

VineFacts Newsletter

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Plant & Food Research: Marlborough

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1 VINEFACTS NEWSLETTER OVERVIEW OF THE 2015-16 SEASON

The National Phenology and VineFacts is a New Zealand Winegrowers (NZW) project supported by the Sustainable Farming Fund (SFF), the Marlborough Research Centre (MRC) and Plant & Food Research (PFR) for the three years from July 2014 to June 2017. The main output from this project is VineFacts Newsletter. This brief report to the MRC briefly summarises some of the main outputs included in the VineFacts Newsletter.

Up until the 2014-15 season, the VineFacts Newsletter had been available only to Marlborough subscribers as an email-based service. In the 2015-16 season VineFacts was made available to any winegrowers nationwide, and it moved to being delivered via the NZW website. Subscribers outside Marlborough were able to receive VineFacts for free this season.

In the 2015-16 season VineFacts had a total of 508 subscriptions from the following regions: Marlborough – 272, Auckland - 31, Gisborne - 23, Hawke's Bay - 78, Wairarapa - 15, Nelson - 12, Canterbury - 32, Central Otago - 37, Other – 8.

Information communicated to subscribers via VineFacts Newsletter in the 2015-16 season included:

- Weekly growing degree days (GDD), rain and evapotranspiration (ET) summaries for five wine regions, compared with previous seasons
- Fortnightly GDD graphs for five wine regions indicating how the current season deviated from the long-term average (LTA)
- Monthly GDD graph incorporating all five wine regions, to indicate how the regions differed in GDD accumulation for the current season, and with the LTA
- Monthly summaries of rainfall and GDDs from 19 vineyard weather stations in the five wine regions. These are the nearest weather stations to the 28 vineyard phenology blocks
- Monthly temperature and rainfall predictions summarised from National Institute of Water and Atmospheric Research (NIWA) seasonal climate outlook data
- Seasonal phenology comparisons for all phenology blocks in the five wine regions
- Prediction of flowering dates for Marlborough Sauvignon blanc using Plant & Food Research's prediction model
- Prediction of véraison and harvest dates for Marlborough Sauvignon blanc based on the previous 10 years of phenology data

- Early season botrytis bunch rot risk for Marlborough using the Botrytis Decision Support Model
- Disease risk for powdery mildew, based on the Gubler risk prediction model.

2 VINEFACTS CLIMATE SUMMARIES FOR THE 2015–2016 GROWING SEASON

The following climate data for the five New Zealand wine regions summarise the 2015-16 growing season in comparison to the long-term average.

2.1 Rainfall

The rainfall data (Table 1) indicate that Gisborne and Hawke's Bay experienced above-average rainfall in 2015-16. Marlborough, Waipara and Central Otago experienced a very dry season.

Table 1. Total seasonal rainfall (mm) for five New Zealand wine regions for the 2015-16 season compared with the long-term average (LTA).

	Long-term average	2015-16	% of LTA
Gisborne	594.9	678.6	114%
Hawke's Bay	457.3	509.5	111%
Marlborough	395.7	240.2	61%
Waipara	393.2	288.8	73%
Central Otago	297.6	179.0	60%

2.2 Monthly temperatures

Table 2 presents the monthly mean temperatures for the five growing regions for the 2015-16 season and the deviation in the mean from the LTA. By comparing the temperatures, it is possible to observe trends across the five regions.

The temperature deviation data indicate that above- or below-average temperatures are generally experienced in the different regions across New Zealand at the same time e.g. September 2015 was much cooler than average, and February 2016 was much warmer than average in all five regions. Central Otago, being much further from the coast than any of the other regions, sometimes showed a different temperature pattern.

In Gisborne, temperatures in most months were above average and hence overall the season was 0.3°C above average. In Hawke's Bay, monthly temperatures were slightly above or below the LTA, and as a result the seasonal mean was very close to average. In the three South Island regions, the monthly mean temperatures were predominantly above average and as a result the seasonal means were well above average. The positive or negative deviations in the monthly mean temperatures can be related to the positive or negative slope of the growing degree day lines in the corresponding months in Figure 1.

Table 2. Monthly mean temperatures (°C) and deviation from the monthly long-term averages (LTA), for five New Zealand wine regions, for the 2015-2016 growing season.

	Gisborne		Hawke's Bay		Marlborough		Waipara Valley		Central Otago	
	Mean °C	±LTA °C	Mean °C	±LTA °C	Mean °C	±LTA °C	Mean °C	±LTA °C	Mean °C	±LTA °C
Sep.	10.9	-1.2	9.5	-1.7	9.7	-1.4	9.4	-1.1	8.1	-0.9
Oct.	14.7	+0.7	13.1	+0.1	13.7	+0.6	13.3	+1.3	12.6	+1.4
Nov.	15.6	=	14.0	-0.6	14.9	+0.3	14.3	+0.6	13.8	+0.4
Dec.	16.7	-1.4	15.9	-1.3	15.9	-0.9	15.7	-0.4	16.9	+0.7
Jan.	20.3	+1.0	19.0	+0.9	18.8	+0.8	17.0	-0.4	17.9	+0.3
Feb.	20.9	+1.7	19.9	+1.7	20.0	+2.3	19.4	+2.1	20.7	+3.2
Mar.	18.4	+0.9	17.3	+0.8	17.0	+1.0	16.7	+1.2	15.7	+1.0
Apr.	15.2	+0.1	13.7	-0.2	13.9	+0.5	14.4	+1.6	11.9	+1.0
Seasonal Mean	16.6	+0.3	15.3	=	15.5	+0.4	15.0	+0.6	14.7	+0.9
Deviation from LTA										

2.3 Growing Degree Days

While the total GDDs for a region (Table 3) are a way of comparing seasons and regions, they do not give any understanding as to whether some periods of the season were below or above average. The GDD graph for the five wine regions (Figure 1) enables you to understand when cool or warm temperatures occurred during a season and to relate the temperature at any point in time to the phenology; e.g. knowing whether temperatures over the flowering period in November/December were below or above average gives understanding as to whether fruit set is likely to be below or above average.

Table 3. Total seasonal growing degree days for five New Zealand wine regions for the 2015-16 season compared with the long-term average (LTA).

	Long-term average	2015-16	% of LTA
Gisborne	1544	1616	105%
Hawke's Bay	1320	1328	101%
Marlborough	1240	1377	111%
Waipara	1117	1273	114%
Central Otago	1036	1221	118%

Figure 1 presents the deviation in GDDs from the LTA for each of the five regions for 2015-16 season. From Figure 1 the following points can be made:

- October 2015 was very warm in Gisborne, Marlborough, Waipara Valley and Central Otago. Hawke's Bay was close to average in October.
- Cool temperatures were experienced during the first weeks of November 2015, followed by a period of very warm temperatures in late November and early December.
- From the second week of December 2015 through until the first week of January 2016 Gisborne, Hawke's Bay, Marlborough and Waipara Valley experienced cool

temperatures. However, Central Otago experienced average to above-average temperatures during this period.

- As the temperatures fluctuated markedly during November and December 2015, it is impossible to make a broad statement about whether temperatures were above or below average over flowering. It would depend entirely on when blocks flowered as to whether the temperatures were warm or cool at that time.
- All regions became very warm at some point in January 2016 and remained very warm through until some point in April. For Gisborne and Hawke's Bay, the warm temperatures brought about a recovery in GDDs in the second half of the season, from the deficit position in the first half of the season. For Marlborough, Waipara and Central Otago, the warm temperatures meant that total GDDs for the season finished well above average.
- The ripening period in 2016 was very warm. In Gisborne, Hawke's Bay, Marlborough and Waipara, it was the warmest (or very close to warmest) since the very hot ripening period in 1998.

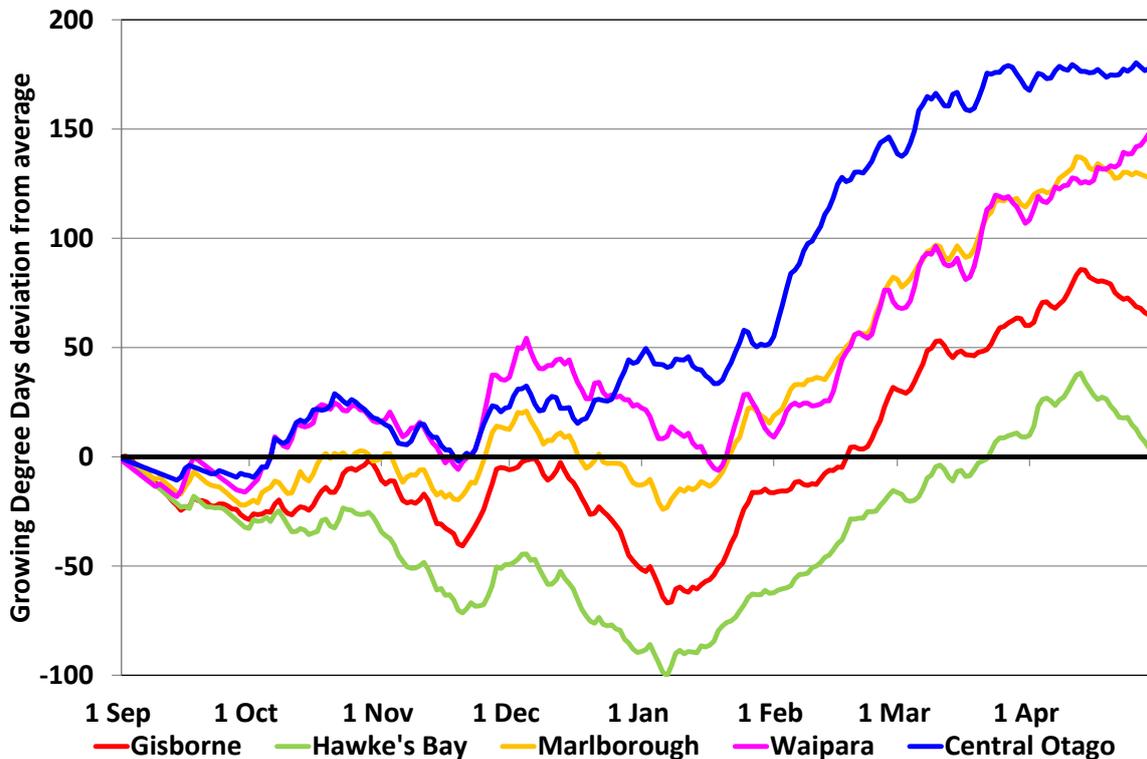


Figure 1. Normalized growing degree days for five New Zealand wine regions for the 2015-16 season: days above (+) or below (-) the long-term average for the period 1 September to 30 April.

3 VINEFACTS PHENOLOGY SUMMARIES FOR THE 2015–16 GROWING SEASON

Comprehensive phenological summaries for Gisborne, Hawke's Bay, Marlborough, Waipara Valley and Central Otago were communicated through VineFacts Newsletter throughout the 2015–16 growing season. This information has been summarised in two reports:

- Grapevine growth stage monitoring for prediction of key phenological events. Plant & Food report to New Zealand Winegrowers, June 2016. This report will be available to New Zealand Winegrowers members on their website www.nzw.com/research.
- Phenological monitoring. Plant & Food report to Marlborough Research Centre Trust, July 2016. This report will be available on the Marlborough Research Centre website www.mrc.org.nz.

4 ARTICLES OF INTEREST COMMUNICATED IN VINEFACTS NEWSLETTER

Articles of interest with relevance to the grape and wine industry, which were published in the VineFacts Newsletter during the 2015-16 season, were:

1. Sensitivity of grapevine powdery mildew to DMI and QOI fungicides in Hawke's Bay and Marlborough
2. Powdery mildew – a new resistance management strategy
3. Glyphosate (weed killer) – a new resistance management strategy
4. Glyphosate resistance, take two
5. Beetlejuice (article about grass grub beetle flights)
6. Grapevine trunk diseases – spring symptoms
7. Frost damage in spring – what should I do next?
8. Groundwater levels in Hawke's Bay and Marlborough
9. Potential temperatures over flowering in 2015
10. Inflorescence number in Marlborough in 2014 and 2015
11. Preparing for summer (Winepress No. 251 September 2015)
12. Woody grapevine diseases in spring and summer
13. Powdery mildew is not about to take a Christmas holiday
14. Weather summaries for five regions for September to December 2015
15. Early season Botrytis Decision Support Model
16. Update of botrytis infection periods: Early season botrytis risk and bunch trash removal
17. Summer strategies for leafroll 3
18. RotBot app
19. Influence of Marlborough Sauvignon blanc yield on the duration of ripening from véraison to harvest
20. New research on lower-alcohol wine production
21. Early season botrytis decision support update after véraison
22. Anticipating harvest date

23. Groundwater levels in the Wairau aquifer
24. Vineyard hygiene and leafroll 3 virus
25. Why is 2016 smashing heat records?
26. 2015 – The international year of soils
27. Botrytis infection period summaries for five regions for the last three growing seasons
28. Weather summaries for five regions for September 2015 to April 2016.

5 KEY FUNDING SOURCES AND COLLABORATING COMPANIES

The climate and phenology information included in VineFacts Newsletter is supported by:

- Marlborough Research Centre Trust – Meteorological Services project
- New Zealand Winegrowers – National Phenology and VineFacts project
- Ministry for Primary Industries Sustainable Farming Fund – National Phenology and VineFacts project
- The New Zealand Institute for Plant & Food Research Ltd – Ongoing operation of regional weather stations
- NIWA – CLIFLO National climate database for some regional climate data
- HortPlus – Weather station network
- Participating wine companies and grape growers in the five New Zealand wine regions on whose blocks vines are being monitored.

Report for:

Marlborough Research Centre Trust
Project #3

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