

Future Orchards Trial: Final Report

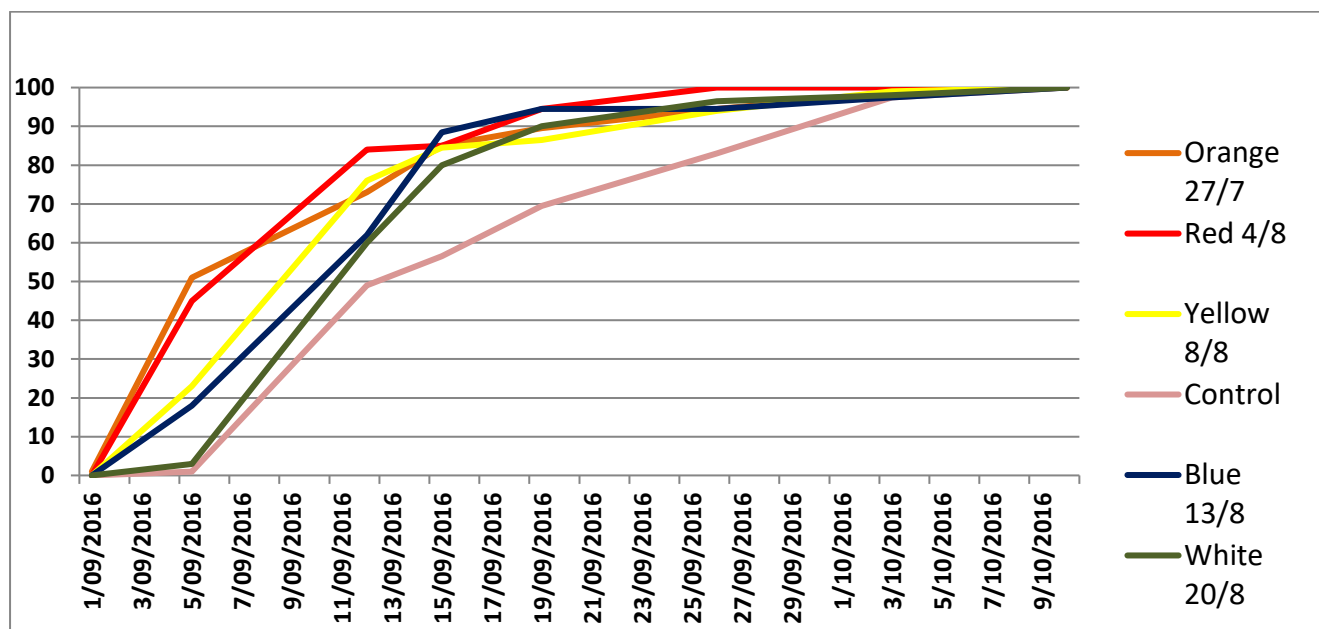
Project title:	Observations of Erger™ use in South Australia 2016-17
Region:	Adelaide Hills
Contact:	Paul James
Projective Objective:	To observe the impact on flowering of apple trees in SA with different Erger™ application times pre flowering

Outline/method/ (what you did):	<p>Erger™ is a recently released product that is reputed to promote uniform flower bud break from dormancy. Erger™ is reported to be able to both advance flowering and condense flowing depending on application time.</p> <p>A demonstration trial was established on an Adelaide Hills orchard where the product was applied at several differing times before normally anticipated green tip of the variety Alvina Gala. Each of the proposed application dates was supposed to be 5 days apart depending on having suitable application windows in the weather. Unfortunately, the weather prevented this happening as planned. The applications were supposed to be 50, 45, 40, 35, and 30 days before the anticipated green tip date. Due to the weather, they were sprayed on 27th July 4th August 8th August 13th August and 20th August 2016. The control green tip date was determined as the 8th of September 2016.</p> <p>Four rows in a commercial Open V trellis orchard of Alvina Gala were marked out and sprayed by the orchardist using the commercial rates of Erger and Calcium Nitrate in 1000l of water (per hectare) using a commercial tower sprayer. A control treatment of no spray was included. No application of Dormex™ was applied due to grower preference.</p> <p>The trees were pruned prior to treatments being applied and because of space and buffering considerations all treatments were in the same 4 rows. Two rows were ultimately used as buffer rows.</p> <p>During the flowering period the treatments were monitored, photographed and measured weekly with the dates of the various phenological stages recorded. Fruit growth and yields were monitored. A sample of 100 buds on each side of the double row trellis was tagged and monitored and then 10 fruits were selected from these 100 buds and tracked through to harvest.</p> <p>A field day session was held in the orchard for growers to observe and discuss the treatments.</p> <p>Fruit was harvested (1st Pick) on the 25th February 2017 and final pick on the 8th of March</p>
--	--

Results Summary (measurements and observations, photos, photos of control area if applicable)

The graph below shows the effects of the Erger™ applied at several different times prior to flowering.

Graph 1 Erger Trial - % of Buds at or beyond Green tip - September/October 2016



All Erger™ treatments advanced and compressed the flower development of the Alvina Gala as compared with the control treatment (Pink Line).

The Erger™ Treatments also advanced the green tip and full bloom dates relative to the control treatment (no Erger™ application) except for the last application on the 20th of August. See table 1

Table 1 Erger Trial - % of Buds at or beyond Green tip - September/October 2016

Treatment	Application Date	Green tip Date	5th Sept	12th Sept	15th Sept	19th Sept	26th Sept	3rd Oct	10th Oct
Orange	27/07/2016	1/09/2016	51.0	73.0	85.0	89.5	94.5	98.5	100
Red	4/08/2016	3/09/2016	45.0	84.0	85.0	94.5	100.0	100.0	100
Yellow	8/08/2016	5/09/2016	23.0	76.0	84.5	86.5	94.0	99.0	100
Pink	Control	8/09/2016	1.0	49.0	56.5	69.5	83.0	97.5	100
Blue	13/08/2016	5/09/2016	18.0	62.0	88.5	94.5	94.5	97.5	100
White	20/08/2016	8/09/2016	3.0	60.0	80.0	90.0	96.5	98.0	100

At harvest the sample fruit was picked and tested for average fruit size (Table 2) and fruit maturity.

Table 2 Average Fruit Size at Harvest

Treatment	Orange	Red	Yellow	Pink	Blue	No Colour
Ave Fruit size (mm)	66.6	69.1	65.8	68.5	65.5	68.5

Table 2 shows a fairly consistent average fruit size however the 4.4 mm size difference between the largest fruit (Red) and the smallest (blue) could be equivalent to at least 3 commercial pack sizes which could influence grower returns. Unfortunately, the larger fruit size of the red treatment can possibly be attributed to the lower per tree yields of this treatment. See table 4

Table 3 Fruit Maturity at first pick

Treatment	Pressure	Starch 1-6 plate	TSS
Orange	9.92	2.6	15.04
Red	10.37	3.4	14.46
Yellow	10.92	1.4	14.84
Pink	10.75	1.6	13.44
Blue	10.99	2.4	14.40
No Colour	10.68	1.0	14.12

All treatments were initially harvested on the same day. The results above show that they could have been picked on different days if in a larger block. Treatments Orange and Red were more mature than the other treatments which is reflected in their pressure, starch and percentage 1st pick results (Table 4).

The latest Erger™ treatment on the 20th of August had no impact on advancing maturity as shown by the low 20% first pick percentage, however the dramatically higher yields in this treatment may have also affected this result.

Overall all of the Erger™ treatments had higher TSS readings at harvest including the yellow treatment which was not as advanced in its starch reading as the control.

Table 4 Yield Performance 2016-17

Treatment	No Trees	1st pick 25-Feb Kg	2nd Pick 8-Mar Kg	Total	Yield per tree	% 1st Pick
Orange	31	75	50	125	4.03	60.0
Red	31	80	10	90	2.90	88.9
Yellow	31	65	120	185	5.97	35.1
Pink (Control)	33	75	70	145	4.39	51.7
Blue	29	70	40	110	3.79	63.6
No Colour	47	75	300	375	7.98	20.0

Table 4 above shows the yield performance of the trial blocks. Despite similar yield levels for the first pick there were considerable variations in total kilograms per tree at the completion of harvest.

Further work on timing of applications and performance will be required by individual growers.

Implications (What did we learn? How will this impact on the business? What will we change? What are the road blocks/obstacles to change?)

The trial successfully demonstrated that Erger® was successful in advancing and condensing the flowering time of Alvina Gala. Both characteristics will be useful to apple growers in the future however more work needs to be undertaken to identify the best time to apply the chemical for each variety in varying weather conditions.

This seasons results were clearly impacted by the weather conditions during the period each treatment flowered. This had both positive and negative impacts for the commercial crops.

More grower usage and confidence in using the chemical will be needed before it becomes a widely used tool. More confidence in long term weather predictions will also be needed for growers to be confident in getting the flowering results they want.