


MARCH 2021
VOLUME 3.0



**BLUEBERRY
VARIETY
GUIDE**



MOONDARRA
GENETICS

CONTENTS

Background	3
Program Progress	4
Climate Data	5
Named Selections	6
Merliah	7
Kalinda	9
Lilijah	11
Midnight	13
Named Varietal Summary	15
AMAPs (As Many As Possible) Selections	16
E14-01-117	17
E16-49-43	18
E16-48-58	19
E16-73-97	20
Rabbiteye Selection	21
Luna	22

Disclaimer:

Whilst Moondarra Genetics (MG) has taken all reasonable care to ensure the accuracy of the data/information provided in this Blueberry Variety Guide, the data/information is provided for information purposes only and shall not constitute reliance information. Growers must satisfy themselves as to the suitability of the varieties and MG gives no warranty or guarantee whatsoever. The yields and timing of flowering and fruiting are based off data collected of plants in the ground at Moondarra, Victoria, Australia.

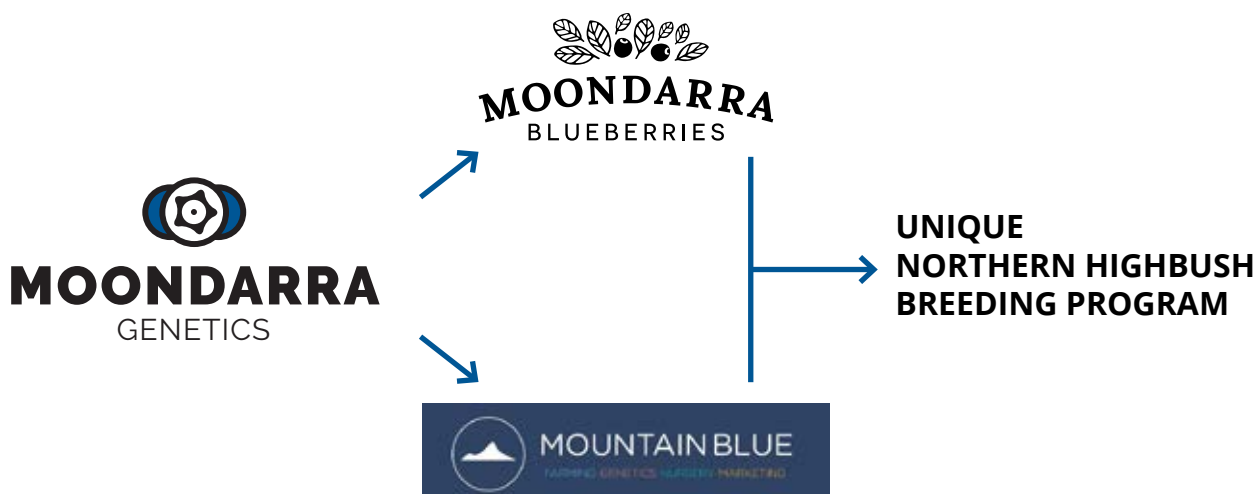
BACKGROUND

Moondarra Genetics is a distinctive blueberry breeding collaboration between Moondarra Blueberries and Mountain Blue. The program has been ongoing since 2003 and recent changes have seen the program become an equal partnership between Moondarra and Mountain Blue.

Utilising superior Northern Highbush varieties and incorporating Mountain Blue Southern Highbush genetics, this unique program released their first four selections for license in 2017.

Moondarra Blueberries is owned and operated by the Deveson family who planted their first blueberry block in 1981. Over nearly 40 years a reputation developed around Moondarra's ability to produce blueberries of the finest quality. The Moondarra brand, with its fruit production and nursery operation, is well known and held in high regard within the Australian industry as a benchmark for quality and integrity. Based at Moondarra in Gippsland, Victoria, Australia, the local conditions allow growing of Northern Highbush, Southern Highbush and Rabbiteye blueberry species.

Established in 1978, **Mountain Blue** is a family owned and operated company that produces the highest quality blueberry fruit and genetics along with an extensive nursery and marketing service. Through their breeding program, headed up by Ridley Bell, Mountain Blue supply world renowned genetics to suit their growers' individual requirements. Considered a world leading expert, Ridley has been actively involved in the development of the Australian blueberry industry since its humble beginning in 1975.



PROGRAM PROGRESS as of March 2021

The Moondarra Genetics breeding program is showing some exciting results with current and future upcoming selections. Our largest progression forward has been fulfilling the objective of securing crunch into the texture of our new selections. This was achieved by interlocking the flavour lines of the Moondarra program with the texture of the 'Eureka'/Mountain Blue program. With the promise our AMAP varieties are showing, the program has taken a new direction. This year, we are looking at breeding cold hardiness back into our hybrid varieties, whilst keeping the desired berry qualities attained from MBO.

Currently, the program is in the process of moving its infrastructure to our new site in Erica, Victoria. Throughout the next four months, 25,000 new seedlings will be planted into Botanicoir substrate bags, with a Priva direct injection fertigation system. Future programmed crosses will allow us to rotate through 10,000 new seedlings on an annual basis. This goal will be a result of performing 100 plus crosses annually. We will also have the capacity to showcase and evaluate old and new selections alongside industry benchmarks.



New site at Erica, Victoria, there is 3 hectares of area under birdnetting and hectares of nursery and operation space.



Members of the Moondarra Genetics team meet up at Erica after Victoria's strict Covid lockdown. From left to right: Mal, Tom, Damien, Tom, Joel, Ridley, Mieke, Kathy, Luke, Sandra and Mano.



This 3 hectare space under netting will hold over 25,000 assessment plants in Botanicair substrate.



The Priva direct injection fertigation system in the process of being commissioned.



Laying of weedmat and fertigation lines in the first of three blocks.

CLIMATE DATA 2020/21

Moondarra, Victoria, Australia

Location: Lat -38.0387 Long 143.3713
 Elevation: 337 meters
 Time Zone: Melbourne, Australia

Average Annual Temperature: **13.8°C**
 Average Maximum Temperature: **18.7°C**
 Average Minimum Temperature: **9.7°C**
 Average Annual Rainfall: **800-900mm**

Month / Year	Avg. Max Temp (°C)	Avg. Min Temp (°C)	Avg. Temp (°C)
July 2020	12	6	8
August 2020	12	6	9
September 2020	16	8	12
October 2020	17	9	13
November 2020	23	11	17
December 2020	21	11	15
January 2021	24	13	18
February 2021	23	12	17
March 2021	20	12	15
April 2021	TBC	TBC	TBC
May 2021	TBC	TBC	TBC
June 2021	TBC	TBC	TBC
Avg. Annual Totals	18.7	9.7	13.8

Average Temperatures recorded at Moondarra, Victoria, Australia 2020-21

NAMED SELECTIONS



MERLIAH



KALINDA



LILIJAH



MIDNIGHT

FUTURE OBJECTIVES

Currently we are implementing 5 plant plots for each of the named varieties at our new R&D facility in Erica, Victoria. Throughout 2021, gathering data on flowering behaviour and timing, will be a key focal point for us to implement into the next variety guide edition.

We will continue to gather data for cultivar yields, berry qualities and variety performance during storage trials. Furthermore, we look to update our variety guide throughout the year, once more conclusive data has been gathered and analysed.

NAMED SELECTIONS

MERLIAH

'Merliah' was selected in 2015 based on having a very early season and an excellent crunchy texture. Developed from a pure Northern Highbush variety and Mountain Blue's Southern Highbush 'Eureka'.

CHILL - MEDIUM

'Merliah' is showing attributes towards being of a medium chill nature.

SEASON - VERY EARLY

With a very early season, 'Merliah' ripens around the same time as 'O'Neal'.

BERRY

This excellent variety has an irresistible flavour that compliments the 'Eureka' style crunch. With an even, light blue bloom and a clean dry scar, these large attractive berries stand out when on display.

BUSH

Bush habit is vigorous and tough with strong upright canes that develop into a well shaped, open bush with excellent fruit bud set.

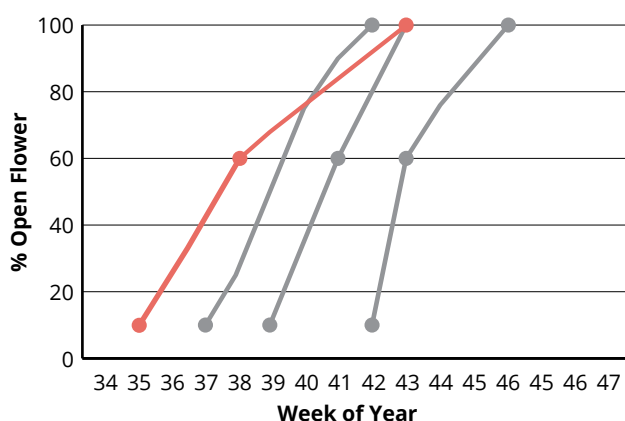


Figure 1: The timing of the percentage flower of 'Merliah' in comparison to other named MG varieties during 2017.

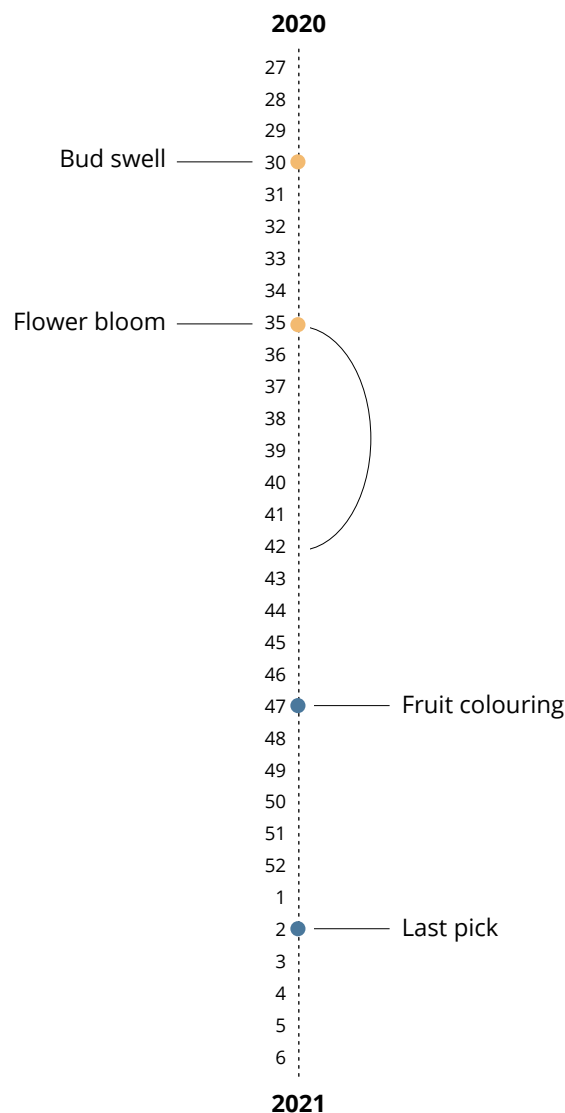


Figure 2: Key stages of 'Merliah' fruit development observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
Merliah	86%	3.3-5.3	23-28	16-18	56

Table 1: Self-pollination and fruit quality characteristics of 'Merliah'.

MERLIAH

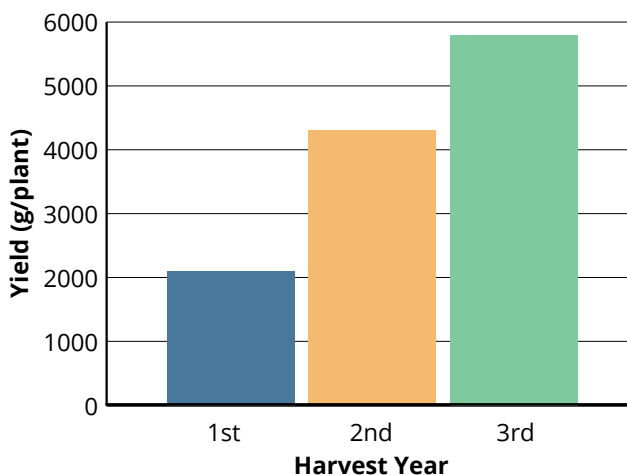


Figure 3: Yield of 'Merliah' plants over three consecutive years.

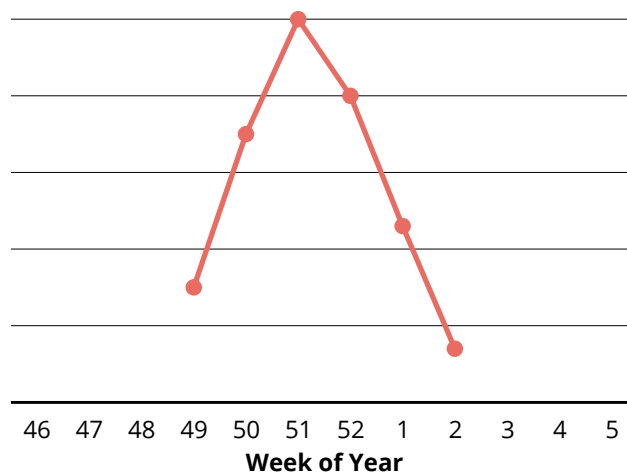
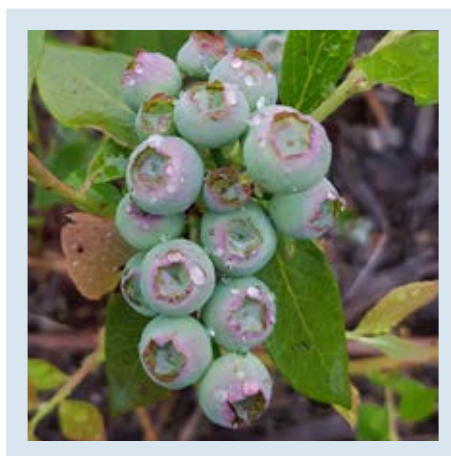


Figure 4: The harvest distribution of 'Merliah'.



YIELD

The yield data displayed in Figures 3 and 4 has been collected from 5 plant plots that have been grown in 28 litre pots with Legro CP Optima substrate. Harvest data is collected over consecutive years as the bushes mature.

Figure 3 shows the first, second and third years harvests as 2.1kg/plant, 4.3kg/plant and 5.8kg/plant respectively.

RIPENING

'Merliah' has a very early season with ripening around week 48 and 49. Comparative in timing to 'Eureka' and 'O'Neal' when grown in a high chill environment. Approximately three weeks earlier than 'Duke'.

The timing and distribution of fruit ripening and harvest of 'Merliah' is shown in Figure 4 where first pick is around week 49, peak harvest during weeks 50 through 52, before the yield diminishes by week 2.

SHELF LIFE

Initial storage trials for 'Merliah' show promise. During the first four weeks, there was only a mild change in berry quality at the end of the four week period, with little mould and shrivel being present in successive repetitions.



NAMED SELECTIONS

KALINDA

'Kalinda' was selected in 2016 based on its very crunchy berry and pleasant flavour. Bred from an exceptional pure Northern Highbush variety and Mountain Blue's Southern Highbush 'Eureka'.

CHILL - MEDIUM

'Kalinda' is showing attributes towards being of a medium chill nature.

SEASON - MID

It is placed as a mid season variety similar to 'Duke' when grown outdoors, with ripening around week 52. 'Kalinda' has been trialled growing indoors in 28 litre pots with Legro CP Optima substrate and this brought the 'Kalinda' season forward into an early season ripening around week 50.

BERRY

Having a small dry scar with medium blue bloom, the very large berries will emulate the 'Eureka' style crunch which is presented alongside a subtle, yet sweet, pleasing flavour.

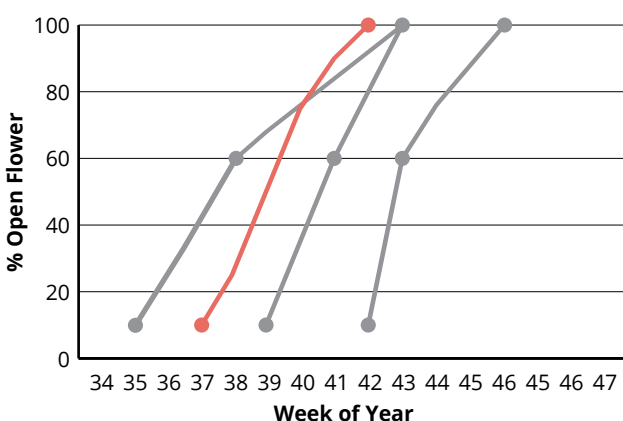


Figure 5: The timing of the percentage flower of 'Kalinda' in comparison to other named MG varieties during 2017.

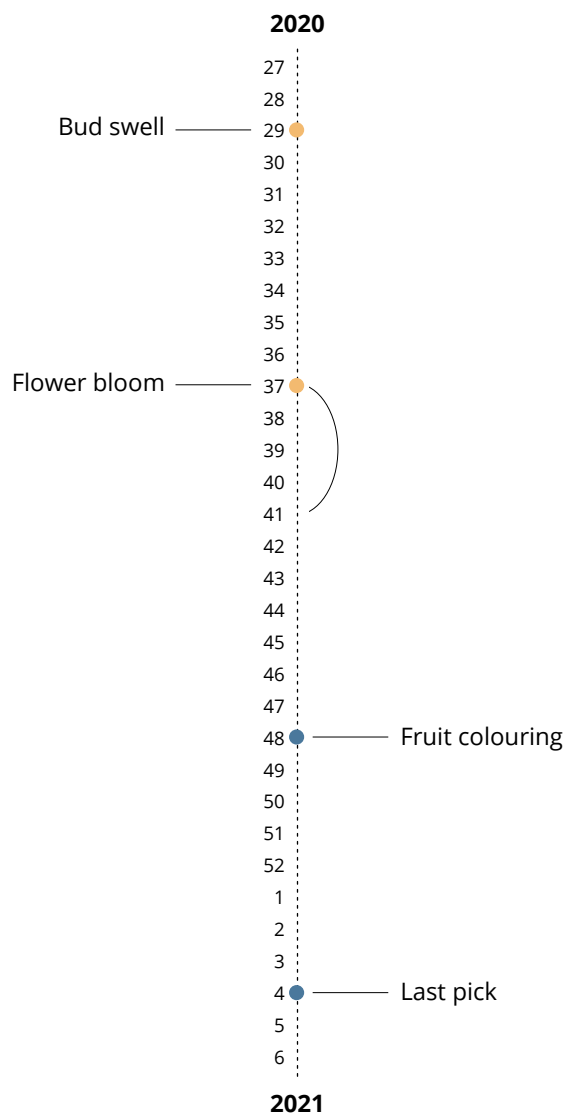


Figure 6: Key stages of 'Kalinda' fruit development on plant grown outdoors observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
Kalinda	76%	3.2-5.4	17-24	13-18	42-54.8

Table 2: Self-pollination and fruit quality characteristics of 'Kalinda'.

KALINDA

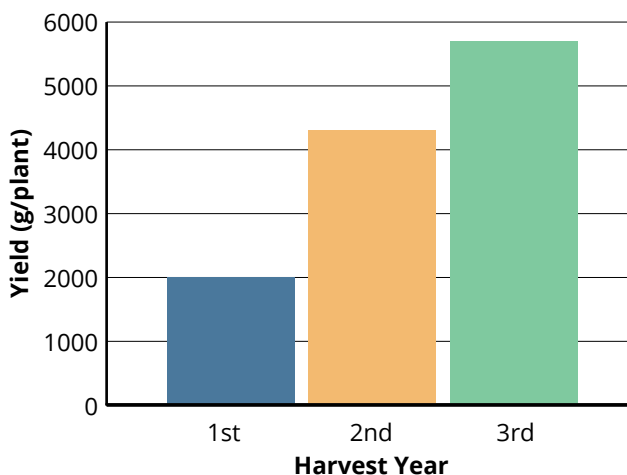


Figure 7: Yield of 'Kalinda' plants over three consecutive years.

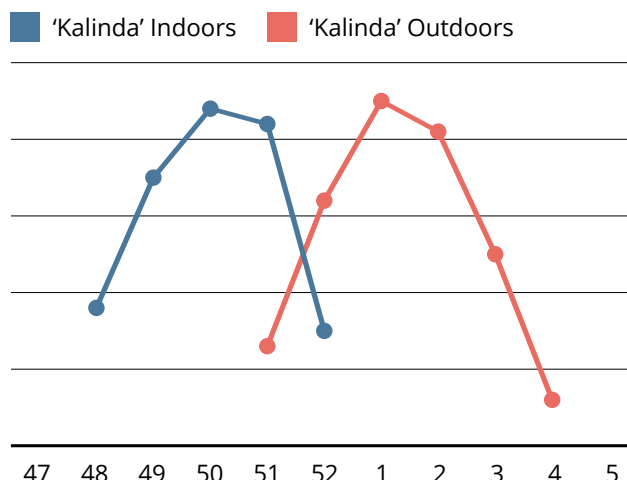
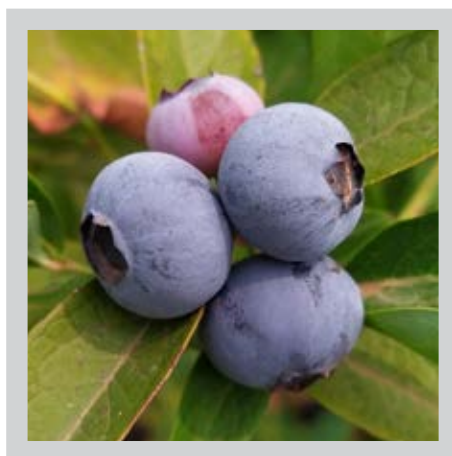


Figure 8: The harvest distribution of 'Kalinda' based on growing method.



YIELD

The yield data displayed in Figures 7 and 8 has been collected from 5 plant plots that are grown in 28 litre pots with Legro CP Optima substrate. Harvest data has been collected over consecutive years as the bushes mature.

Figure 7 shows the first, second and third years harvests as 2.0kg/plant, 4.3kg/plant and 5.7kg/plant respectively.

Figure 8 shows the timing and distribution of fruit ripening and harvest for 'Kalinda':

- Grown outdoors – data shows ripening around week 51, with peak harvest during weeks 1 and 2.
- Grown indoors – data shows ripening during week 48, with the peak at weeks 50 and 51.

SHELF LIFE

Initial storage trials suggest that 'Kalinda' stores well for a four week period, with minimal shrivel and mould being present.



NAMED SELECTIONS

LILIJAH

Having a fantastic, aromatic flavour, our 'Lilijah' selection in 2016 was a standout with its all-round berry attributes derived from the pure Northern Highbush variety 'Caroline', and the Southern Highbush variety 'Magnolia'.

CHILL - MEDIUM TO HIGH

A mid season variety 'Lilijah' displays a medium to high chill, generally losing most, if not all, leaves during Winter.

SEASON - MID

With first harvest during week one, this places 'Lilijah's' season a week later than 'Duke'.

BERRY

'Lilijah' produces berries with consistent size, excellent bloom, appearing light blue in colour. The long stemmed, exceptionally loose clusters contribute towards the ease of harvest. by hand, and being potentially ideal for machine harvesting.

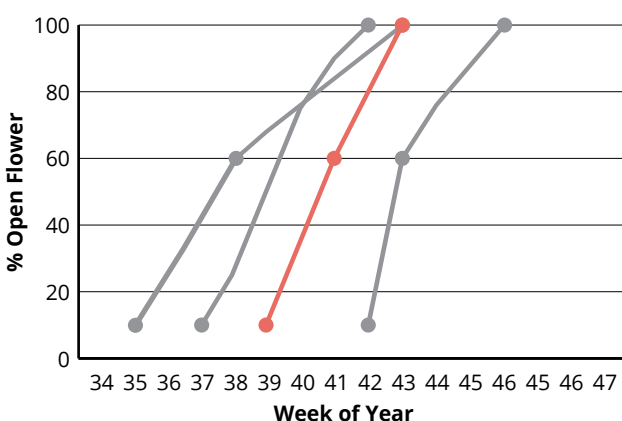


Figure 9: The timing of the percentage flower of 'Lilijah' in comparison to other named MG varieties during 2017.

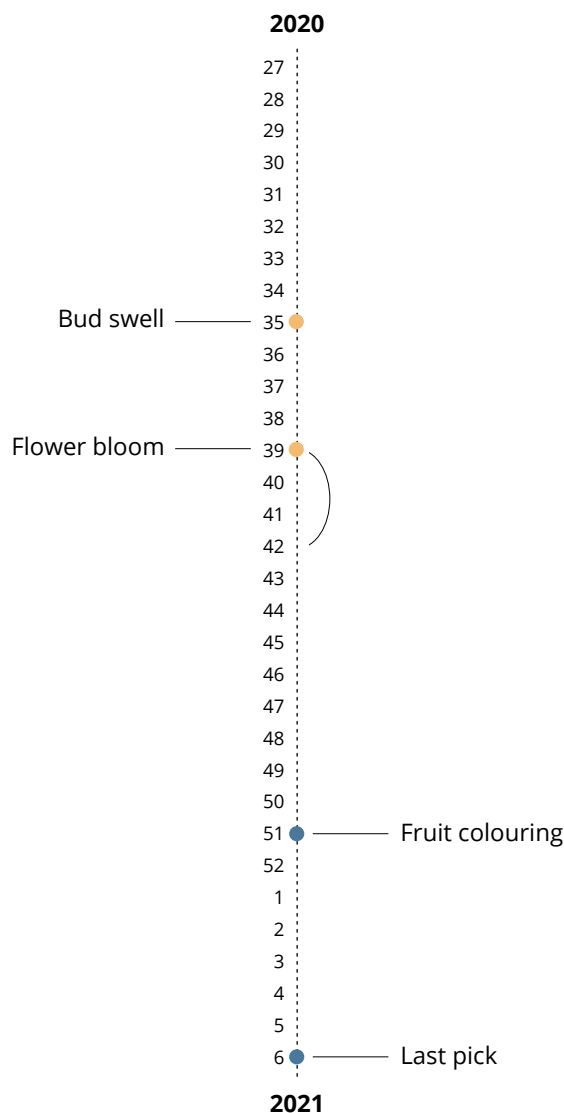


Figure 10: Key stages of 'Lilijah' fruit development observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
Lilijah	80%	3.3-5.1	20-25	15-18	34.2-51

Table 3: Self-pollination and fruit quality characteristics of 'Lilijah'.

LILIJAH

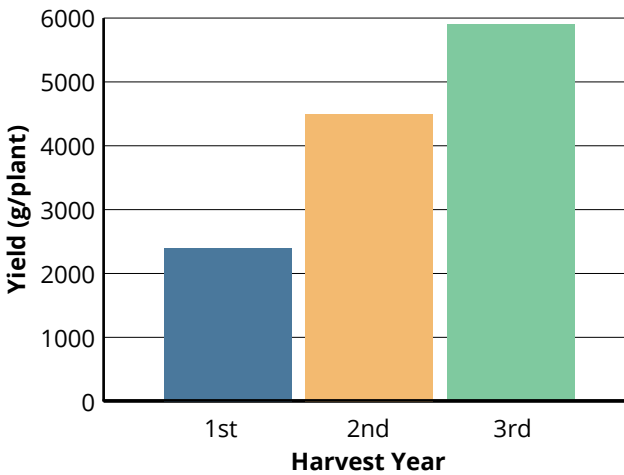


Figure 11: Yield of 'Lilijah' plants over three consecutive years.

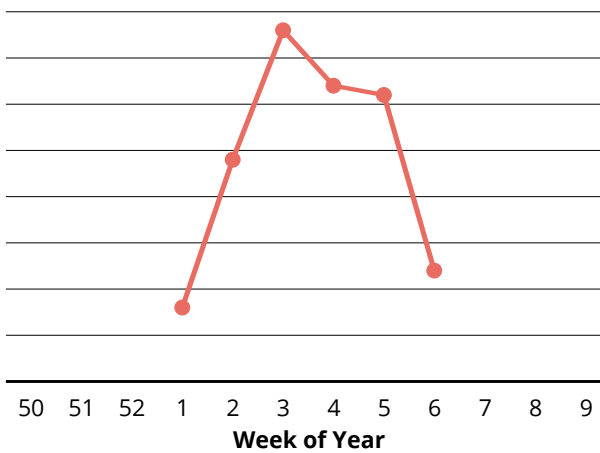
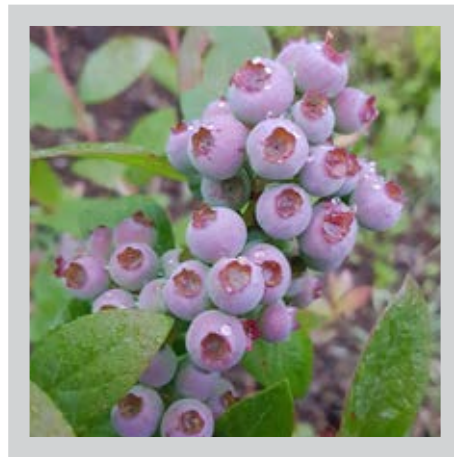


Figure 12: The harvest distribution of 'Lilijah'.



BUSH

With a natural vase shape the bush throws vigorous canes that lateral freely. With minimal pruning 'Lilijah' develops into a well structured bush suited to substrate/container growing.

YIELD

The yield data displayed in Figures 11 and 12 has been collected from 5 plant plots that are grown in 28 litre pots with Legro CP Optima substrate. Harvest data has been collected over consecutive years as the bushes mature.

Figure 11 shows the first, second and third years harvests as 2.4kg/plant, 4.5kg/plant and 5.9kg/plant respectively.

The timing and distribution of fruit ripening and harvest of 'Lilijah' is shown in Figure 12 where it begins ripening around week 1, with peak harvest at week 3 and finishing in week 6 (early February).

SHELF LIFE

Results from initial storage trials show that over a six week period, 'Lilijah' displayed exceptional keeping qualities. Held under normal refrigeration, 'Lilijah' showed little deterioration in berry quality over successive repetitions during its season.



NAMED SELECTIONS

MIDNIGHT

'Midnight' was selected as a variety in 2012. Both parents of 'Midnight' are late fruiting, and this has shown up in the timing of this selection.

CHILL - HIGH

As a pure Northern Highbush, 'Midnight' requires high chill of around 1000 hours.

SEASON

With 'Midnight' flowering four weeks after 'Elliott' and 'Aurora' this helps negate the risk from a late Spring frost (refer to Figure 13). This places 'Midnight' as a very late pure Northern Highbush variety with ripening commencing around week 8.

BUSH

'Midnight' grows as a well structured vase shape bush throwing strong vigorous upright canes that require tip pruning to encourage lateral growth.

BERRY

Even ripening provides a significant first and second harvest of large flat, slightly unusual, shaped berries, with a mild subtle flavour.

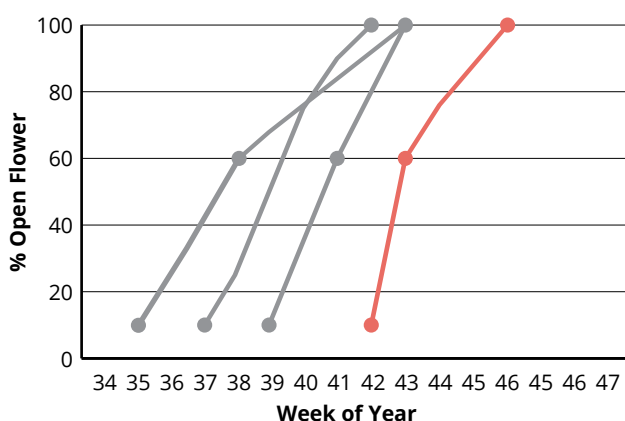


Figure 13: The timing of the percentage flower of 'Midnight' in comparison to other named MG varieties during 2017.

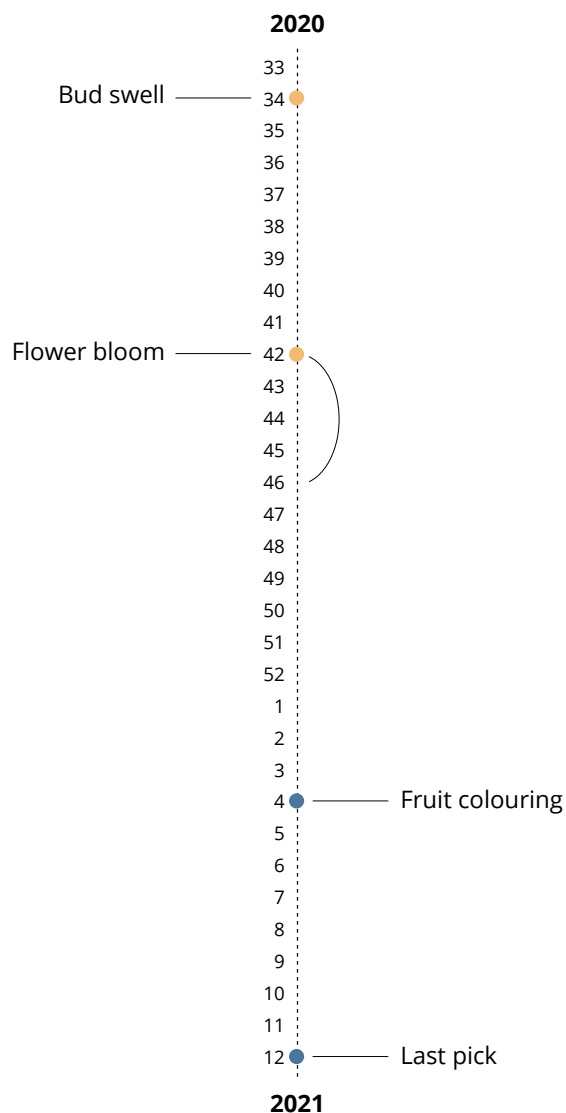


Figure 14: Key stages of 'Midnight' fruit development observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
Midnight	100%	2.5-3.8	18-22	15-18	15-40.5

Table 4: Self-pollination and fruit quality characteristics of 'Midnight'.

MIDNIGHT

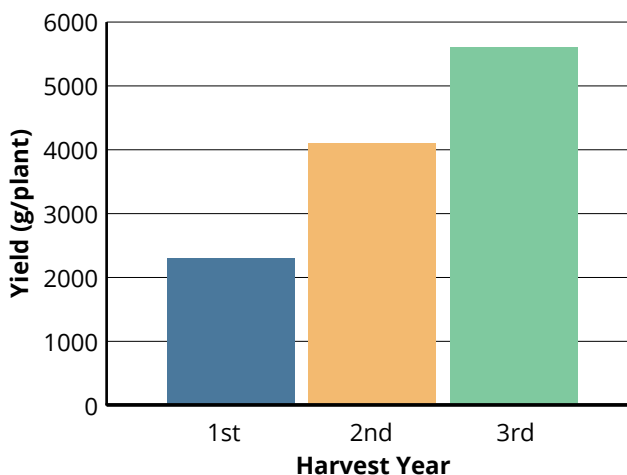


Figure 15: Yield of 'Midnight' plants over three consecutive years.

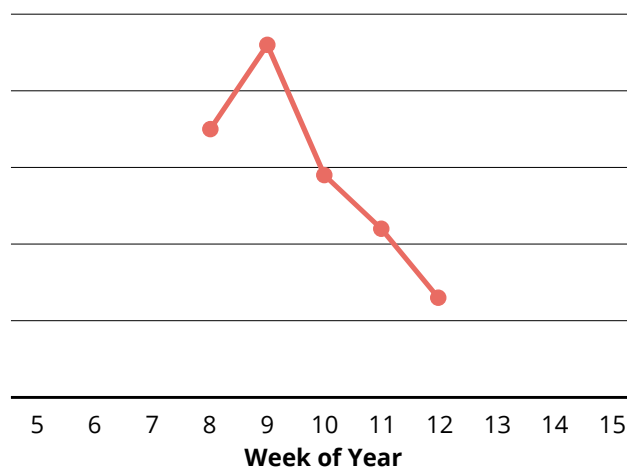
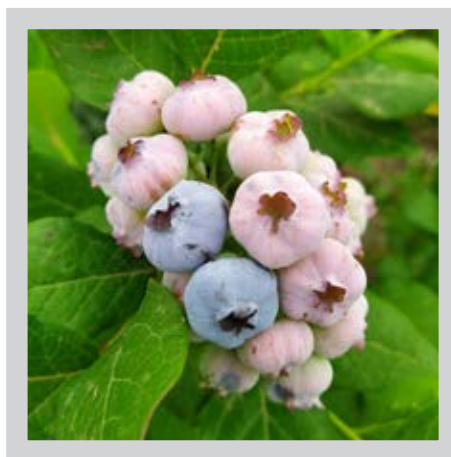


Figure 16: The harvest distribution of 'Midnight'.



POLLINATION

Pollination trials have indicated this variety to be largely self fruitful with results of 100% pollination (refer to Table 4).

YIELD

The yield data displayed in Figures 15 and 16 has been collected from a 5 plant plot. Harvest data has been collected over consecutive years as the bushes mature.

Figure 15 shows the first, second and third years harvests as 2.3kg/plant, 4.1kg/plant and 5.6kg/ plant, respectively.

The timing and distribution of fruit ripening and harvest of 'Midnight' is shown in Figure 16 where it begins ripening around week 8, with peak harvest during week 9 where a heavy pick is required and drops off evenly by week 12 (late March).

SHELF LIFE

Storage trials are currently being conducted on 'Midnight' to observe whether the variety is suitable for long distance shipping.



NAMED VARIETAL SUMMARY

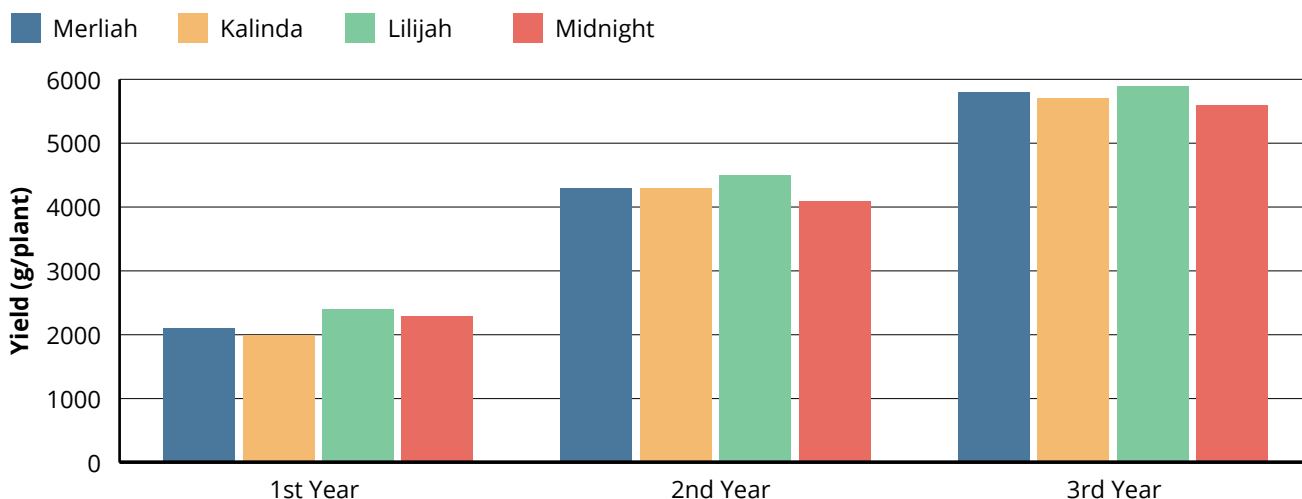


Figure 17: Yield comparison of ‘Merliah’, ‘Kalinda’, ‘Lilijah’ and ‘Midnight’ plants over three consecutive years.

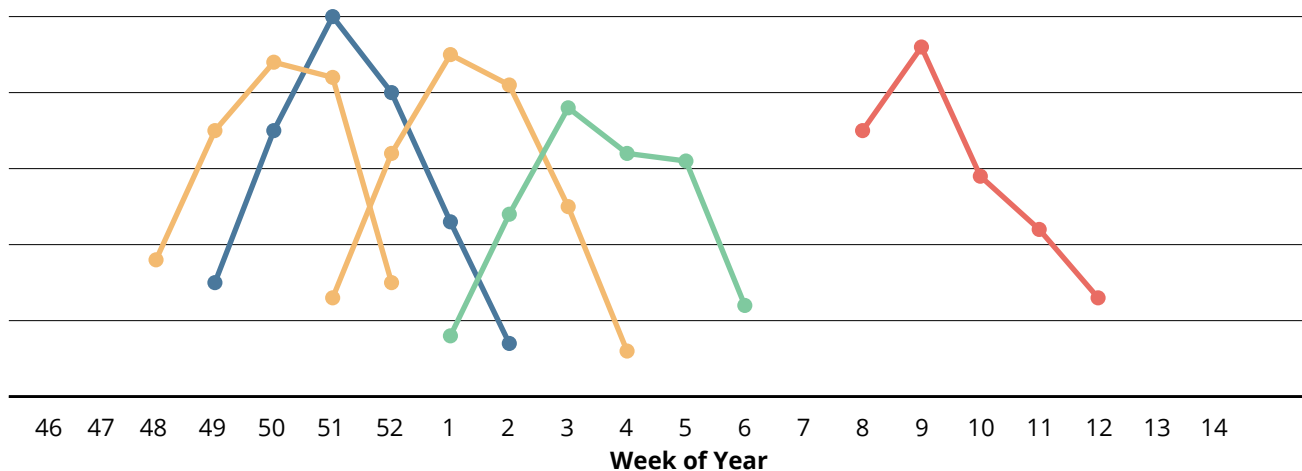


Figure 18: Harvest distribution comparison of ‘Merliah’, ‘Kalinda’ (Indoor and Outdoor), ‘Lilijah’ and ‘Midnight’.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
Merliah	86%	3.3–5.3	23–28	16–18	56
Kalinda	76%	3.2–5.4	17–24	13–18	42–54.8
Lilijah	80%	3.3–5.1	20–25	15–18	34.2–51
Midnight	100%	2.5–3.8	18–22	15–18	15–40.5

Table 5: Comparison of the self-pollination and fruit quality characteristics of ‘Merliah’, ‘Kalinda’, ‘Lilijah’ and ‘Midnight’.

AMAP SELECTIONS

The following AMAP selections have been chosen because of their exceptional taste, texture and crunch. These selections are early in the process of assessment, with only partial data profiles being available.

Since selection, all four AMAPs have been sent and fast tracked to trial sites around the world. This allows us, in conjunction with our licensees, to evaluate our top selections in many countries and sites at a concurrent time, as the critical evaluation is occurring at Moondarra Genetics.



FUTURE DIRECTION

Currently, at our new Erica site these varieties are being delegated into 5 plant plots, where they will be further assessed based on yield, berry quality, and storage performance. As they move through this comprehensive assessment and testing period, data collected will then be analysed and made available for review from licensees.

AMAP SELECTIONS

E14-01-117

(formerly MG14001-01-117)

SEASON - MID

Similar season to 'Lilijah' and 'Bluecrop'.

SELECTION CRITERIA

- The outstanding flavour combined with a smooth, chewy crunch leads towards an exceptional eating experience.
- 13-14.5mm pumpkin shaped berries, ripen on loose clusters with good, even and light coloured bloom.

SHELF LIFE

'E14-01-117' displayed average results during the initial storage trials, with shrivel and mould becoming more prominent after the first four weeks.

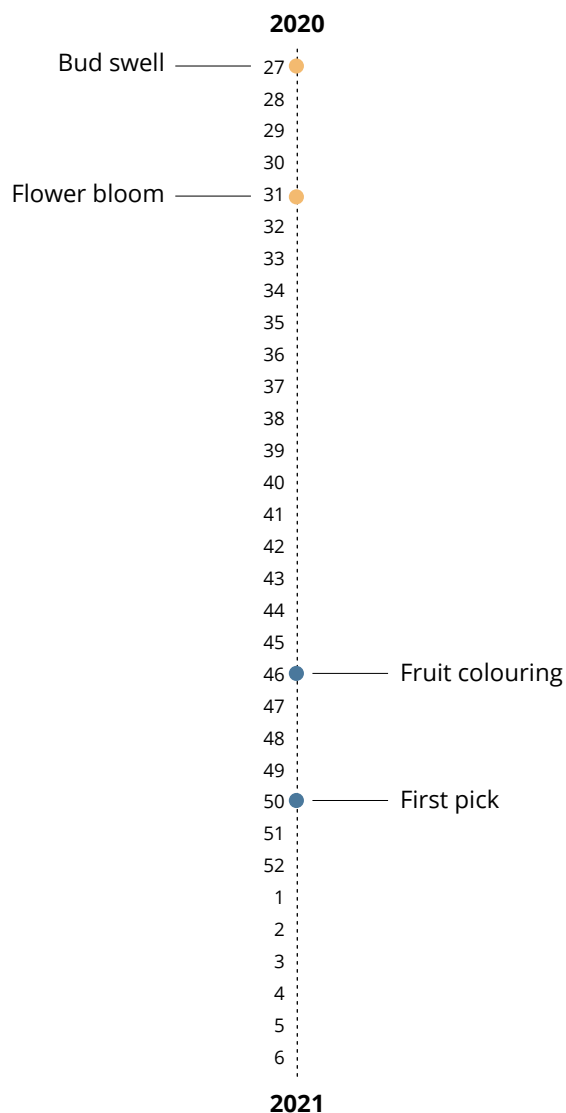
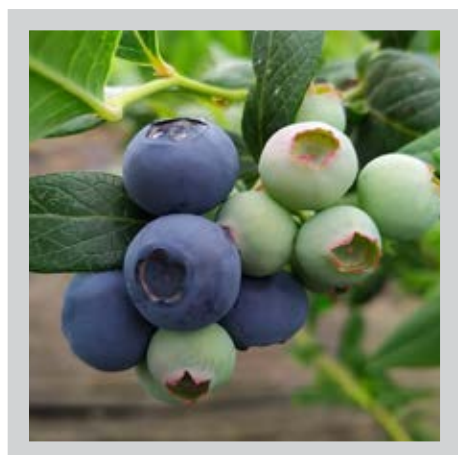


Figure 19: Key stages of 'E14-01-117' fruit development observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
E14-01-117	TBC	1.63-2.48	12.4-14.83	15.57-17.25	TBC

Table 6: Self-pollination and fruit quality characteristics of 'E14-01-117'.

AMAP SELECTIONS

E16-49-43

(formerly MG16049-20-043)

SEASON - MID

Similar season to 'Lilijah' and 'Bluecrop'.

SELECTION CRITERIA

- Good flavour combined with a crisp crunch made for a pleasant eating experience.
- Berries are large and pumpkin shaped. Presented well on open, loose clusters.

SHELF LIFE

'E16-49-43' performed well during the first four weeks of storage trials, with minimal mould and shrivel being present.

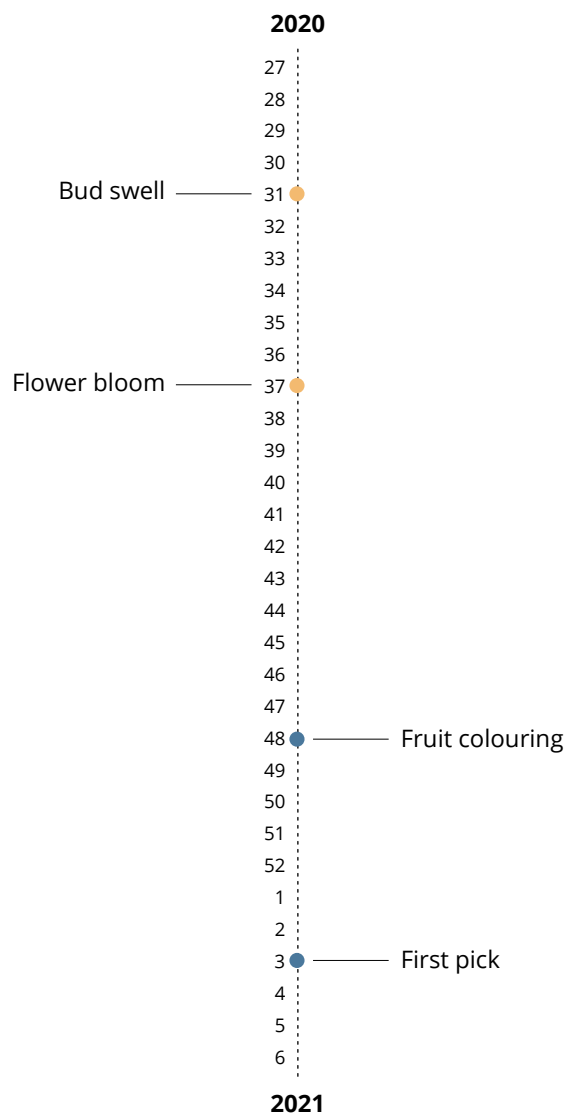
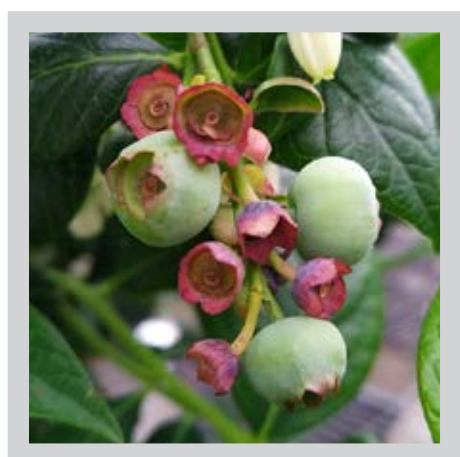


Figure 20: Key stages of 'E16-49-43' fruit development observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
E16-49-43	TBC	2.5-3.53	12.8-16.83	14.13-19.33	TBC

Table 7: Self-pollination and fruit quality characteristics of 'E16-49-43'.

AMAP SELECTIONS

E16-48-58

(formerly MG16048-24-058)

SEASON - MID

Similar season to 'Lilijah' and 'Bluecrop'.

SELECTION CRITERIA

- Amazing flavour and large crisp, crunchy berry.
- With loose clusters, these large round berries are easy to harvest.

SHELF LIFE

Initial storage trials indicate that 'E16-48-58' holds well for up to four weeks with minimal mould and shrivel being present.

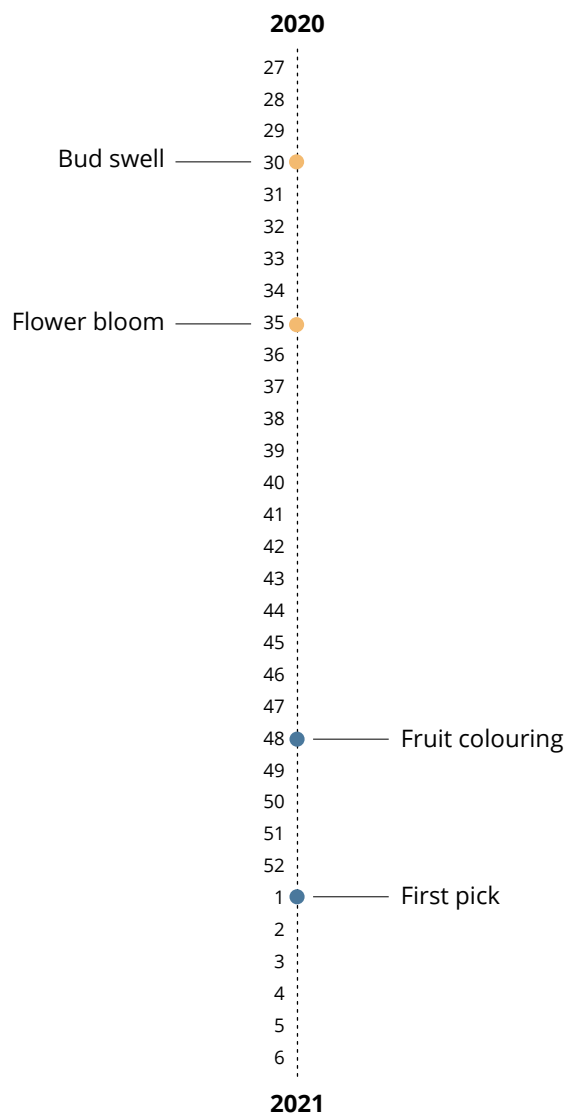
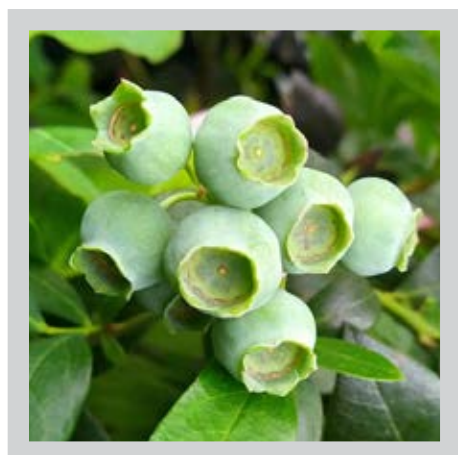


Figure 21: Key stages of 'E16-48-58' fruit development observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
E16-48-58	TBC	3.04-3.9	15.6-19.33	14-16	TBC

Table 8: Self-pollination and fruit quality characteristics of 'E16-48-58'.

AMAP SELECTIONS

E16-73-97

(formerly MG16073-28-097)

SEASON - LATE

Similar season to 'Midnight'.

SELECTION CRITERIA

- With a season just prior to 'Midnight', this improved selection delivers a lovely sweet juicy flavour through a crisp and crunchy, 18-19mm sized, pumpkin shaped berry.
- Berries hang within loose open clusters with an exceptional bloom.

SHELF LIFE

Initial storage trials have shown promising results. Bloom and firmness hold very well, with minimal shrivel and mould was observed over a six week period. These results indicate that 'E16-73-97' could be suitable for long-distance shipping.

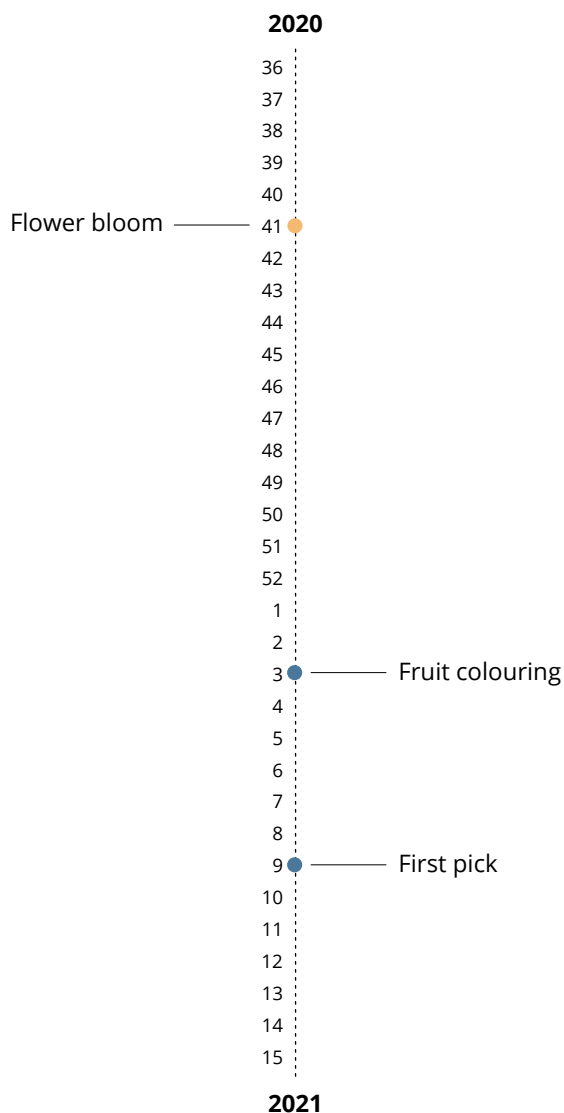
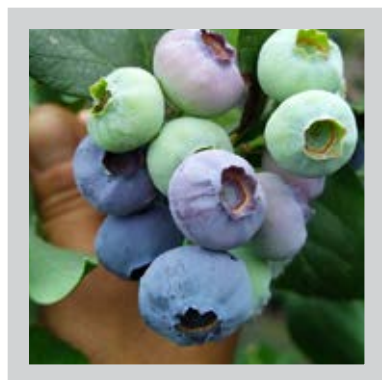


Figure 22: Key stages of 'E16-73-97' fruit development observed over 2020/2021 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
E16-73-97	TBC	3.9-4.23	18.2-19.33	13.88-15	TBC

Table 9: Self-pollination and fruit quality characteristics of 'E16-73-97'.

RABBITEYE SELECTION

Our Rabbiteye selection, 'Luna', has been chosen for its late fruiting qualities, and its attractive, round marble like berries. These berries have a light, even bloom, and have a delicious, juicy flavour. Currently, 'Luna' is in the early stages of assessment, with any data collected in the coming year being made available for review for all licensees in future variety guide editions.



FUTURE AIM

Throughout 2021, data will continue to be gathered on 'Luna' regarding flowering, yield, plant/berry qualities and storage performance.

RABBITEYE SELECTIONS

LUNA

SEASON - LATE

SELECTION CRITERIA

- 'Luna' is a new variety which delivers a sweet juicy burst through a ~13mm sized, round shaped berry.
- Berries have a fantastic bloom, hanging in loose open clusters.

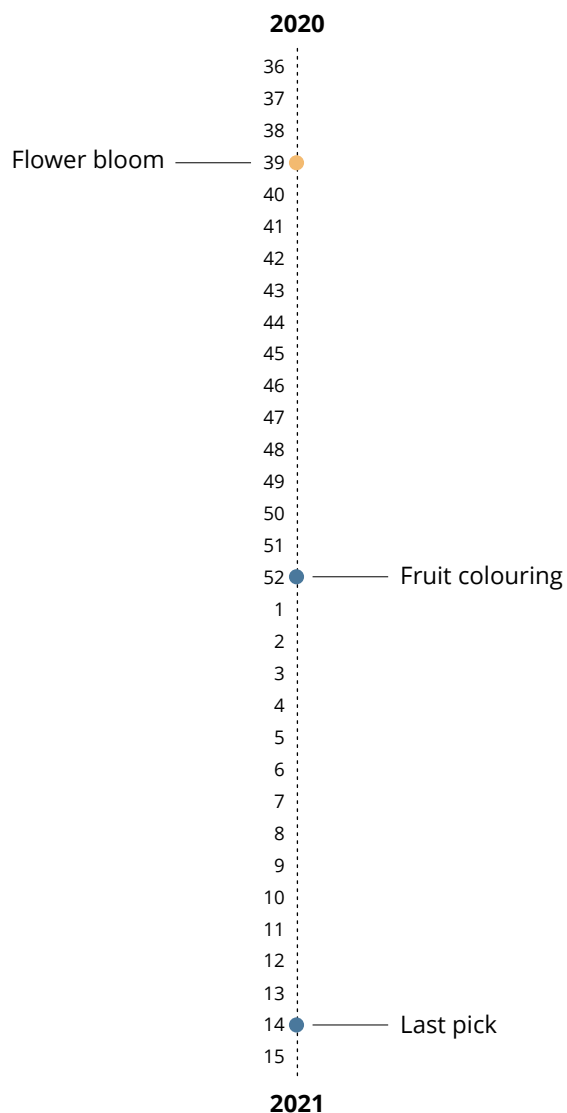
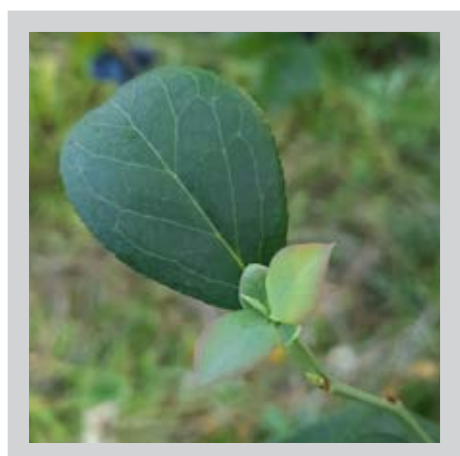


Figure 23: Key stages of 'Luna' fruit development observed over 2017/2018 and recorded by week of year.

Variety	Self-pollination	Avg. Berry Weight (g)	Avg. Berry Size (mm)	Brix	Durofel
LUNA	TBC	1.8-2.3	10-15	13.88-15	33-59

Table 9: Self-pollination and fruit quality characteristics of 'Luna'.

*Average of berry weight calculated from 50 berries.