



Pistachio Growers' Association

PGA Chill Newsletter Number 1 - 2022-23 Season

1st July 2022

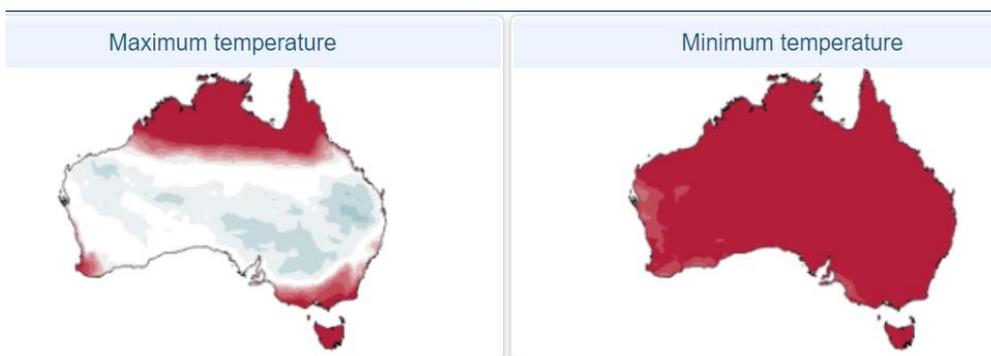
Winter chill to the end of June is very mixed. The main growing areas of Sunraysia and the Riverland are having below average chill, The eastern end of the growing area, Griffith and Wagga Wagga have enjoyed above average chill.

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.

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

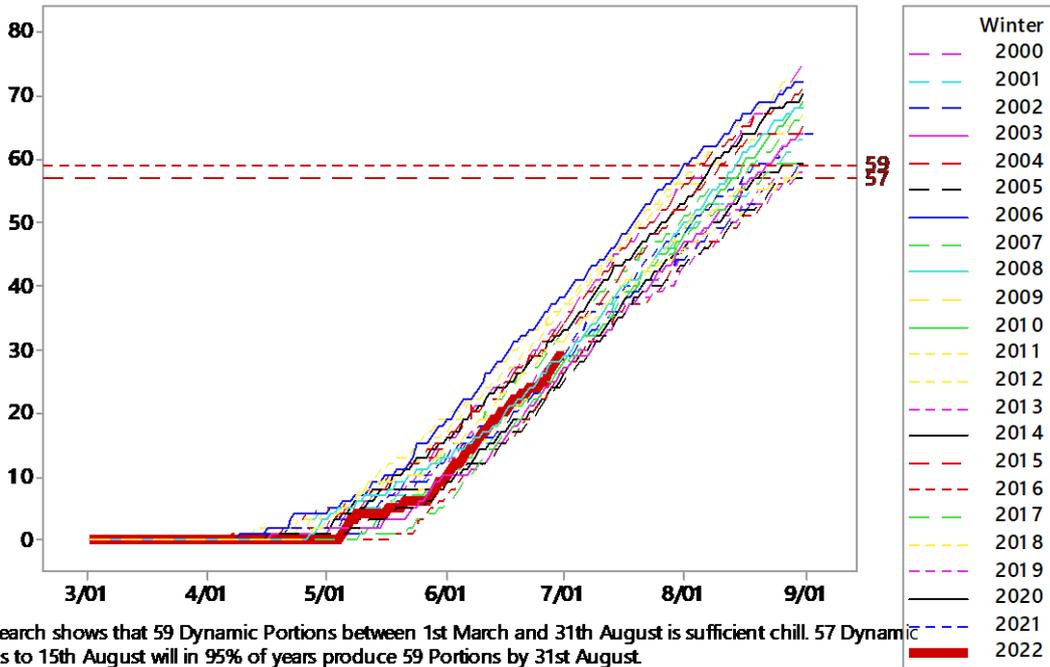
Minimum temperatures for July to September are very likely to be above average for most of Australia (chances are greater than 80%).



Whilst it is too early to be making any final decisions, growers should ensure that they are prepared to take mitigating action in the last week of August should there be insufficient chill over the next six weeks.

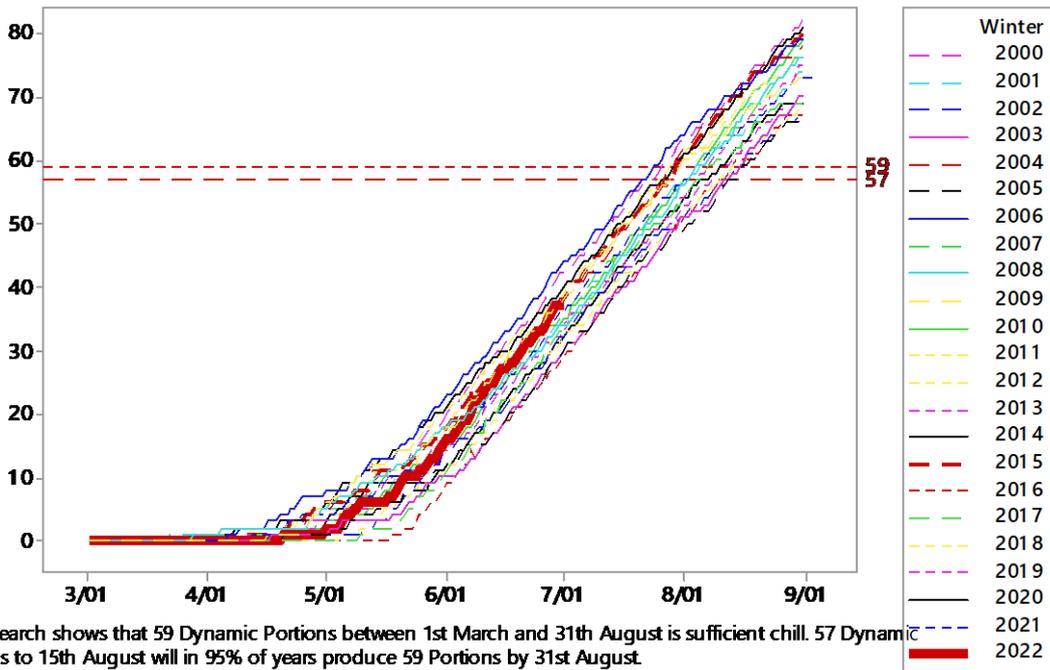
The PGA will update this data for the 31st July and again on 15th August.

Mildura



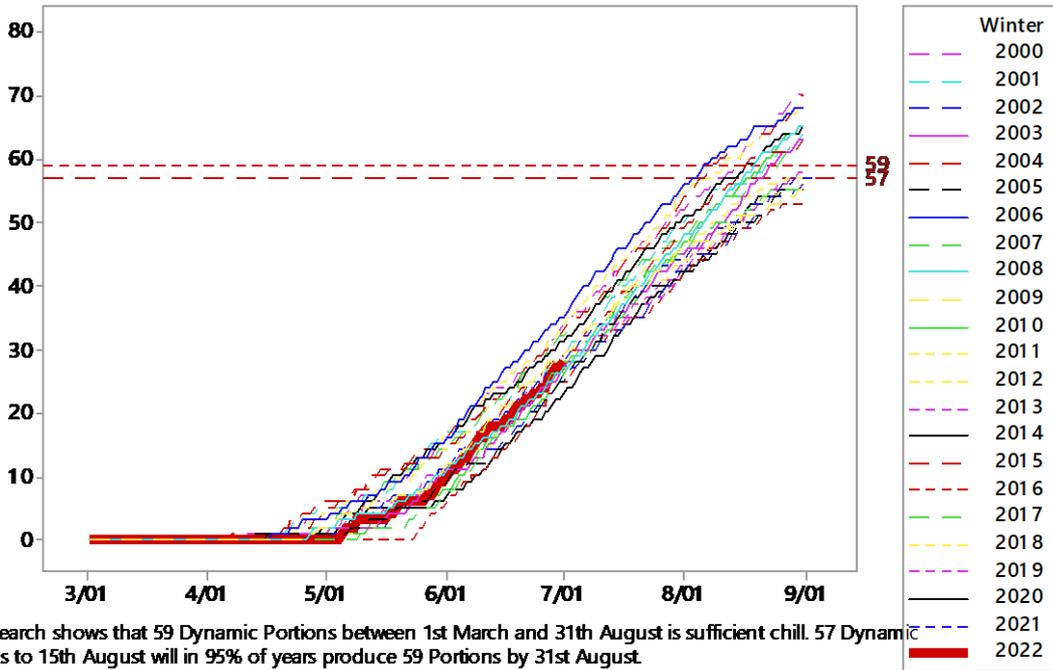
MILDURA: 29 portions on 30th June, below average to the 30th of June by 1 portion.

Swan Hill



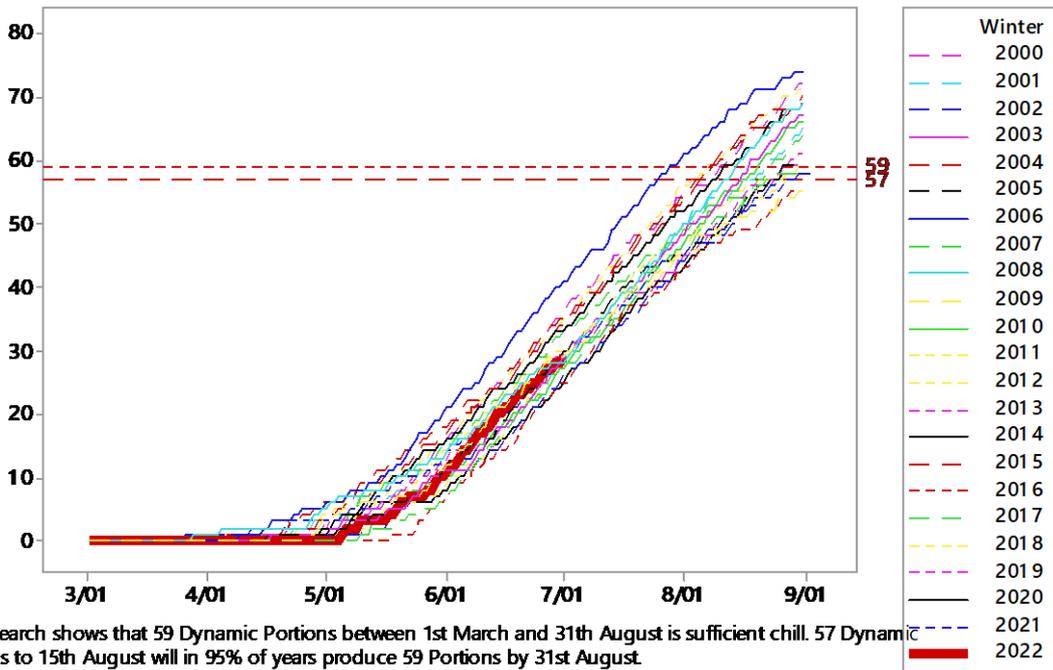
SWAN HILL: 37 portions on 30th June, above average to the 30th of June by 2 portions.

Renmark



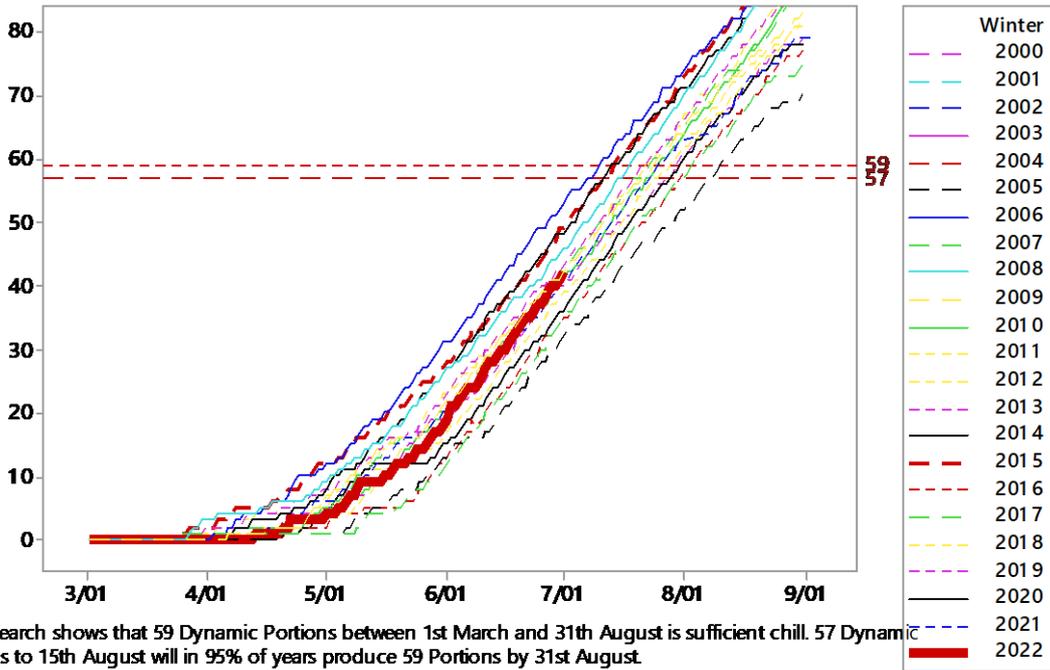
RENMARK: 27 portions on 30th June, below average to the 30th of June by 1 portion.

Loxton



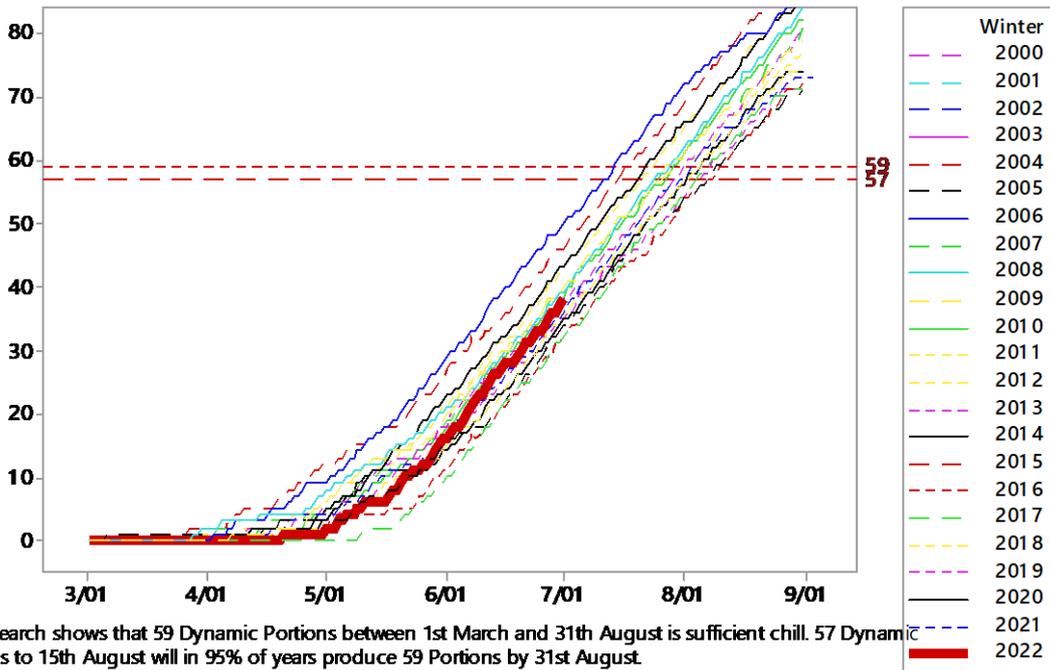
LOXTON: 28 portions on 30th June, below average to the 30th of June by 2 portions.

Nhill



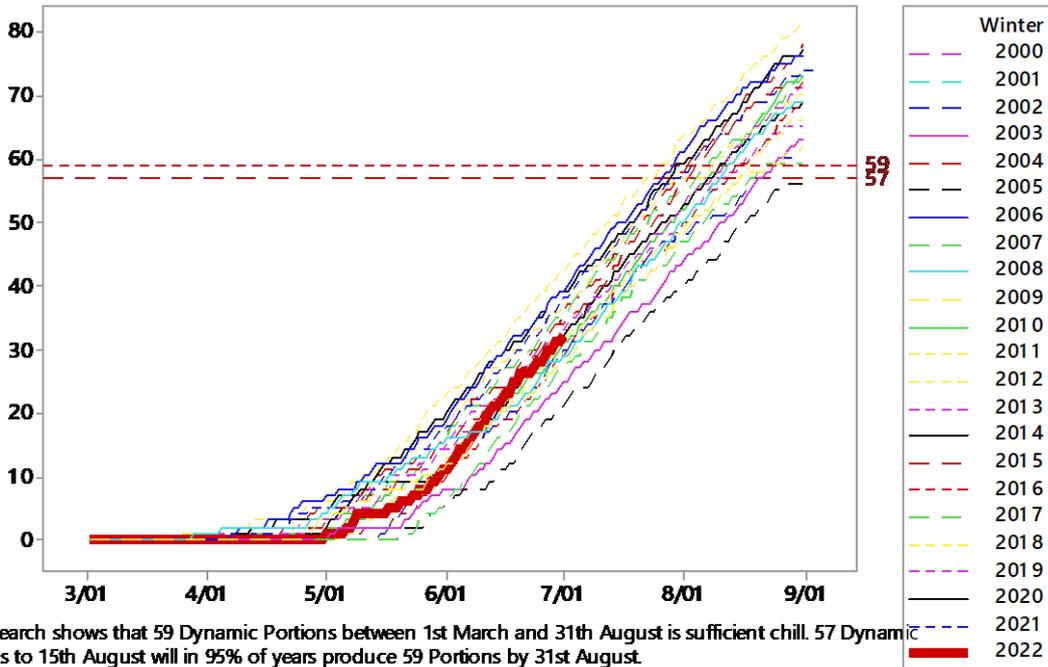
NHILL: 41 portions on 30th June, equal to average to the 30th of June.

Lameroo



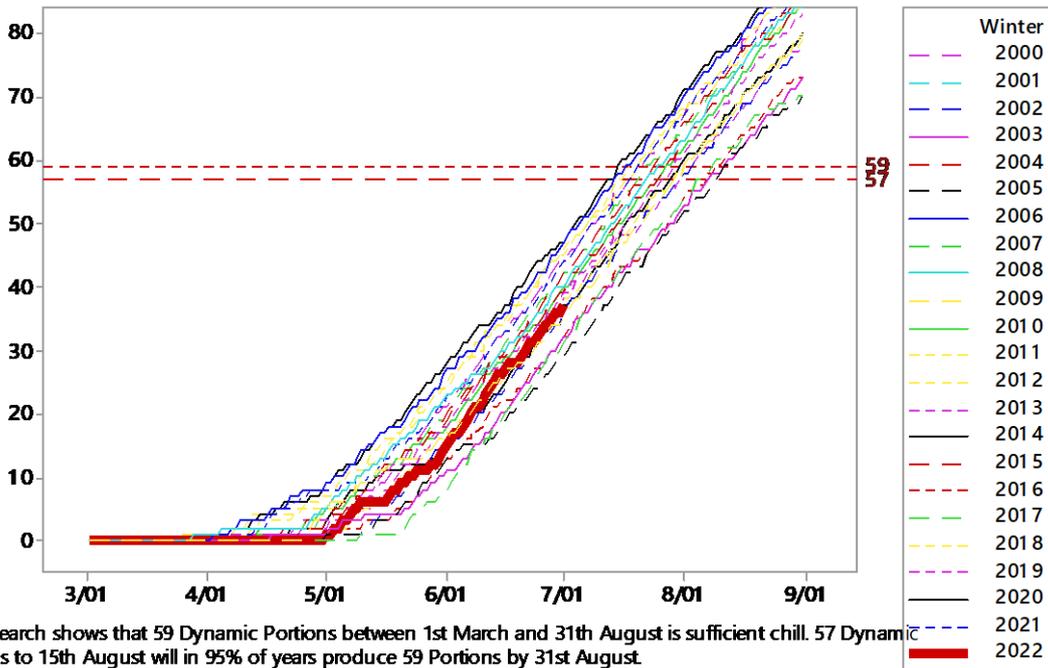
LAMEROO: 37 portions on 30th June, below average to the 30th of June by 1 portion.

Griffith



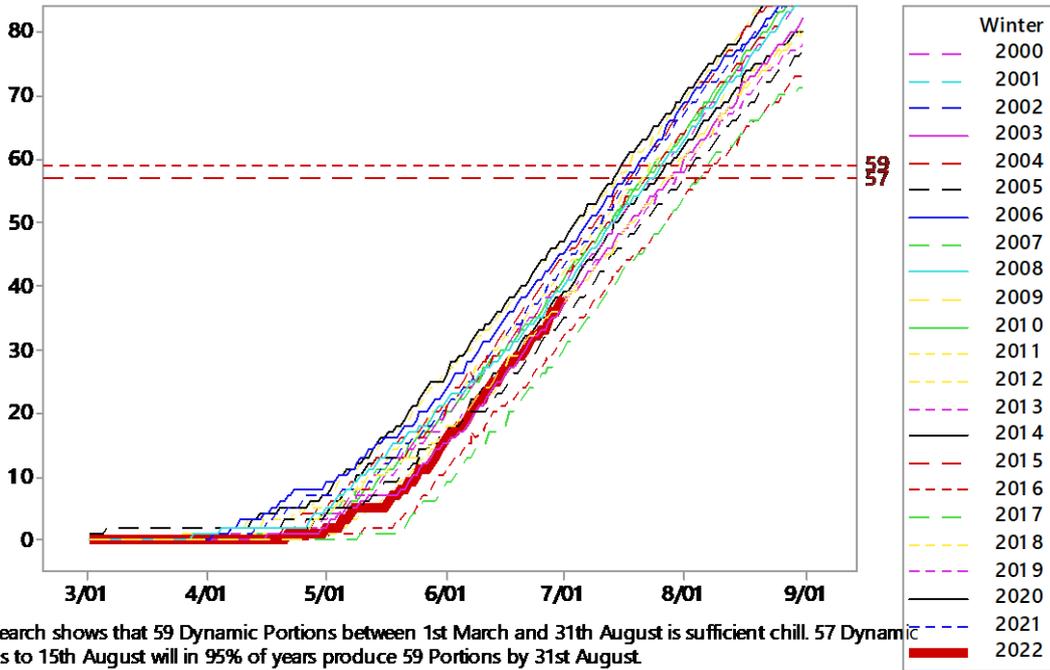
GRIFFITH: 31 portions on 30th June, below average to the 30th of June by 1 portion.

Wagga Wagga



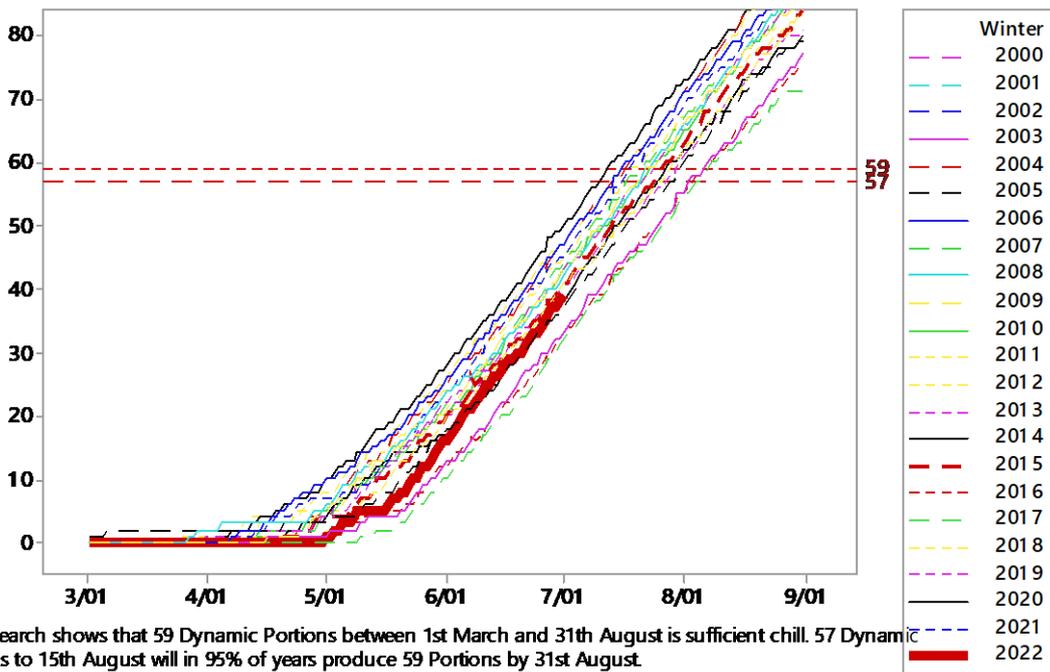
WAGGA WAGGA: 36 portions on 30th June, below average to the 30th of June by 2 portions.

Yarrowonga



YARRAWONGA: 37 portions on 30th June, below average to the 30th of June by 2 portions.

Albury

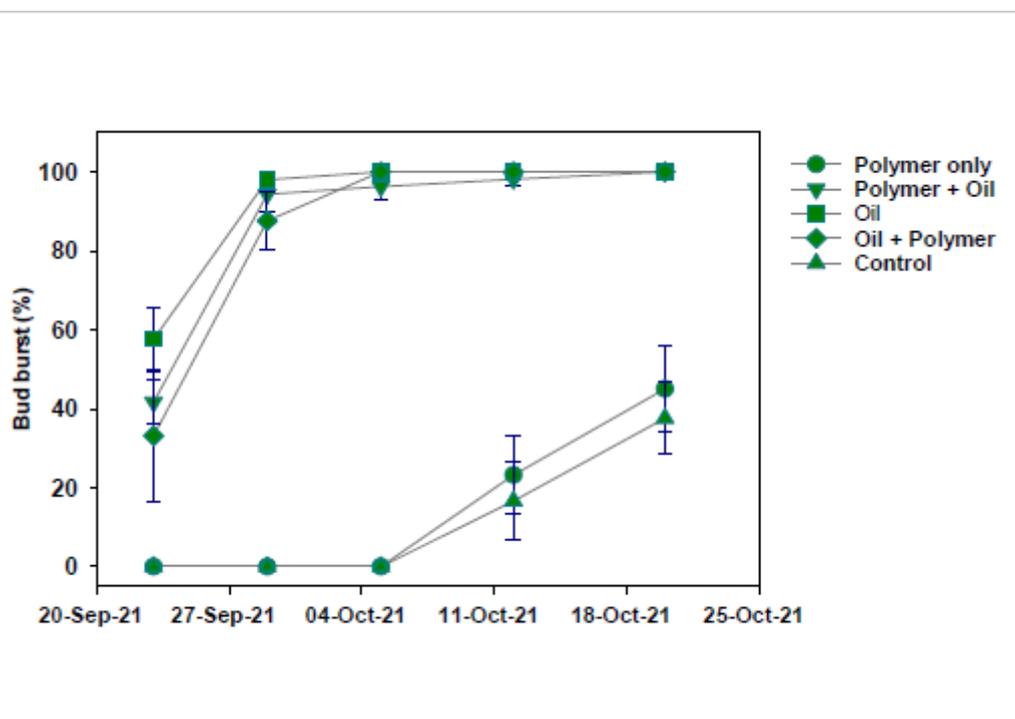


ALBURY: 38 portions on 30th June, below average to the 30th of June by 3 portions.

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. This was confirmed in PGA research done last season in the Riverland by Dr Maha Mahadevan. The Riverland had insufficient chill in the 2021 winter.



On trees that did not receive the recommended oil spray in late August, only 40% of the fruit buds opened.

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 1st March and 31st August. The research also shows that 57 Dynamic Chill Portions to the 15th August will, in 95% of years, accumulate to the required 59 Portions by 31st 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 is up to 1,800 litres/ha. 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^{rds} of the fruit buds not opening, i.e., 2/3^{rds} 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%.

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

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

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