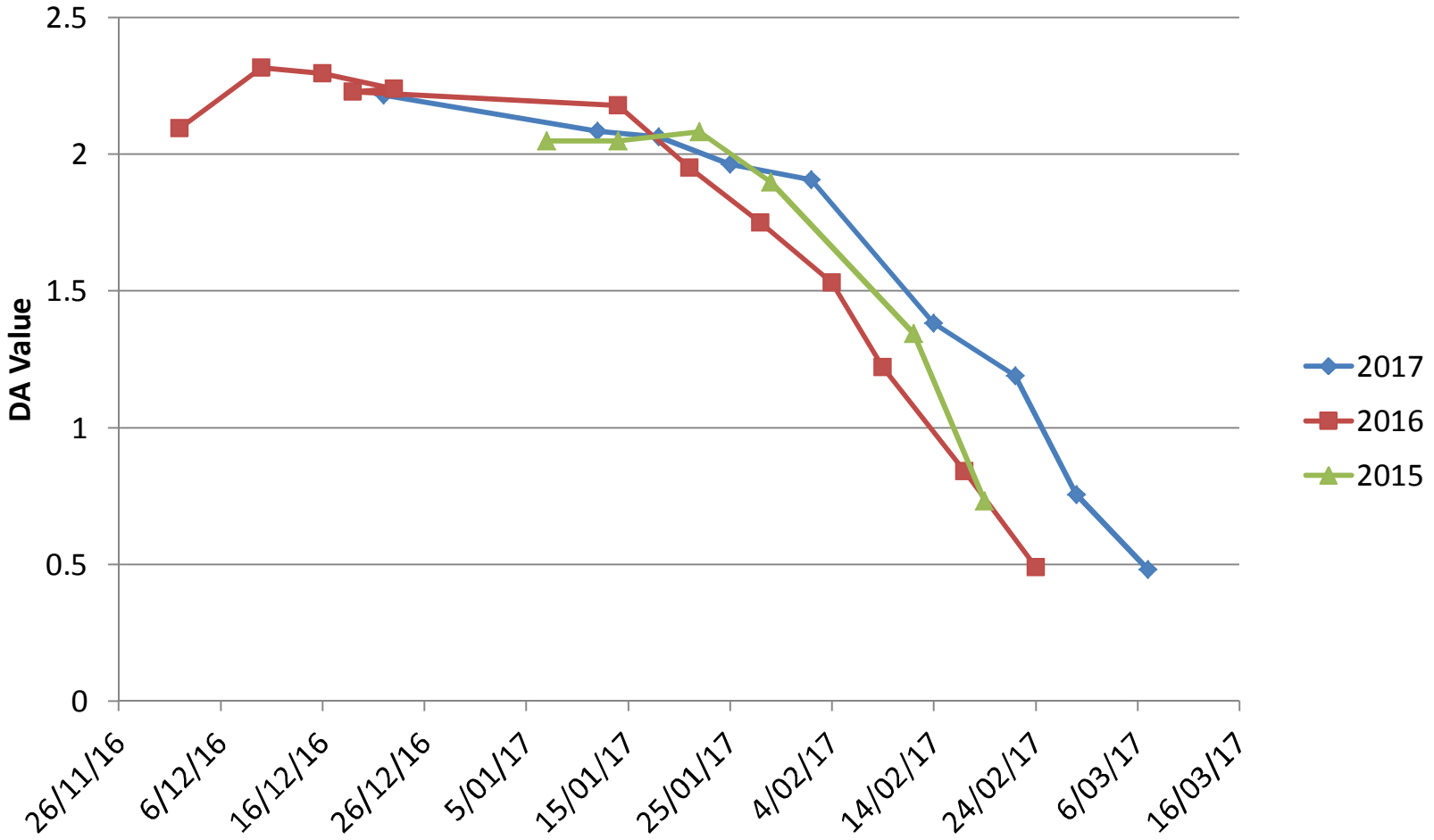


Peach ‘August Flame’

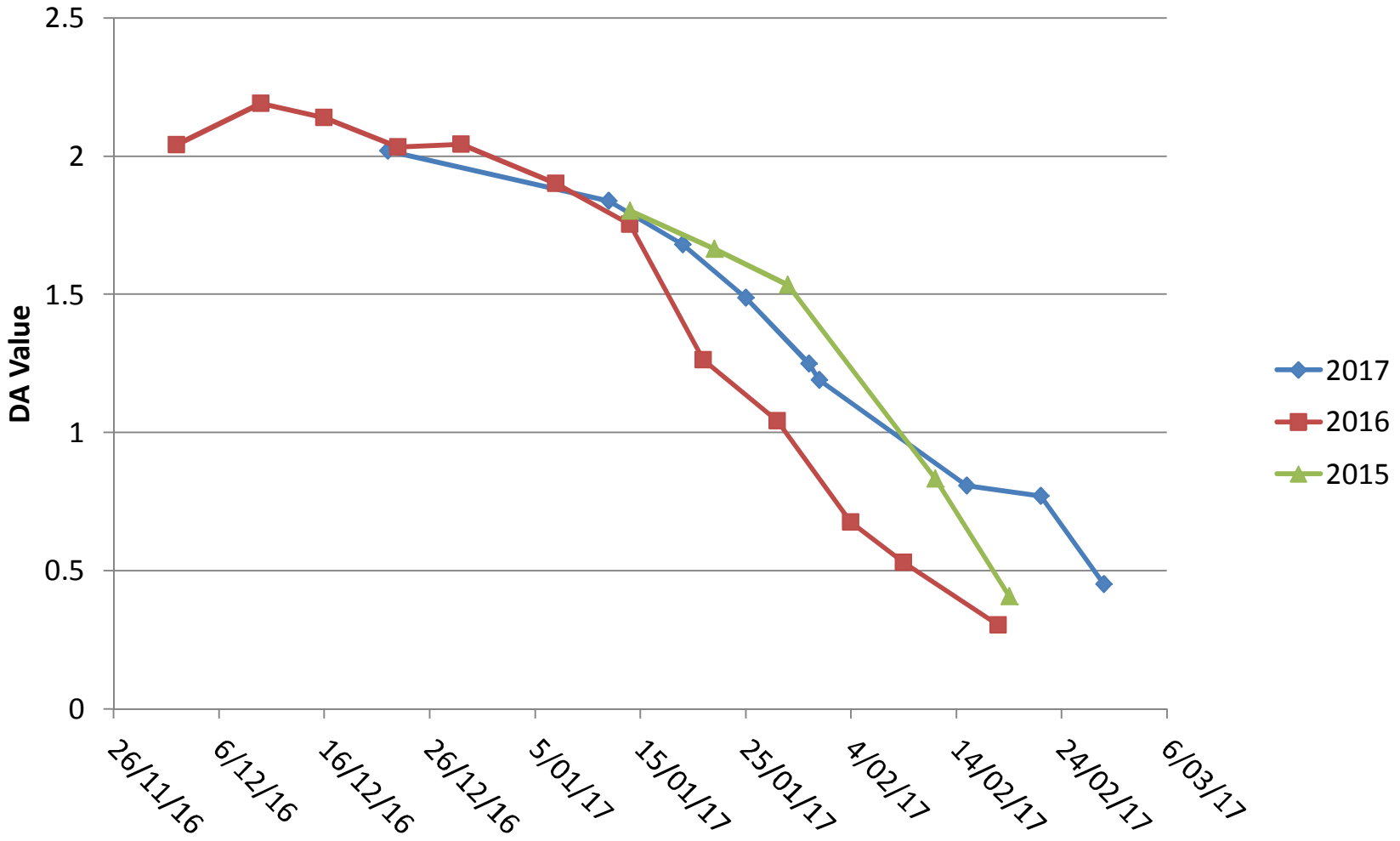
August Flame peach I_{AD} field development



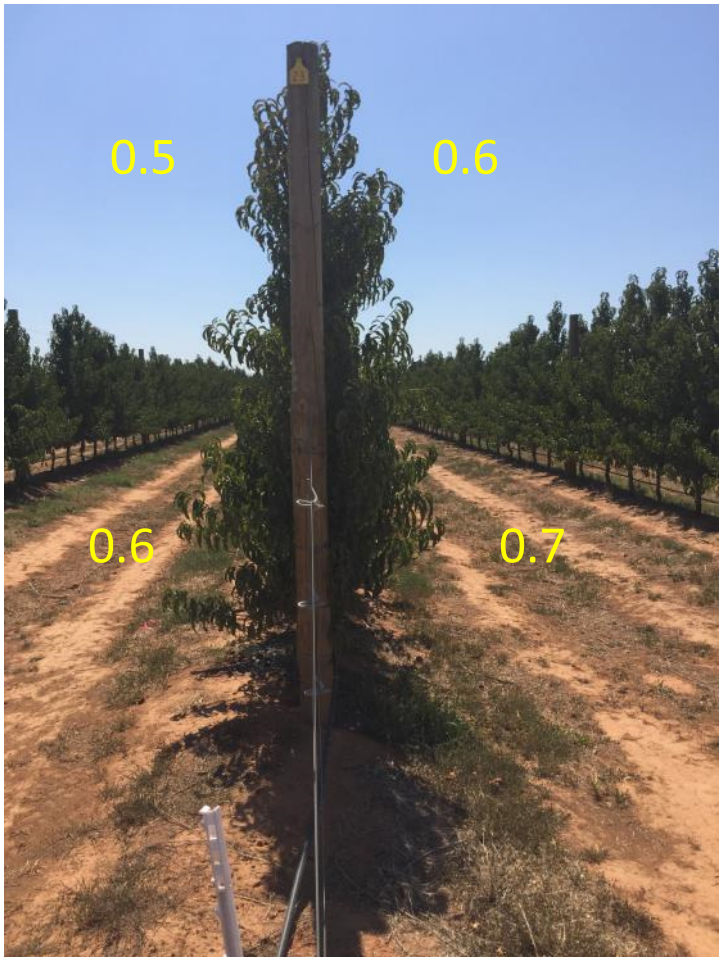
August Flame peach I_{AD} field development 2015-17

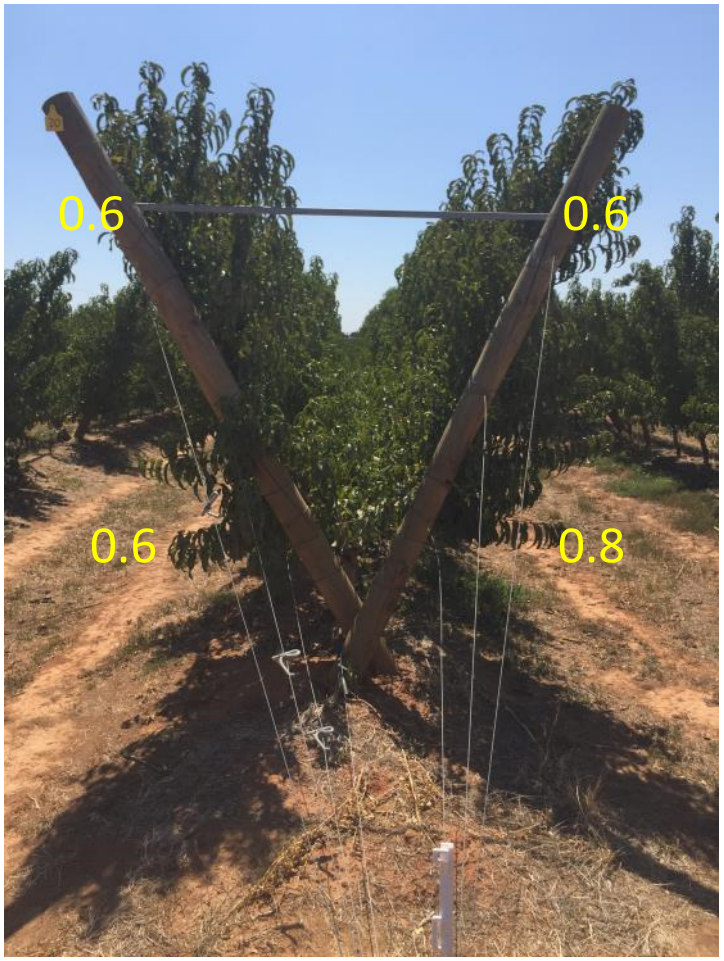


Autumn Bright nectarine I_{AD} field development 2015-17



Position X Canopy Experiment





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Nectarine 'Autumn Bright'

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Field monitoring summary

- Important to understand and predict optimal harvest

- Variety plays an important role in possible variability:
  - Canopy training system
  - Crop load
  - Canopy position
  - Block
  - irrigation

- More monitoring = more understanding = better planning

= improved whole farm logistic = HIGHER PROFITABILITY

Thanks to:

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Issues

- Stagnant market for fresh fruit
  - Price stasis
  - Need to differentiate during marketing
- Need to increase export
  - Market selection especially in Asia
- Importance to cater to consumers
  - High consumer dissatisfaction
  - Retailers dictate quality