

M7 NAVEL



2005 5 9

2010 – An Unusual Season

- Very hot two weeks late November, 2009 substantially reduced fruit set – lightest crop in memory.
- Long ideal growing season (warm and humid autumn) combined with low fruit densities produced largest fruit size on record.
- Maturity 2-3 weeks advanced on last year (which was late) similar to 2008.

M7 Navel

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M7 is a very early maturing navel.

Mutation discovered in Autumn 2004 on a Navelina (clone 7.5) tree in the orchard of **Chislett Developments Pty Ltd**, Kenley, Victoria, Australia.

Australian PBR granted: 2005/185

Background

- Orange full colour of mutation first noticed when Navelina was light green on 02-May-2004
- Advanced colour around 4 weeks earlier than Navelina
- Very high brix 13.07 when Navelina was 9.94 on 18-May-2004
- Certified by Auscitrus to be free of any viruses in March 2006.



Outstanding Characteristics

- Early Colour – around 4 weeks earlier than Navelina
- Round fruit shape
- Early Internal Maturity – around 3 weeks earlier than Navelina
- Very high brix – reaching 13°
- Extended harvest period – at least 4 months from April (Oct) to July (Jan)
- Rind quality – No albedo breakdown
- Firmer rind than Navelina throughout harvesting period

Observations made at Kenley, Victoria, which is a mid to late growing area

Outstanding Characteristics

- No need to apply 2,4-D to prevent fruit drop
- Vigorous and a distinctive foliage
- Medium to small and distinctive external navel
- Small internal navel
- Early production, good yields and fruit size
- Good compatibility with all rootstocks

Observations made at Kenley, Victoria, which is a mid to late growing area

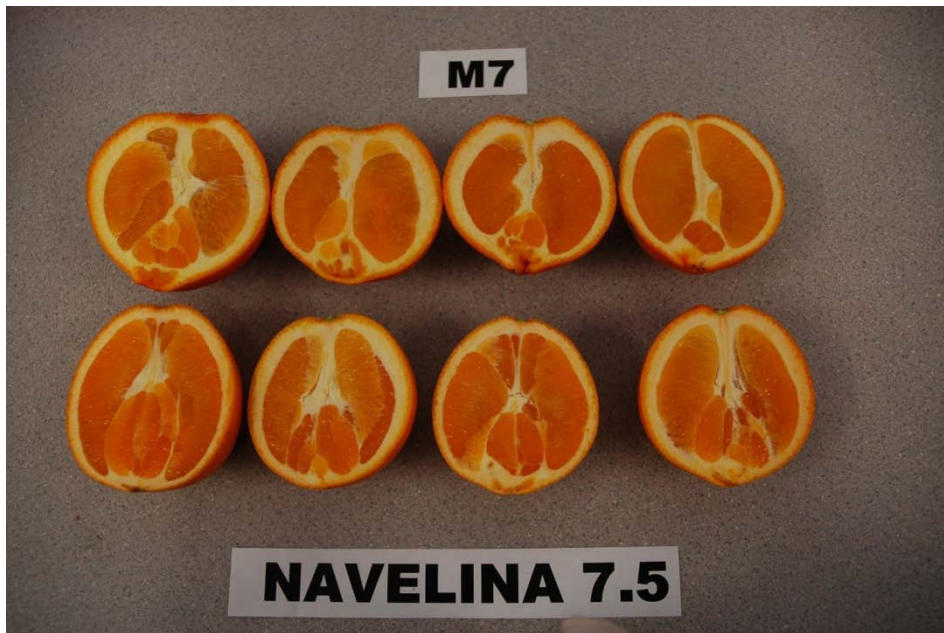
External Navel

- Medium to small navel size and similar to Navelina
- Distinctive with slight lines radiating outwards from the navel.



Internal Navel

- Significantly smaller than Navelina 7.5



Photos taken August 25, 2006 at Dareton Research Station

Colour

- Colour around 4 weeks earlier and more even over the tree than Navelina with gas colouring possible in early April (October NH).
- M7 on the 5-Apr-05 had better colour than Navelina on the 28-Apr-05.
- Individual fruit colour more uniform than Navelina.
- Intensity of colour similar to Navelina when fully developed.



Fruit Shape

- Completely round fruit



Internal Quality

- Approximately 3 weeks earlier than Navelina
- Brix acid ratio of 8.4 on 05-April-2005 (October NH) compared to navelina of 7.0

(at Kenley which is a late maturing area)

- Maintains acid levels of 0.7grams of citric acid per 100 ml of juice on 06-September-2005 (March NH)
- Exceptional eating quality due to high brix (13° plus) and higher brix/acid ratio than Navelina.

Internal Quality

- Potentially good juicing yields
- More advanced and intense flesh colour than Navelina
- Limonin levels to be determined and expected to be relatively low like Navelina



M7 Maturity Results - 2005

Date	Juice (%)		Brix (°)		Acid (%)		Ratio (brix to acid)	
	M7	Navelina	M7	Navelina	M7	Navelina	M7	Navelina
05/04/2005	36	34	11.60	9.70	1.38	1.38	8.4:1	7.0:1
28/04/2005	41	43	12.70	10.10	1.16	1.02	10.9:1	9.9:1
07/06/2005	47	49	13.20	10.80	1.08	1.02	12.2:1	10.6:1
30/06/2005	55	54	13.10	10.90	0.87	0.92	15.1:1	11.8:1
06/09/2005	47	45	13.90	12.40	0.70	0.70	19.8:1	17.7:1

Tested by Graeme Sanderson – Dareton Research Centre

M7 Maturity Results - 2006

Date	Juice (%)		Brix (°)		Acid (%)		Ratio (brix to acid)	
	M7	Navelina	M7	Navelina	M7	Navelina	M7	Navelina
30/03/2006	32	31	8.8	8.5	1.37	1.47	6.4:1	5.8:1
10/04/2006	43	41	9.1	7.7	1.25	1.25	7.3:1	6.2:1
20/04/2006	40	46	9.7	8.4	1.21	1.22	8.0:1	6.9:1
29/04/2006	47	45	10.7	8.7	1.2	1.08	8.9:1	8.1:1
14/06/2006	44	42	10.2	8.8	1.02	0.96	10.0:1	9.2:1
20/07/2006	42	43	11.5	8.8	0.96	0.89	12.0:1	9.9:1
25/08/2006	40	43	11.7	10.8	0.75	0.76	15.6:1	14.2:1

2006 shows a later maturity for both varieties due to intense pruning, budwood collection and high fertiliser inputs for vegetative growth but still the same differences between them

Tested by Graeme Sanderson – Dareton Research Centre

M7 Maturity Results - 2007

Date	Juice (%)		Brix (°)		Acid (%)		Ratio (brix to acid)	
	M7	Navelina	M7	Navelina	M7	Navelina	M7	Navelina
05/04/2007	37	37	10.2	8.8	1.25	1.08	8.2:1	8.1:1
26/04/2007	41	40	11.1	9.7	1.18	0.99	9.4:1	9.8:1
06/06/2007	43	47	13.5	10.8	1.24	0.87	10.9:1	12.4:1
31/07/2007	47	44	13.3	11.1	0.89	0.69	14.9:1	16.1:1

Tested by Graeme Sanderson – Dareton Research Centre

M7 Maturity Results - 2008

Date	Juice (%)		Brix (°)		Acid (%)		Ratio (brix to acid)	
	M7	Navelina	M7	Navelina	M7	Navelina	M7	Navelina
26/03/2008*	50	51	11.56	11.10	1.41	1.15	8.2	9.7
16/04/2008*	53	54	12.23	11.77	1.26	0.96	10.36	12.23
24/04/2008*	51	52	13.48	12.75	1.2	0.95	11.2	13.4
21/05/2008*	51	47	14.13	12.71	1.06	1.00	13.33	12.71
21/05/2008	49	40	13.45	11.61	0.97	0.85	13.87	13.66
10/06/2008*	49	46	14.52	13.77	1.03	0.80	14.1	17.21
26/06/2008	50	50	14.63	13.35	0.90	0.84	16.26	15.89

Data from PBR Trial except * which are from the Mother Tree

Tested by: Scholefield Robinson, Mildura

M7 Maturity Results - 2009

Date	Juice (%)		Brix (°)		Acid (%)		Ratio (brix to acid)	
	M7	Navelina	M7	Navelina	M7	Navelina	M7	Navelina
07/04/2009	43	39	10.64	10.42	1.16	1.06	9.13	9.81
17/04/2009	48	41	11.86	11.42	1.18	1.11	11.86	11.42
13/05/2009	41	36	11.60	9.08	1.02	0.86	11.33	10.51
03/06/2009	40	37	11.10	10.38	1.03	0.87	10.78	11.93
25/06/2009	40	48	12.96	10.66	0.83	0.77	15.58	13.88
19/07/2009*	N/A	N/A	13.10	12.10	0.92	0.88	14.24	13.75
24/08/2009	40	40	13.50	12.40	0.80	0.70	16.88	17.71

* Fruit harvested on 15/06/2009 and tested in the USA on arrival

Tested by: Mildura Fruit Company

www.chislettnavel.com.au

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M7 Maturity Results - 2010

Date	Juice (%)		Brix (°)		Acid (%)		Ratio (brix to acid)	
	M7	Navelina	M7	Navelina	M7	Navelina	M7	Navelina
08/04/2010	47	45	13.02	10.60	1.09	0.99	12.11	10.75
08/04/2010	52	43	12.66	10.40	1.25	0.95	10.14	10.91
14/04/2010*	48	44	11.92	10.46	1.09	0.83	10.89	12.57
20/04/2010	44	49	12.28	10.60	0.91	0.95	13.51	11.12

* Fruit from Jamesville

Tested by: Mildura Fruit Company

M7 Maturity Results - 2011

Date	Juice (%)		Brix (°)		Acid (%)		Ratio (brix to acid)	
	M7	Navelina	M7	Navelina	M7	Navelina	M7	Navelina
08/03/2011	58	61	9.01	8.56	2.14	1.84	4.21	4.65
08/03/2011	57		9.08		1.92		4.72	
11/03/2011*	55	55	8.86	8.42	1.82	1.63	4.86	5.16
11/03/2011*	62	49	8.72	8.06	1.56	1.29	5.58	6.27
11/03/2011*	56		7.81		2.12		3.68	
11/03/2011*	59		8.60		1.52		5.67	
04/04/2011	47	47	10.76	9.32	1.75	1.57	6.16	5.93
04/04/2011	41		10.20		1.46		7.01	
07/04/2011*	47	50	10.68	9.68	1.35	1.43	7.93	6.75
07/04/2011*	45	43	9.06	8.60	1.33	0.99	6.80	8.72
29/04/2011	45	47	11.94	10.54	1.22	1.20	9.82	8.81
29/04/2011	45		12.04		1.22		9.85	
03/05/2011	45		12.04		1.20		10.01	
19/5/2011	43	43	12.52	10.02	1.10	1.08	11.37	9.26

*Fruit from Jamesville (early growing area)

Remainder of fruit from Kenley

Tested by: Mildura Fruit Company

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2011 Maturity – M7 vs. Other Navels

Variety	Details	Juice (%)	Brix (°)	Acid (%)	Ratio (brix to acid)
M7	Volk	56	7.81	2.12	3.68
M7	Citrange Young Trees	55	8.86	1.82	4.86
M7	Grafted on Navelina 315	62	8.72	1.56	5.58
M7	Grafted on Navelina	59	8.60	1.52	5.67
Navelina	315 / Citrange	49	8.06	1.29	6.27
Navelina	Citrange Hill	55	8.42	1.63	5.16
Attwood		45	8.05	2.31	3.48
Fisher	Citrange	38	7.88	1.94	4.07
Passin	Volk	50	7.83	2.15	3.64
Washington	Tri	48	8.59	2.05	4.20

Fruit from Jamesville picked 11/03/2011

Tested by: Mildura Fruit Company

Fig 1: Comparison of % juice in M7 and Navelina 7.5 across four seasons.

Note: On dates marked with *, fruit was sampled from the PBR comparator trial (n=6).
Otherwise fruit were sampled from the mother tree.

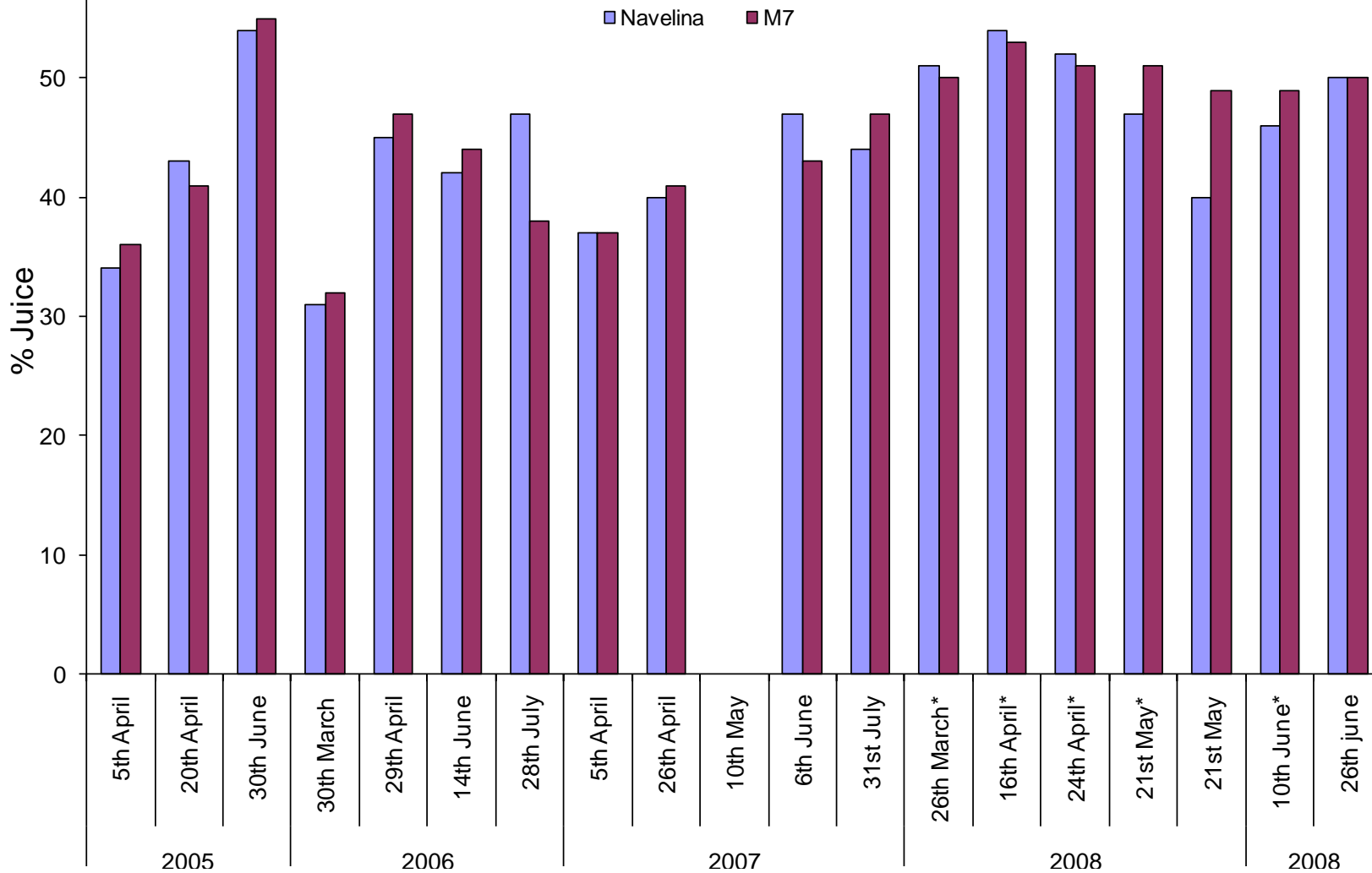


Fig 2: Comparison of ° Brix in M7 and Navelina 7.5 across four seasons

Note: On dates marked with *, fruit was sampled from the PBR comparator trial (n=6). Otherwise fruit were sampled from the mother tree.

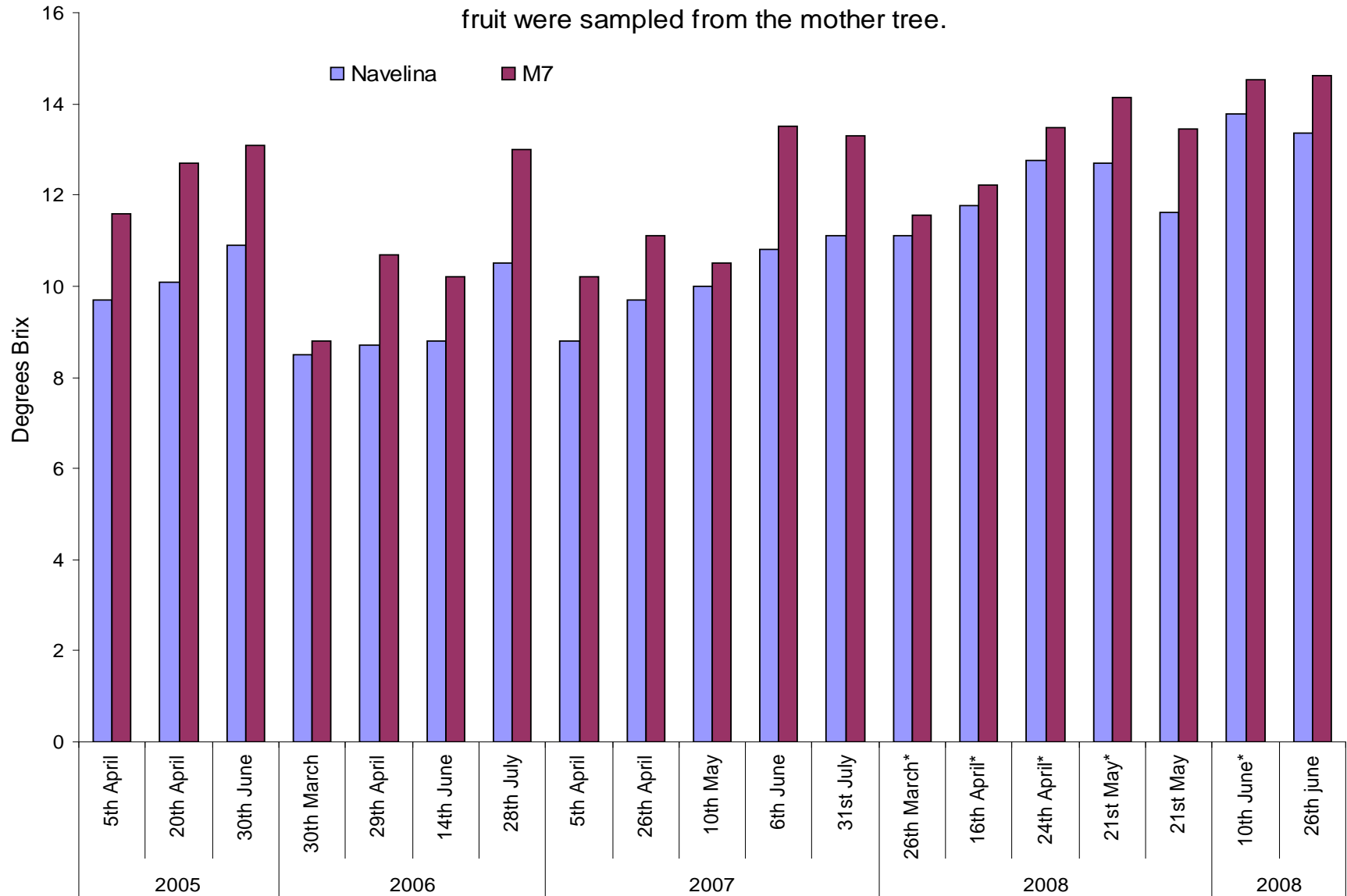


Fig 3: % acid in juice from M7 and Navelina 7.5 across four seasons

Note: On dates marked with *, fruit was sampled from the PBR comparator trial (n=6). Otherwise fruit were sampled from the mother tree.

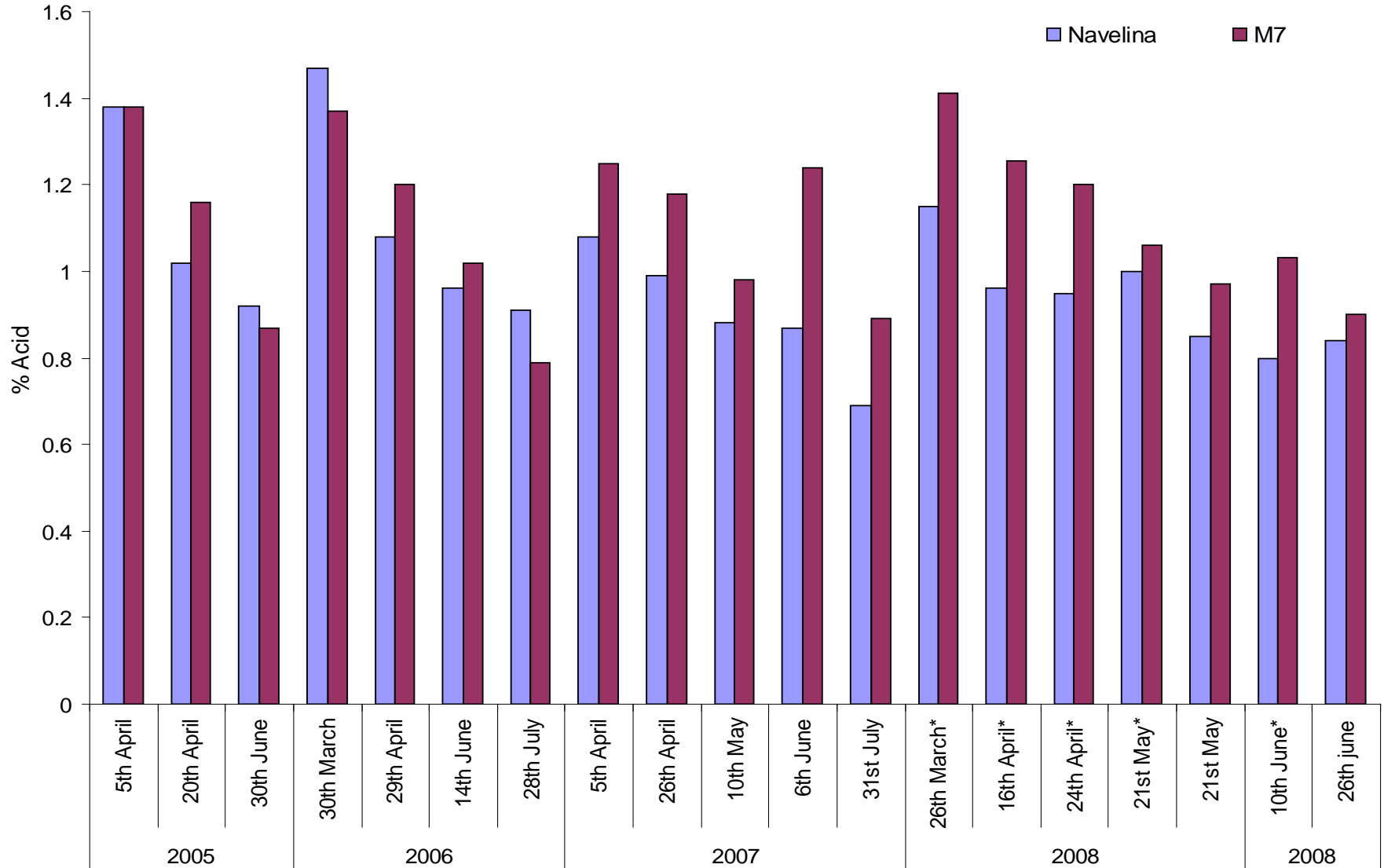
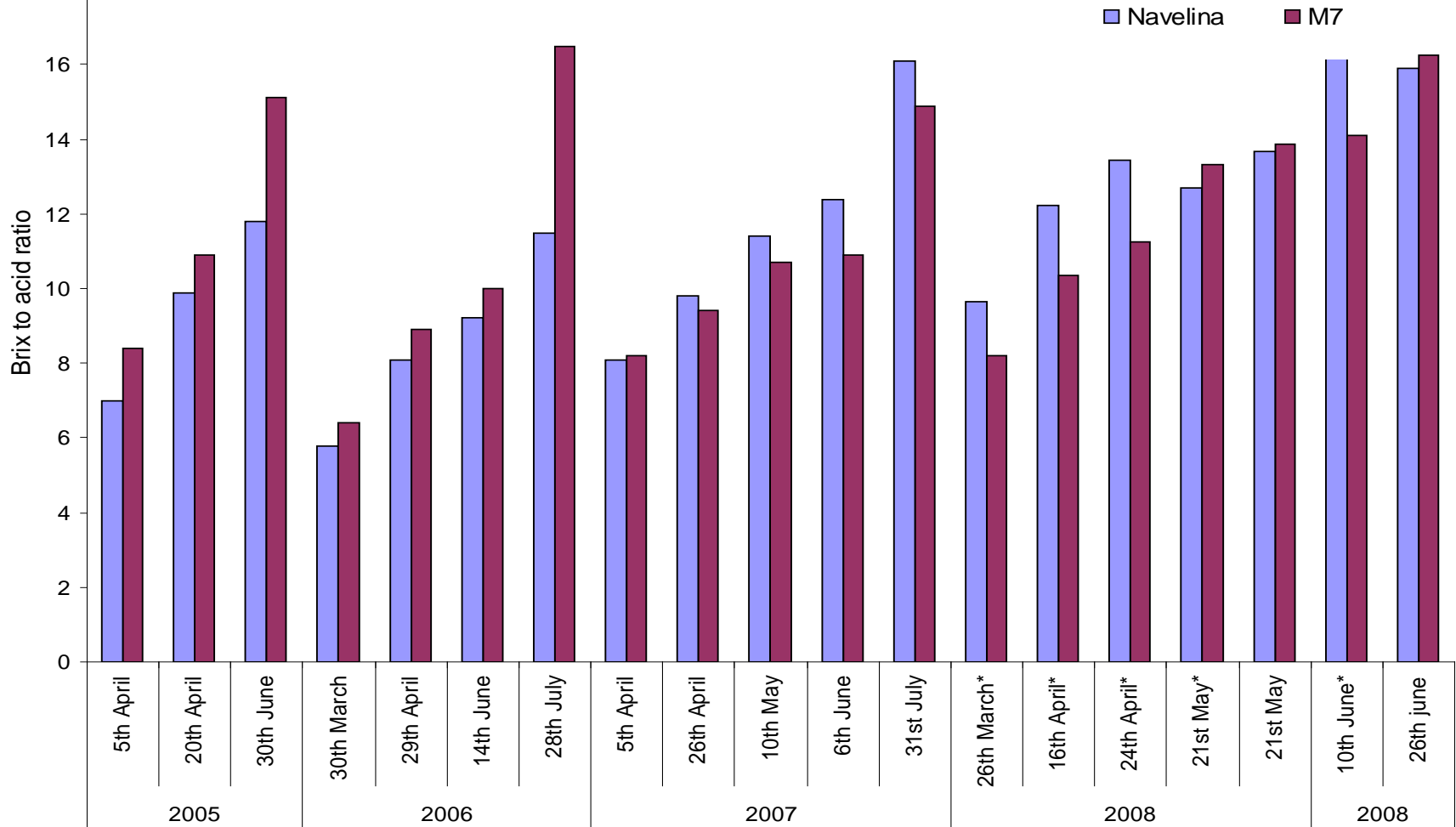


Fig 4: Brix:Acid ratio in juice from M7 and Navelina 7.5 sampled across four seasons.

Note: On dates marked with *, fruit was sampled from the PBR comparator trial (n=6).
Otherwise fruit were sampled from the mother tree.



Harvest period

- Beginning picking with gas colouring around 3 weeks earlier than Navelina
- Most seasons will reach at Kenley (late maturity area) 8.0:1 ratio, brix above 10° and juice content around 40% by early to mid April (October NH)
- Fruit remains firm and in good condition on the tree for at least 4 months (firmer than Navelina at any stage)
- Acid levels maintained for at least 4 months before dropping below 0.75% in late August (February NH)
- No fruit drop without 2,4D up to the end of August, obvious drop on Navelina

Rind Quality

- No sign of albedo breakdown ever observed.
- Firmer rind than Navelina throughout harvesting period.

Leaf Shape

- Length to width ratio significantly lower and petiole wing more pronounced compared to Navelina.
- Leaf also has a distinctive undulation



Foliage

- More upright and open than Navelina allowing more light penetration and facilitating colour development
- Less pruning needs



Tree and Yields

- Very vigorous tree. Fast growing and early cropping
- Potentially good production based on mutation limb. 4-14 fruits per frame (0.5x0.5x0.5m)
- Good fruit size, probably better than Navelina

Protectability

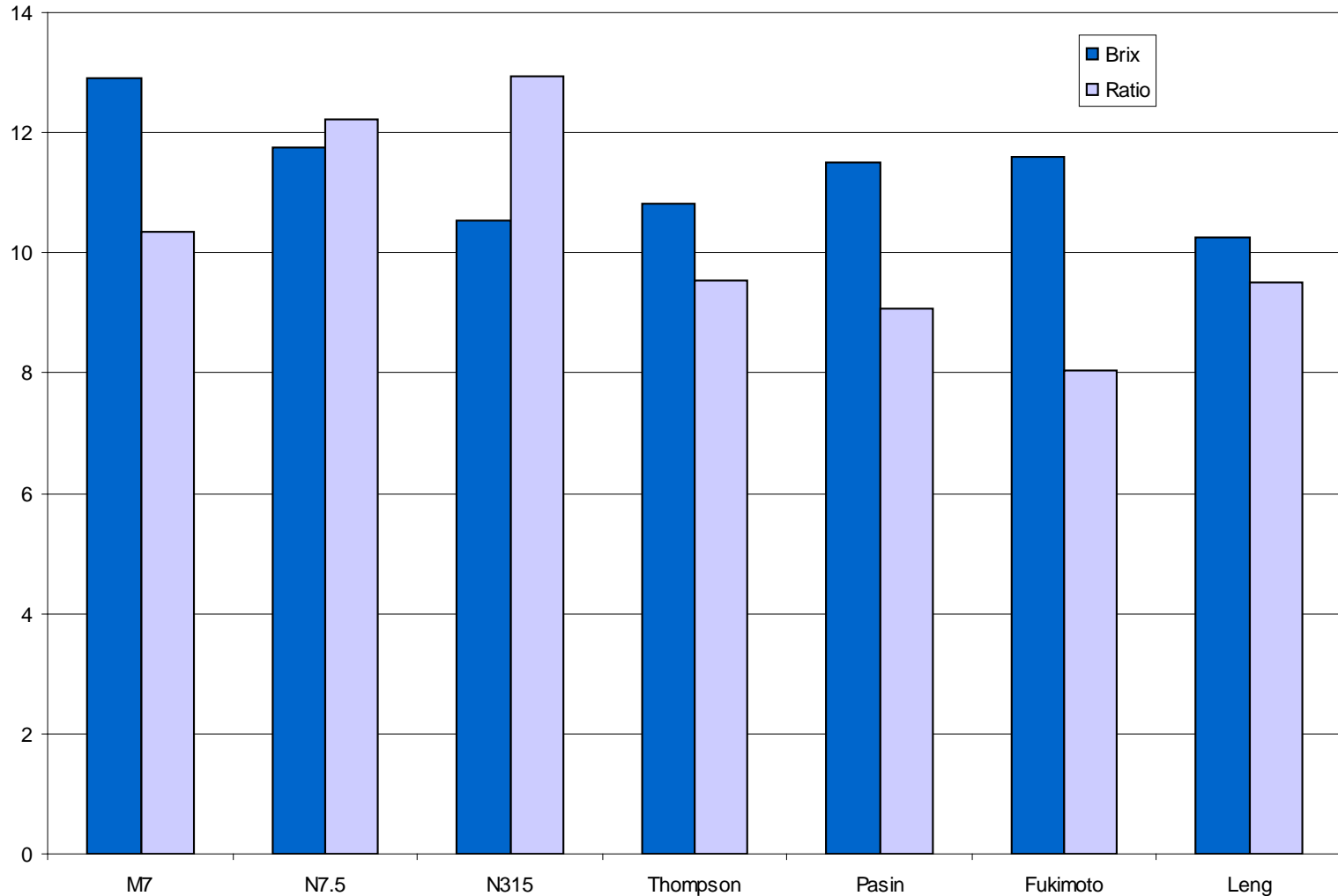
- M7 is easy to protect.
- Any fruit in the market before Navelina has to be M7.
- Round fruit shape and distinctive navel end marks.
- Easy to identify the variety in the field due to the distinctive leaf shape and foliage.

Value Added to stakeholders

- Value added to nurseries by adding a new variety with great sales potential.
- Value added to growers by extending the growing period, high yields, better packouts, protectability and controlled plantings to ensure sustainable and fair returns.
- Value added to packers and marketers by extending the packing period, better packouts and orderly marketing.
- Value added to retailers by extending the marketing period, repeating sales with early fruit, controlled volumes and differentiation to allow branding and better profits.
- Value added to consumers by enjoying an identifiable excellent quality navel.
- Value added to the industry by reducing imports and the risk of new pests and diseases.

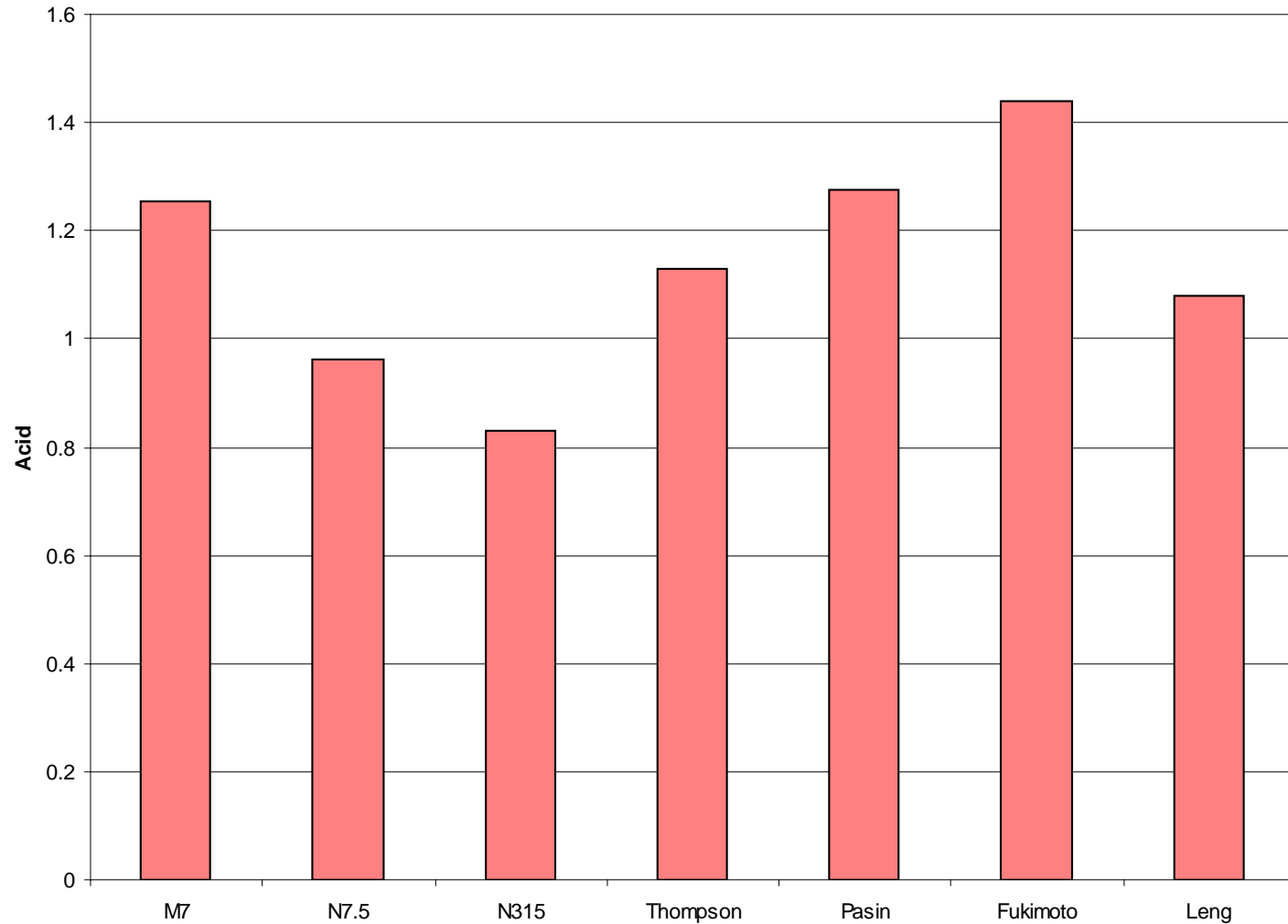
PBR TRIAL RESULTS - 16TH APRIL 2008

conducted by Scholefield Robinson



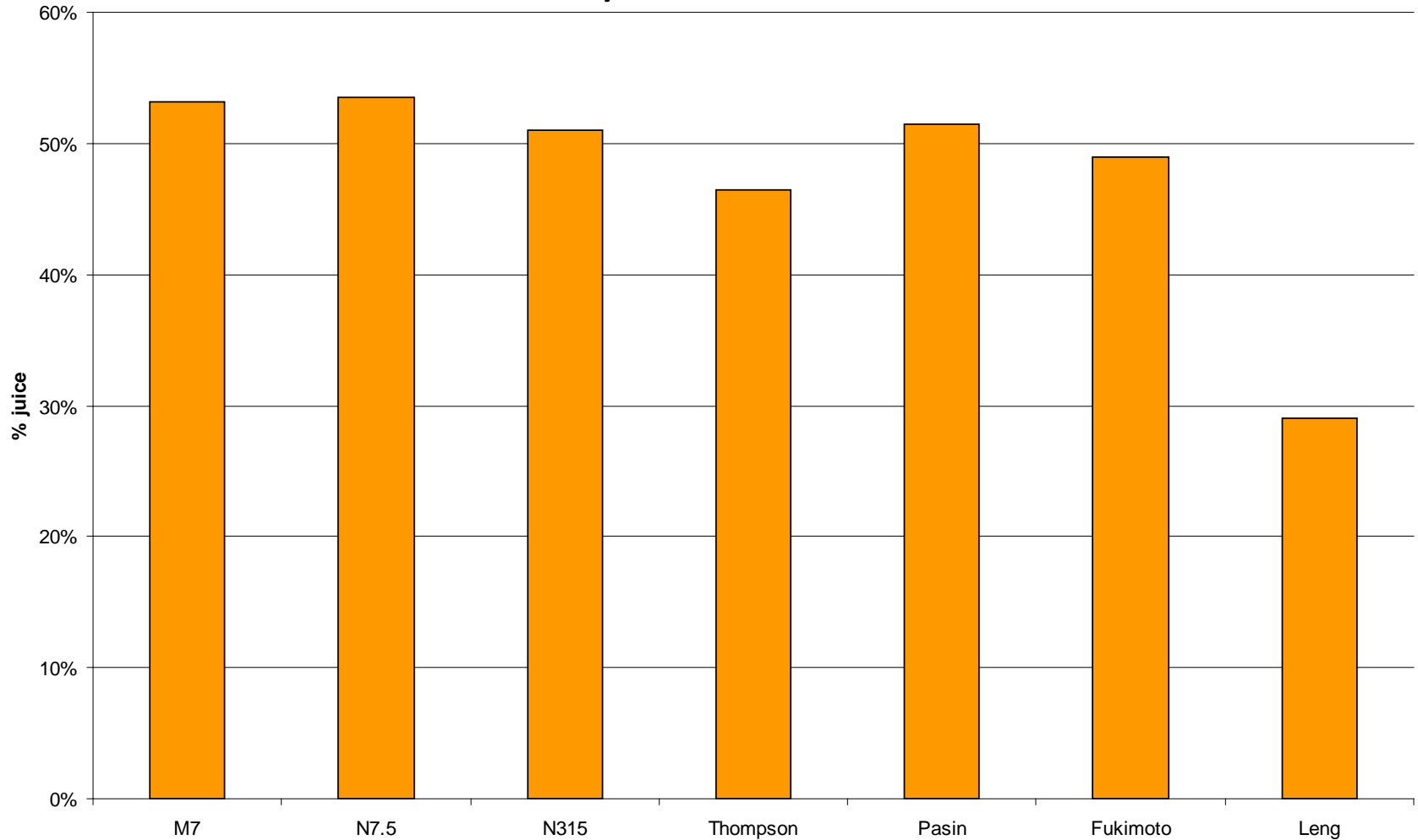
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Further information and current updates go to:

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