

# FOCUS ORCHARD UPDATE FEBRUARY 2019

## SHEPPARTON AND STANTHORPE

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### 1.0 FOCUS ORCHARDS

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This article will focus on the Northern Victoria (Turnbull Brothers) and Queensland (Savio) Focus Orchard. All Focus Orchards collect and collate data on their focus blocks to ensure that they're on track with their cropping plan as well as to allow other industry members to follow what they are doing.

You can monitor the progress and view more information on each Focus Orchard via OrchardNet.

- Go to [www.orchardnet.co.nz](http://www.orchardnet.co.nz)
  - Username: focus
  - Password: focus

The current focus orchards are:

Region	Focus Orchard
Stanthorpe	Savio
Batlow	Seven Springs
Orange	Stoneleigh
Northern Victoria	Turnbull Bros
Southern Victoria	Montague Orchards (Narre Warren)
Tasmania	Hansen Orchards
South Australia	Filsell's Apples
Western Australia	RK & J Fox and Son

### 2.0 ACKNOWLEDGEMENTS

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The ongoing creation, maintenance and monitoring of these orchard blocks is made possible due to the ongoing participation of the Focus Orchard growers across Australia and the Front-Line Advisors who support them.

Special thanks to Alex Turnbull (Turnbull Brothers), Mick Crisera (Fruit Growers Victoria), the Savio family and Stephen Tancred at Orchard Services (Queensland FLA) for their assistance with data used in this article.



**Figure 1** Alex Turnbull discussing the strategy for an apple block during the September field walk. This Granny Smith block had Dormex applied to bring bloom forward.

Turnbull Brothers orchard is a 5<sup>th</sup> generation family farm with a long history in Ardmona. With the goal of producing premium fruit across a diverse range of fruit crops (apple, pears, cherries and stonefruit) planning, goalsetting and careful management play a key role in ensuring premium crops year-in year-out.

The focus blocks at Turnbull’s are shown in the table below; for more information login to OrchardNet using the focus/focus username/password combination.

Block	Variety	Rootstock	Planted
Findon Block 3	Buckeye Gala	M26	2006
Wallace Block 5	Granny Smith	MM106	2006
McKie Block 6	Modi (Civg198)	M9	2014
Young West Block 2	Modi (Civg198)	M9	2015
Ratcliffe Block 4	Ruby Pink (Pink Lady)	M26	2010
Coggars Block 1	WBC	D6	2004

With results now in for Gala, I thought it would be a good opportunity to look back to our first planning session in June and evaluate how we've progressed to a nice Gala crop through to market.

## Target setting – June/July 2018

Back in July last year two main goals for the block in the 2019 harvest were identified:

- Early
- High proportion of crop in high paying sizes (improve size on recent years)

## Putting a plan into action – planning in OrchardNet

Utilising the good pre-existing data at Turnbull Brothers a realistic target cropload, whilst meeting this year's goals was developed. A crop estimate was entered, a target packout and fruit size and with the tree number data we were away.

### Targets:

- Yield of 70 tonnes/ha
- Average fruit size of 175 grams
- Thin to 133 fruit per tree to get 120 fruit per tree in the bin

This is summarised in the 'thinning report' below (with some spoilers on this year's results)

Company: Turnbull Bros  
 Property: Turnbull Brothers Focus  
 Production Site: Blocks  
 Block: A  
 Findon Block 3 - Buckeye

## Thinning Report Season Ending 2019



Blockname	Ssn	Type	Gross Kg/ha	Class1 Kg/ha	Fruit Weight (g)	Harvested /Tree	TCA Harvested /TCA	Tree Pickout %	Target Fruit/Tree post-thin	Actual Fruit/Tree pre-thin	Actual Fruit/Tree post-thin
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### Turnbull Brothers Focus Blocks

#### A

#### Buckeye Gala

Findon Block 3 - Buckeye	2019	Est	70,000	59,500	175	120	33.2	3.6	90	133	-	-
		Act	72,000	59,760	160	135	33.2	4.1	108	-	152	125
	2018	Act	68,825	60,738	167	124	-	-	-	137	-	-
	2017	Act	72,025	62,806	168	129	-	-	-	143	-	-
	2016	Act	56,587	42,157	171	99	-	-	-	110	-	-

## Setting the cropload - Findon Buckeye Gala

With goals and fruit number targets in mind a good chemical thinning regime was going to be a cornerstone of ensuring cropload was dropped quickly to ensure fruit size got a great start to the year.

Chemical thinning for the block is shown below which is all in OrchardNet:

Company:Turnbull Bros

### Chemical Thinning Plan Season Ending 2019



Crop Stage	Date Applied	Product	Rate/100	Rate/ha	Water Rate	Total Water	Nozzle Config	Notes
<b>Turnbull Brothers Focus Blocks-A-Findon Block 3 - Buckeye</b>								
Full bloom		BA( 2%)	65 mL	650 mL	1000 l/ha	3340 l	Whole Tree	1st cytolin spray - 20-40% full bloom
Full bloom + 2		ATS	1500 mL	15000 mL	1000 l/ha	3340 l	Whole Tree	ATS + 2nd Cytolin
		BA( 2%)	65 mL	650 mL				
Open flower 1 yr wood		ATS	1500 mL	15000 mL	1000 l/ha	3340 l	Whole Tree	
		NAA(2%)	50 mL	500 mL				
8-15 mm fruitlets		BA( 2%)	800 mL	8000 mL	1000 l/ha	3340 l	Whole Tree	worked well
		NAA(2%)	50 mL	500 mL				
		Growett	125 mL	1250 mL				

The general strategy was two lead-in Cytolin sprays (6-BA + GA4/7) over the bloom period with the second Cytolin being in a mix with ATS. A 'mop up' ATS/NAA cleaned up the remaining late flower and a 6-BA/NAA application as a secondary thinner broke up clusters and clumps.

This approach resulted in an average post-thin fruit count (per tree) of 152 fruitlets which is 14% higher than the targeted cropload. Great start!

A follow-up hand thin reduced this number to 125 fruit per tree and a good cropload early in the season was established.

## Thinking of next year's crop

In discussion with the AgFirst team, a summer NAA program was utilised across much of the orchard from late-November into December. Whilst Gala generally has strong return bloom, consistency within the tree can vary (e.g. heavier in tops/bottoms). By applying NAA during this period the number of floral sites in the following season has been observed to increase for most apple varieties. This is particularly useful for varieties such as Fuji and Granny Smith when it comes to breaking out of long-held biennial swings.

To read more on the summer NAA program see:

<https://apal.org.au/wp-content/uploads/2013/07/fo-ow-12-mar-plant-growth-regulators-mcartney1.pdf>

- 5ppm is 500mL/ha of the 2% product (generally the one in stock)

## Challenges - Findon Buckeye Gala

Hot weather has proven a big challenge in January 2019 and impacted most growing regions. To adapt to these challenging conditions the Findon Gala block had overhead cooling installed in recent years to help minimise the impact of extreme heat events. In addition to this, maintaining optimum tree health (good nutrition, irrigation and tree structure) is a key focus to ensure tree stress is minimised during these periods.

Fruit growth rate is shown in the graph below. Two shutdown periods where fruit growth crashed can be seen at Christmas/New Year's period where temperatures were  $>40^{\circ}\text{C}$  and again in late January when temperatures reached that level.

### Fruit Size Report Findon Block 3 - Buckeye



#### Fruit Growth Rate - mm per Week



To improve colour (particularly given changes to the pressure specification for Gala in supermarkets) reflective mulch was used within the block.

## Results - Findon Buckeye Gala

See for yourself. A very nice crop with good colour development.



With some fruit yet to be packed we end up with a final provisional yield of 72 tonnes/ha at an average fruit size of 160g; quite a way down on the target size of 175g.

Goes to show the impact that hot weather can have. Fruit sizing was relatively similar to the 2018 harvest (167g) until the hot weather events passed. I'd predict that this has dropped yield in this block (in size) by 4-6%. Considering that this is with overhead cooling I would have to think that much of the region will be well down on their Gala forecast due to a smaller fruit size.

The data used in this block progression article is available on OrchardNet for the other focus blocks. Feel free to login and look at other orchard progression.



Figure 2 Future Orchards walk at Savio’s in the Aziz Smitten twin-stem block in June 2018.

The Savio family in Pozieres, Queensland runs a very impressive orchard and packing facility with lots of new developments both in the orchard and packing/cool storage facility. New plantings in recent years have generally been in club variety programs (Jazz, Smitten, Envy, Ambrosia) and are planted intensively and at relatively large scale.

The focus blocks at Savio’s are shown in the table below; for more information login to OrchardNet using the focus/focus username/password combination.

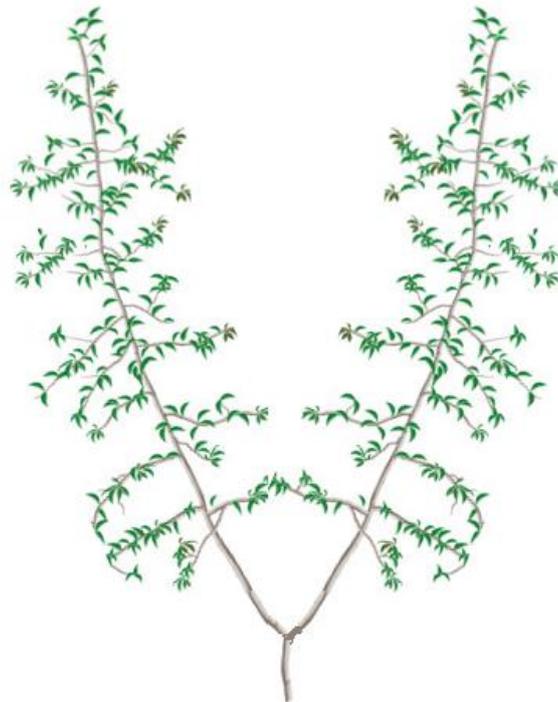
Block	Variety	Rootstock	Planted
Shed grafts (6 stem)	Jazz (Scifresh)	MM106 (Sundowner interstem)	2015
Vecchia	Jazz (Scifresh)	M26	1997
Bird Block	Cripps Pink (Pink Lady)	MM106	1993
Forestry Block	Cripps Pink (Pink Lady)	MM106	1995
Forestry block	Royal Gala	M793	1995
Aziz (twin-stems)	Smitten (PremA17)	M26	2016 (3 <sup>rd</sup> leaf)

Figure 3 Savio Focus Blocks

With harvest not quite as far progressed in Queensland, finalised results aren't available for any of the Savio blocks to date. These will be updated in OrchardNet as the season progresses.

## Aziz Smitten

This Smitten block is now in its third-leaf and has been planted as a closed V-trellis. The planting density in this block is at 7600 trees/ha (15,200 stems/hectare) and will be grown as a relatively tight canopy with small fruiting units on each stem holding the crop. At a spacing of 40cm between each stem branches cannot afford to be long and click-cutting, snapping and ripping will be used to keep each stem in its allotted space.



A twin stem/bi-axis/Bibaum tree. Image adapted from Tustin (2014)

## Croploding – Aziz Smitten

As a young tree, finding the right balance between growth and crop is vital to maximise return on investment. Following a very light second leaf crop (~3tonnes/ha) a heavier crop was targeted for the 2019 harvest (~21tonnes/ha).

A trial with croploding on these trees is also being undertaken by Stephen Tancred and the team at Orchard Services and results will be available on the APAL website in the Future Orchards Library in due course.

## Thinning – Aziz Smitten

As a variety with an extended flowering period Smitten is relatively difficult to target with primary thinners. This proved the case at chemical thinning this year with three ATS sprays being used and then a follow up with a carbaryl-thiram spray as a secondary.

Given the challenges with the length of the flowering window, use of a dormancy breaker to compress the flowering window could be considered next season.

Company: Savio

### Chemical Thinning Plan Season Ending 2019



Crop Stage	Date Applied	Product	Rate/100 l	Rate/ha	Water Rate	Total Water	Nozzle Config	Notes
<b>Savio Focus Blocks-A-Smitten Aziz Twin Stem V</b>								
Full bloom + 2	06/10/18	ATS	1500 mL	15000 mL	1000 l/ha	4600 l	Whole Tree	
Petal fall kings	10/10/18	ATS	1500 mL	9000 mL	600 l/ha	2760 l	Top Half	
Pink flower 1 yr wood	15/10/18	ATS	1500 mL	9000 mL	600 l/ha	2760 l	Whole Tree	
8-15 mm fruitlets	31/10/18	Carbaryl	160 mL	1600 mL	1000 l/ha	4600 l	Whole Tree	flowered for a very, very long time. 3xATS and gave up and decided to do with carbaryl/thiram
		Thiram(40%)	150 mL	1500 mL				

The target of 21 tonnes/ha equates to 9 fruit per stem after hand thinning and getting 8 of those into the bin. The counts after thinning show that there are 12-15 fruit being carried per stem with an average of 14 as can be seen in the OrchardNet thinning report.

Company: Savio  
Property: Savio Focus Blocks  
Production Site: A  
Block: Smitten Aziz Twin Stem V

### Thinning Report Season Ending 2019



Blockname	Ssn	Type	Gross Kg/ha	Class1 Kg/ha	Fruit Weight (g)	Harvested Fruit /Tree	TCA Harvested /TCA	Tree Pickout %	Target Fruit/Tree post-thin	Actual Fruit/Tree pre-thin	Actual Fruit/Tree post-thin
<b>Savio Focus Blocks</b>											
<b>A</b>											
<u>Smitten</u>											
Smitten Aziz Twin Stem V	2019	Est	20,696	14,487	170	8	2.0	4.0	90	9	-
		Act	-	-	-	-	2.0	-	-	-	14
	2018	Act	3,478	2,783	175	1	-	-	2	-	-
	2017	Act	0	0	175	0	-	-	0	-	-

## Adjusting the plan

By updating data on the block OrchardNet can calculate the approximate yield results given the cropload carried if a re-thin is not planned; which in this case was chosen due to tree health and the size of trunk cross-sectional area.

By entering the below in the block metrics category this can be calculated:

- Pickout (90% unless you have good data on this)
- Fruit weight (170g in this case for a 3rd leaf block)
- Fruit count post-thin
- Class 1 packout

With this all entered go into your 2019 estimate (as if to edit) and OrchardNet will auto calculate “suggested values”; see the below thinning report after I entered the suggested figures.

### Smitten Aziz Twin Stem V - Edit 2019 Block Production Estimate

Kg	TCE	Bins	Tonnes per ha		Suggested Values
				Tonnes per ha Picked	33
				Tonnes per ha Submitted to Packhouse	33
				Class 1 Packout %	75 %
				Class 2 Packout %	10 %
				Process Packout %	15 %
				Average fruit weight	170
				High Grade %	

**Enter**

Company: Savio  
 Property: Savio Focus Blocks  
 Production Site: A  
 Block: Smitten Aziz Twin Stem V

### Thinning Report Season Ending 2019



Blockname	Ssn	Type	Gross Kg/ha	Class1 Kg/ha	Fruit Weight (g)	Harvested Fruit /Tree	TCA Harvested /TCA	Tree Pickout %	Target Fruit/Tree post-thin	Actual Fruit/Tree pre-thin	Actual Fruit/Tree post-thin
<b>Savio Focus Blocks</b>											
<b>A</b>											
<i>Smitten</i>											
Smitten Aziz Twin Stem V	2019	Est	33,000	23,100	170	13	2.0	6.4	90	14	-
		Act	-	-	-	-	2.0	-	-	-	14
	2018	Act	3,478	2,783	175	1	-	-	2	-	-
	2017	Act	0	0	175	0	-	-	0	-	-

Its interesting that with this very high stem density per ha, only adding 5 fruit per stem lifts the yield from 21 tonnes/ha up to 33 tonnes/ha.

### **Challenges and results**

With a hot and dry summer in the Stanthorpe region, fruit size is expected to be impacted and this block could be particularly challenged given its age.

With Smitten (PremA17) harvest almost complete in most parts of Australia it will be interesting to watch and see how this block, and the croplod trial's, harvest results look in the near future.

Keep an eye on all Focus Orchard block progress through [OrchardNet](#) using the focus orchard login (username: focus password: focus and demonstration trial updates on the [APAL website](#)