



## Pistachio Growers' Association

### PGA Chill Newsletter Number 3 - 2022 - 23 Season

16<sup>th</sup> August 2022

Winter chill to the middle of August is very mixed. The main growing areas of Sunraysia and the Riverland are having below average chill, The eastern end of the growing area, Griffith and Wagga Wagga have enjoyed above average chill.

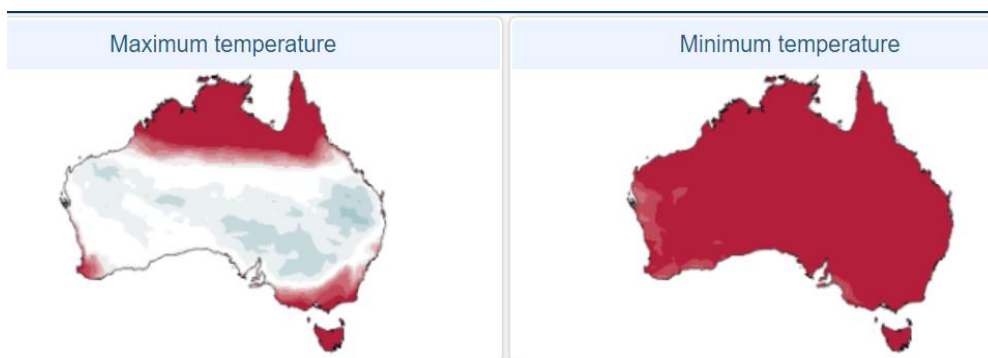
Interestingly the Dynamic Model is showing better chill in Sunraysia than an older method of measuring the chill achieved by the trees – hours below 7°C. This data series is showing chill well below average.

In the 2021/22 season, areas that received sufficient Dynamic Units but below average <7°C hours showed the adverse effects of insufficient chill. Prudence would suggest that Riverland and Sunraysia growers should be using oil at the higher percentages and the high application rates.

The Bureau, in its current Seasonal Outlook, predicts that night temperatures will be above normal for the period July through September:

[www.bom.gov.au/climate/outlooks/#/overview/summary](http://www.bom.gov.au/climate/outlooks/#/overview/summary)

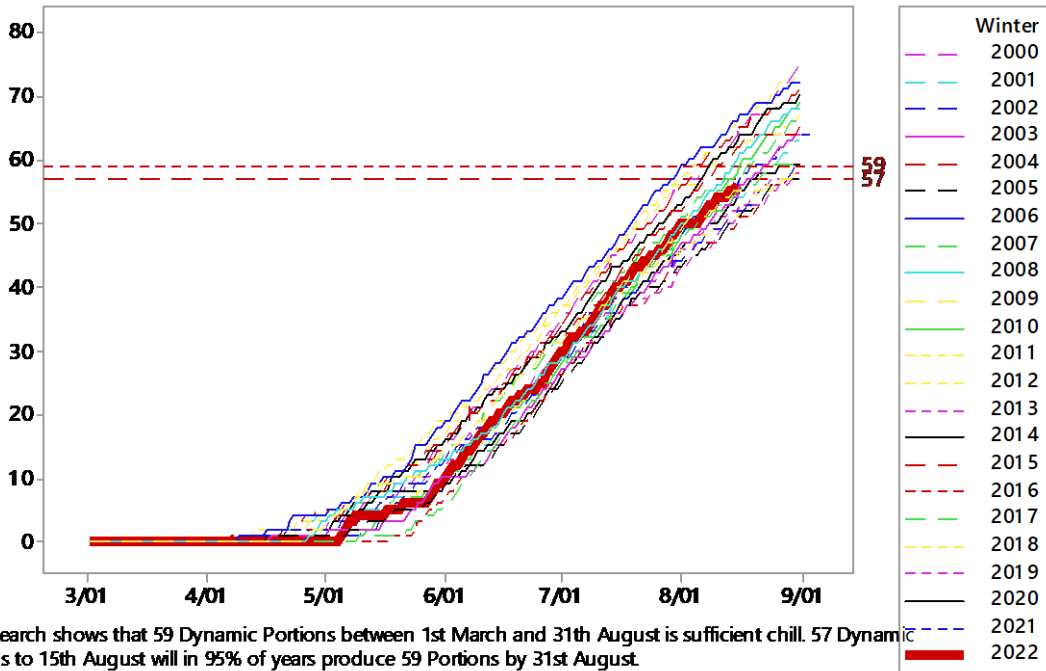
Minimum temperatures for July to September are very likely to be above average for most of Australia (chances are greater than 80%).



Following the district charts, there is a table of probabilities of the districts reaching the recommended Dynamic Units by 31<sup>st</sup> August.

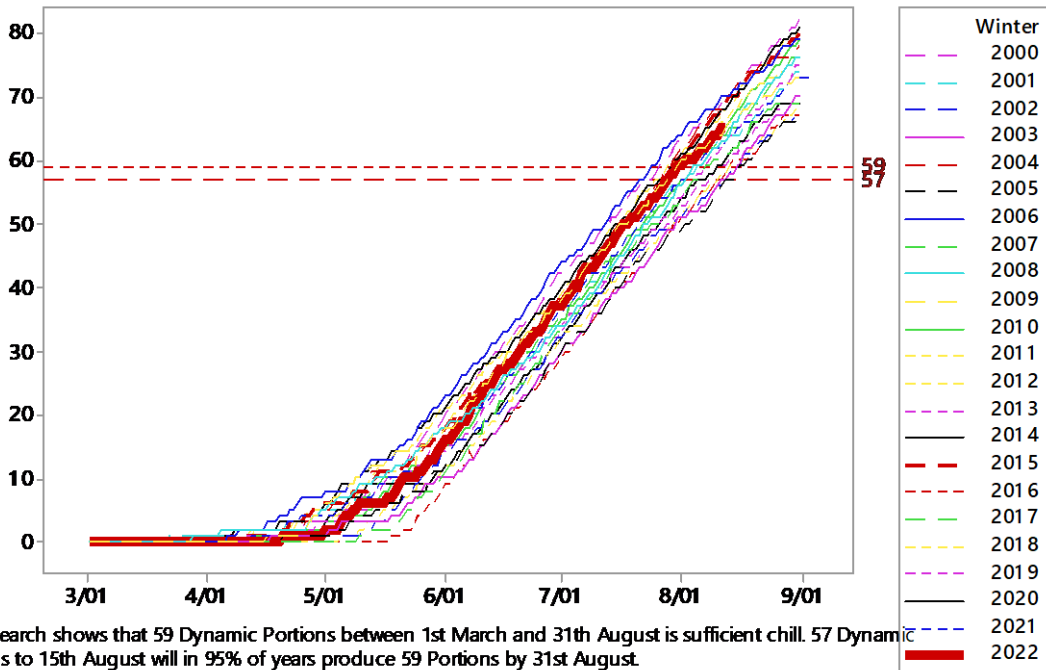
Some comments on the effects of lack of chill on young, non-bearing, trees has been added.

### Mildura



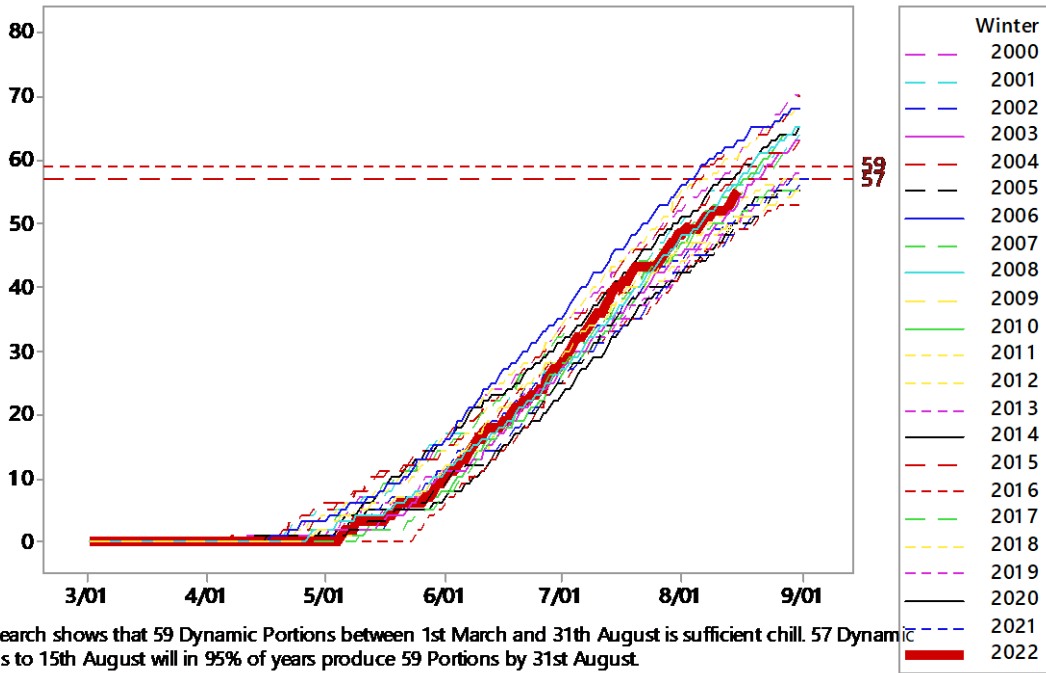
**Mildura: 56 portions on 15<sup>th</sup> August, below average to the 15<sup>th</sup> of August by 1 portion. (But not yet at the required portion of 57.)**

### Swan Hill



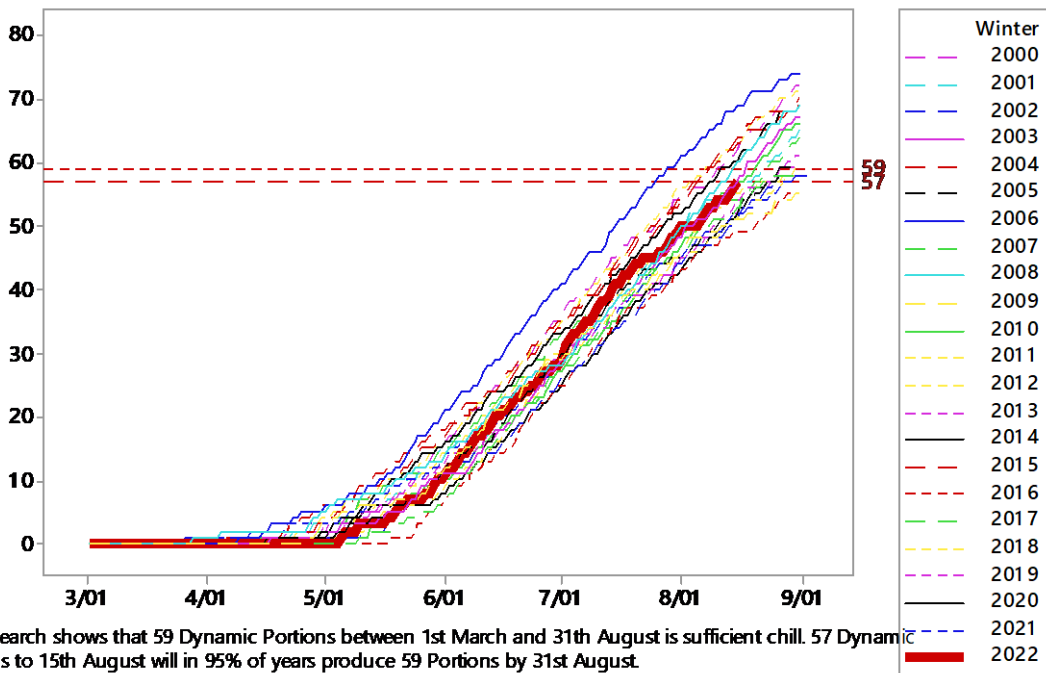
**Swan Hill: 65 portions at 9 am on 12<sup>th</sup> August.**

## Renmark



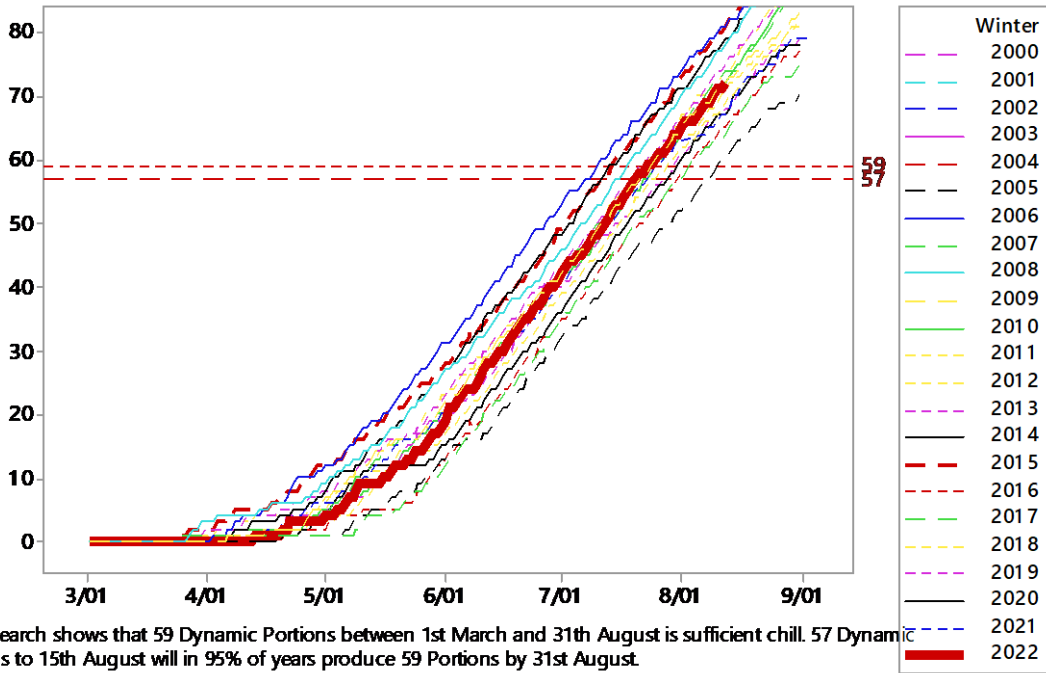
**Renmark: 55 portions on 15<sup>th</sup> August, above average to the 15<sup>th</sup> of August by 1 portion. (But not yet at the required portion of 57.)**

## Loxton



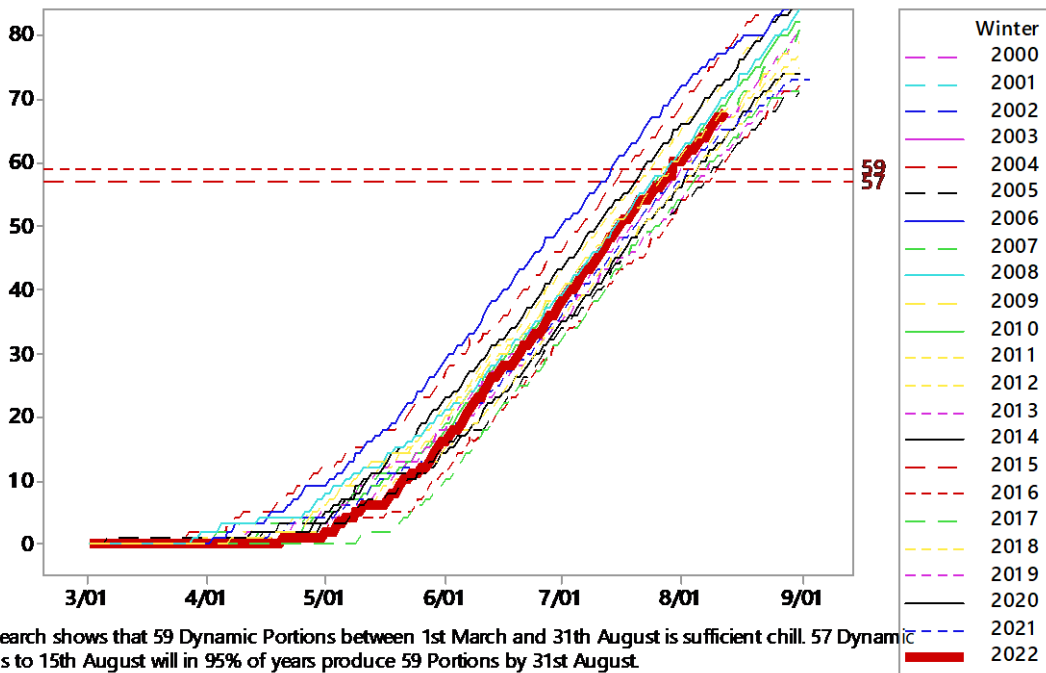
**Loxton: At 57 portions on 15<sup>th</sup> August, above average to the 15<sup>th</sup> of August by 1 portion.**

### Nhill



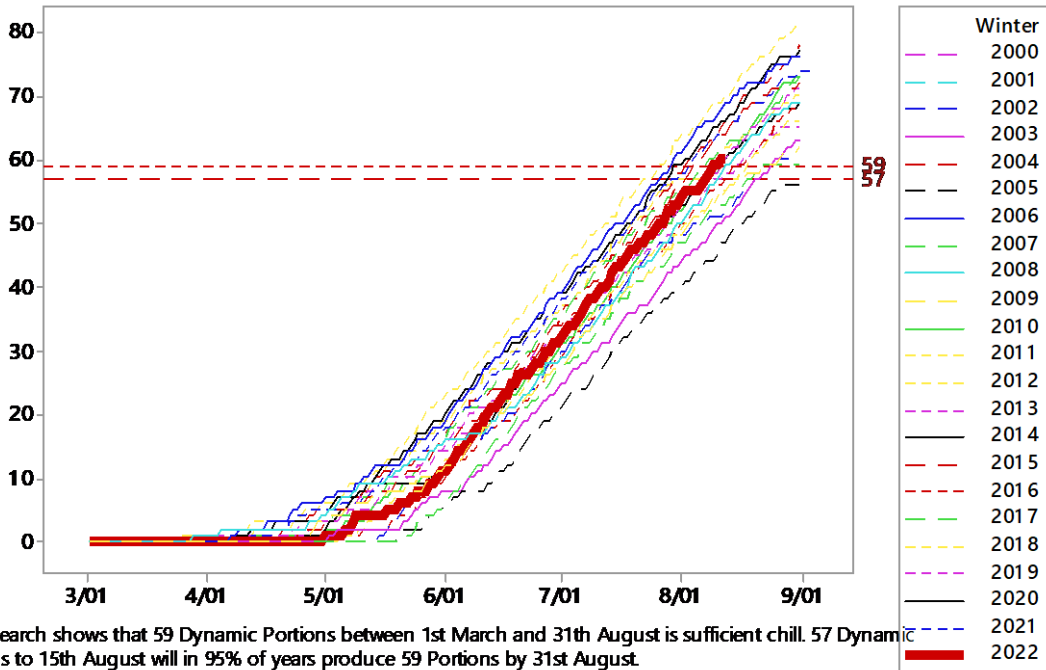
**Nhill: 72 portions at 9 am on 12<sup>th</sup> August.**

### Lameroo



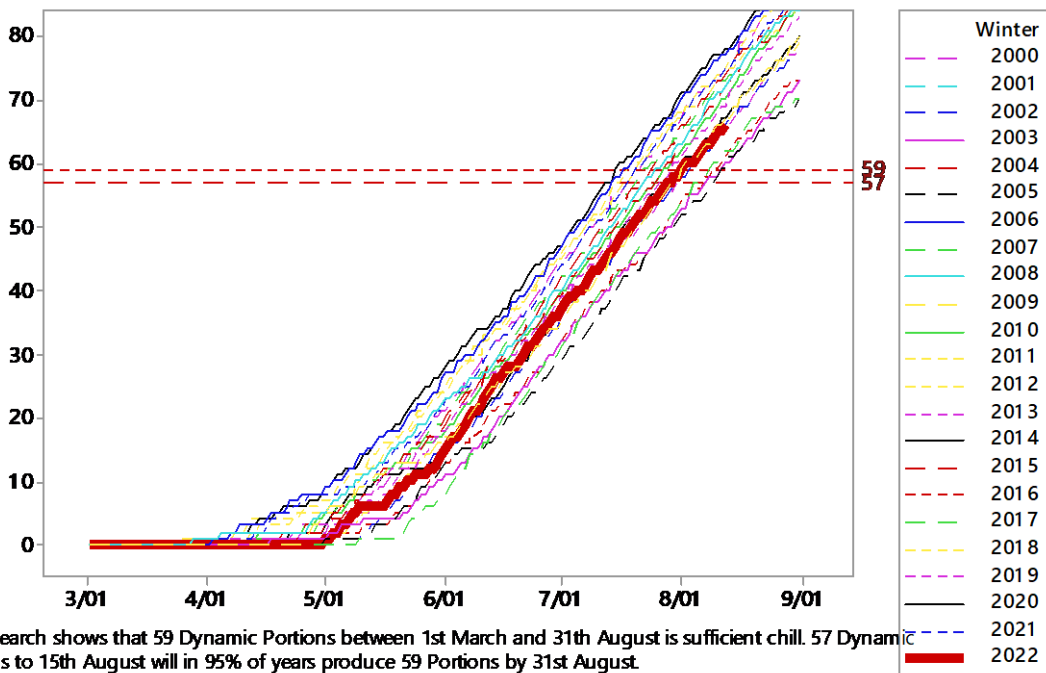
**Lameroo: 68 portions at 9 am on 12<sup>th</sup> August.**

### Griffith



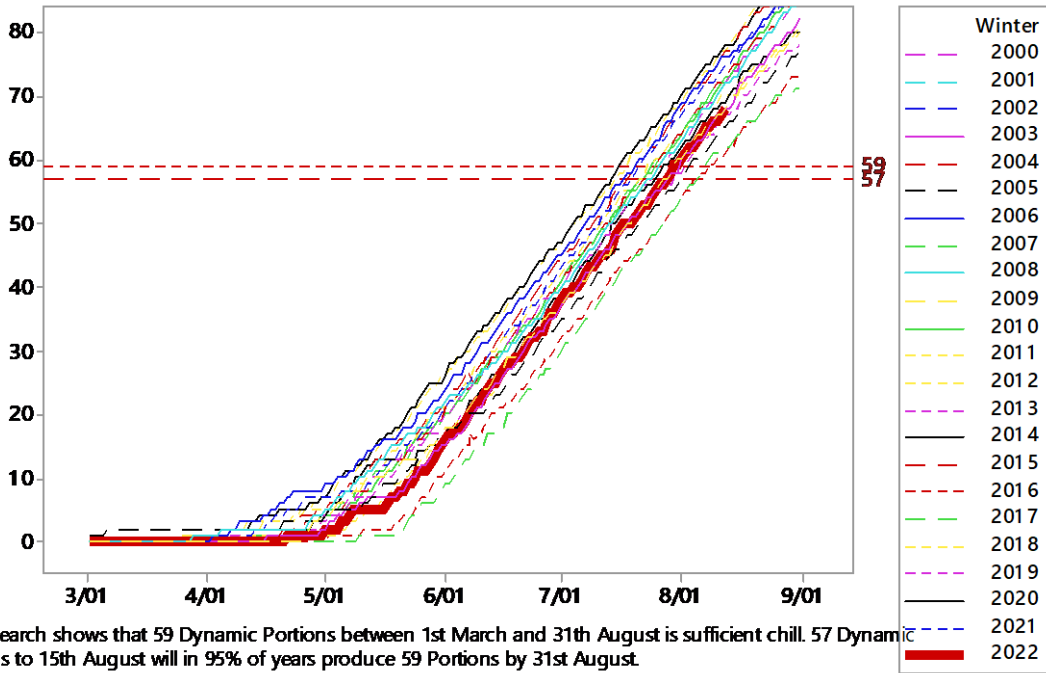
Griffith: 60 portions at 9 am on 12<sup>th</sup> August.

### Wagga Wagga



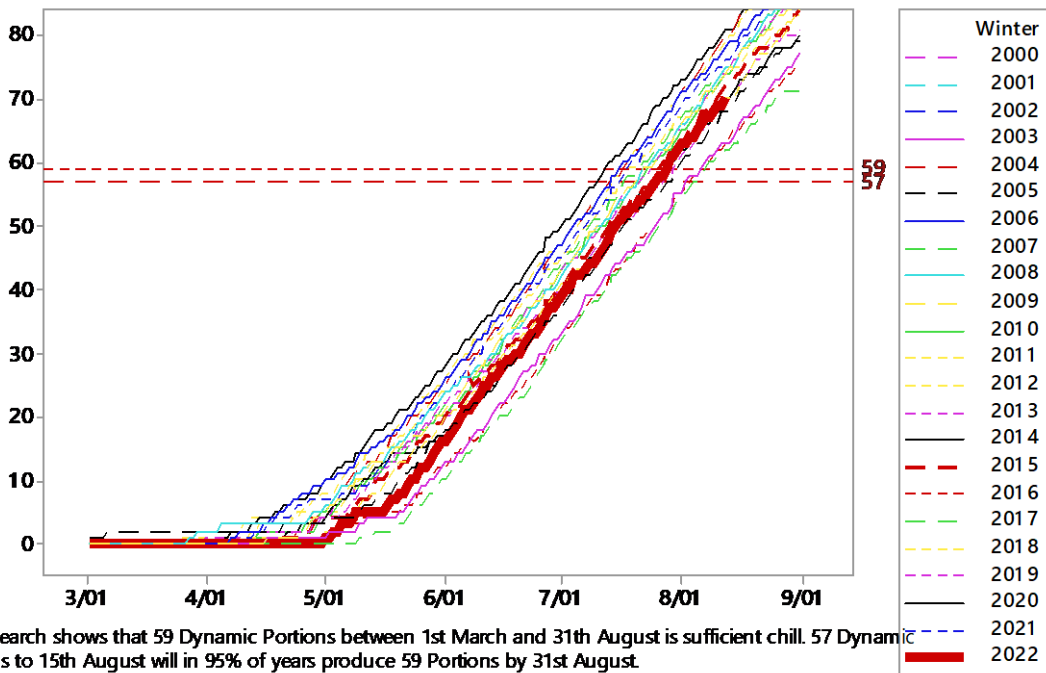
Wagga Wagga: 66 portions at 9 am on 12<sup>th</sup> August.

## Yarrowonga



Yarrowonga: 68 portions at 9 am on 12<sup>th</sup> August.

## Albury



Albury: 70 portions at 9 am on 12<sup>th</sup> August.

Table. Possibility to reach 59 portions by 31<sup>st</sup> August

Station	Portion Now	Further require	Portion gain from 16/08 to 31/08					Possibility to reach 59 (%)
			Min	Q1	Median	Q3	Max	
Wagga	66							100
Griffith	60							100
Swan Hill	65							100
Mildura	56	3	3	5	7	8	11	90.87
Nhill	72							100
Renmark	55	4	4	5	7	8	10	79.28
Loxton	57	2	4	6	7	9	10	97.31
Lameroo	68							100
Yarrowonga	68							100
Albury	70							100

### Chill Background Information

Pistachios are extremely sensitive to lack of winter chill.

Lack of chill will result in very uneven opening of flowering and vegetative buds; some will not open until November or December; many buds will not open at all. Harvest will be very uneven and late.

PGA research has shown the Dynamic Chill model to be the most appropriate method to measure the chill requirement of pistachios. The research has shown that *Sirora* pistachios require 59 Dynamic Chill Portions between 1<sup>st</sup> March and 31<sup>st</sup> August. The research also shows that 57 Dynamic Chill Portions to the 15<sup>th</sup> of August will, in 95% of years, accumulate to the required 59 Portions by 31<sup>st</sup> August. Unless the required Chill Portions are received, growers should take mitigating action. The experience of some growers show that oil sprays may be of assistance to yields in seasons when the Chill Units are below or even a little over the requirements found by the research.

### Mitigating the effect of low winter chill

Research in California and Australia has shown that winter oil application will significantly mitigate the effect of insufficient winter chill. Correctly applied oil can increase crops with insufficient chill by up to 50%. If there has been sufficient chill, little benefit seems to result from the oil application.

Oil application may bring the trees into flower up to a week earlier. The increased risk of frost damage should be considered by growers before applying winter oil in August.

Trials over seven years in California showed limited adverse effects from annual oil application. In the single season where lower yields were recorded from the oil treated trees, the week during the flowering of the treated trees was very wet, affecting pollination. A week of rain during pollination will affect crop load.

Winter oil is registered in NSW and SA only for the treatment of scale. Growers can only apply oil for the registered purpose.

**Application time:** Ideally the third week of August.

**Oil to use:** Refined, heavy, emulsifiable horticultural spray oil. Typically, about 860 g/litre petroleum oil. One brand that is used is: “Vicol Winter Oil” – Winter Dormant Miscible Oil – Insecticide

**Concentration:** 3% to 6 %, i.e. 3 to 6 litres per 100 litres of applied spray volume. PGA research has shown that in low-chill years, the higher concentration shows better yields. Care must be taken not to over spray – excessively high rates of oil will burn trees and perhaps kill them.

**Application rate:** Spray volume is dependent on tree size but must be applied to the point of runoff.

**It is critical that all bud scales are thoroughly wetted.**

On average size trees, the application rate should be a minimum of 2,000 litres/ha, or higher if required to achieve to point of runoff. The very warm winters of 2013, 2014 and 2016 demonstrated the benefit of well applied oils. The orchards that ensured total coverage achieved the good off-crop results. Orchards that did not spray oil had 2/3<sup>rds</sup> of the fruit buds not opening, i.e., 2/3<sup>rds</sup> of the crop potential was lost. The vegetative shoots that sprouted late, in November and December did not have fruit buds, i.e., the following crop was also reduced.

**To be effective, the oil application must be applied to EVERY bud.**

One key issue for the application is the tractor speed. Californian research shows that tractor speeds of 2mph, 3.2kph, produce significantly better results for any spray application than faster speeds.

The results of the PGA research in the low chill 2016/17 season clearly demonstrated that application rates of 4,000 l/ha had massive increases in yield over 2,000l/ha. There was no such benefit of the higher application rate in the high chill 2015/16 season.

Some growers always apply oil unless the chill is well above the required Chill Portions. They say they do this to ensure scale control and also to be conservative. In such cases, to reduce cost, they use a 3% oil spray rather than 6%. If the chill has been low, growers usually apply at 6%.

**Young Trees**

In low chill years, young trees will also have a late and very uneven budburst. Sometimes full budburst on all trees can be delayed 3 to 4 weeks, presumably reducing the growing season.

Farmer trials have shown that oil spray will also coordinate and advance budburst in young trees.

In recent years many young orchards have suffered from Young Tree Shoot Death (YTSD). This is when excellent shoots from the previous season do not have bud burst in spring and die. Whilst the cause of this is unknown and is the subject of PGA research, a possible contributor is heavy oil application especially at low




temperatures, say, below 5°C. Whilst there is not yet hard evidence of oil being a contributor to YTSD, prudence would suggest that oil should not be applied at a higher concentration than 3% and should not be applied if the temperature is below 5°C. The oil guidelines above should be followed especially the application rate in this a low chill year.

The raw data is collected from the Bureau of Meteorology sites. The data for each orchard may be different. This data and information is provided as a guide to growing pistachios in Australia. Each grower should ensure that actions taken on their orchard is appropriate for their orchard. The PGA Inc and its office bearers will not accept responsibility for the actions of individual growers on their orchard.

Chris Joyce, Chair, Research Committee  
Pistachio Growers' Association Inc

**This newsletter is an output of Project PS17003 - Pistachio Productivity Improvement Program.**



This project has been funded by Hort Innovation using the pistachio research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit [horticulture.com.au](http://horticulture.com.au)