

# Pistachio Growers Association Incorporated

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## **PGA Chill Newsletter Number 3**

**2011-12 Season**

**16<sup>th</sup> August 2011**

### **Winter Chill 2011**

Whilst there are prospects for the accumulation of additional chill over the next weeks, the PGA concludes its reporting of the Dynamic Model chill portions on 15<sup>th</sup> August each season. This cut off date is to allow growers to take remedial action in the event of insufficient chill.

The PGAI research, lead by Dr Jianlu Zhang, shows that 59 Dynamic Portions to 31<sup>st</sup> August provides pistachios with sufficient chill. The research and annual data collection is funded by the financial contribution of most pistachio growers with additional support from the Australian Government through Horticulture Australia Ltd.

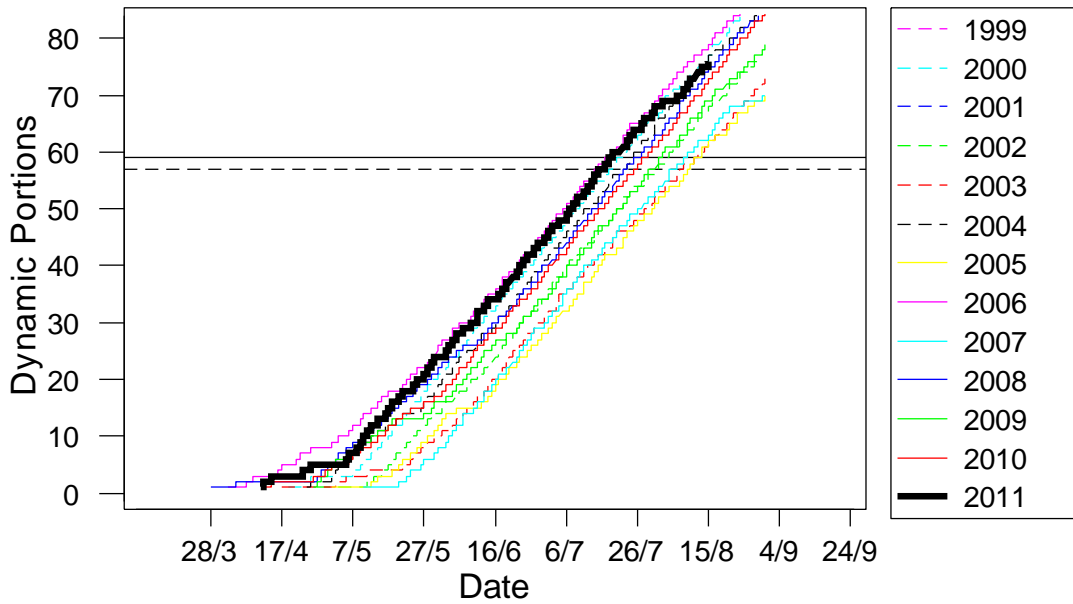
The data for 2011 shows that the

- Riverland had insufficient chill;
- Swan Hill- Mildura region just had sufficient chill;
- Other sites covered by the PGAI all showed sufficient chill.

The details for each site are shown below.

All of the charts show a flat portion of zero chill accumulation in the first week of August. It really is not known what this week of record high temperatures will do. But, it is unlikely to be a positive impact on chill accumulation.

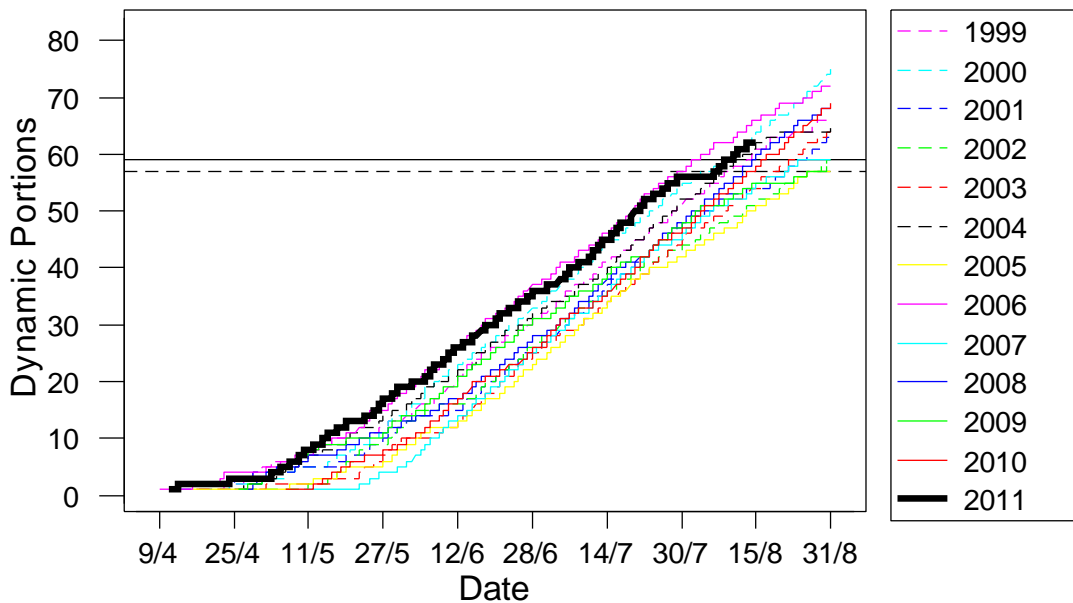
## Wagga Wagga



PGA research shows that 59 Dynamic Portions between 1st March and 31st August is sufficient chill. 57 Dynamic Portions to 15th August will in 95% of years produce 59 Portions by 31st August.

**Wagga Wagga - It is 76 Portions. This is well above the required 59 Portions.**

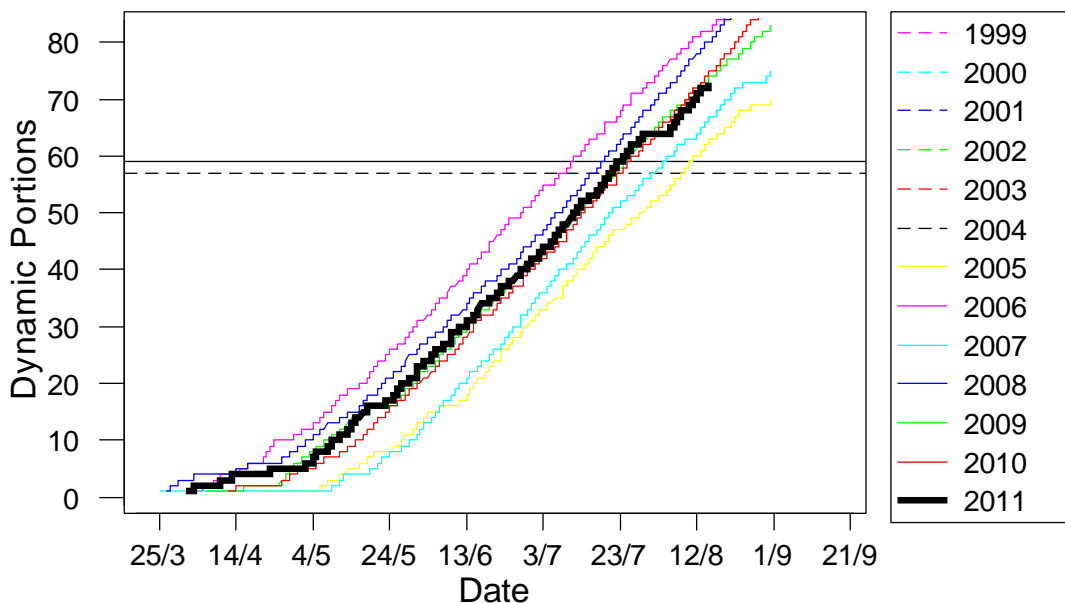
## Mildura



PGA research shows that 59 Dynamic Portions between 1st March and 31st August is sufficient chill. 57 Dynamic Portions to 15th August will in 95% of years produce 59 Portions by 31st August.

**Swan Hill/Mildura – It is 62 Portions. This is just above the required 59 Portions.**

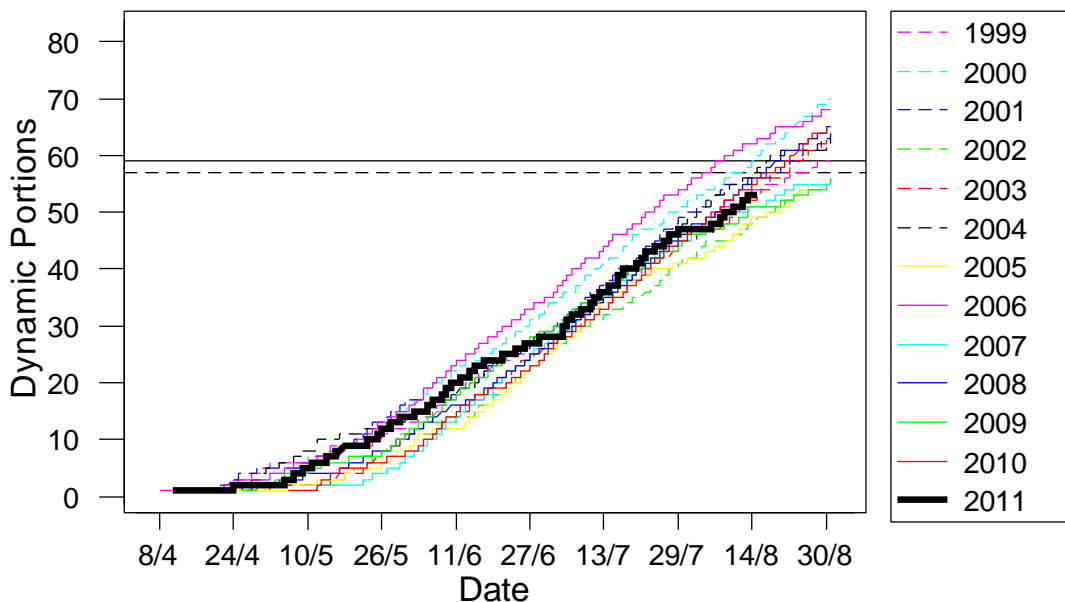
## Nhill



PGA research shows that 59 Dynamic Portions between 1st March and 31st August is sufficient chill. 57 Dynamic Portions to 15th August will in 95% of years produce 59 Portions by 31st August.

**Nhill – It is 73 Portions. This is well above the required 59 Portions.**

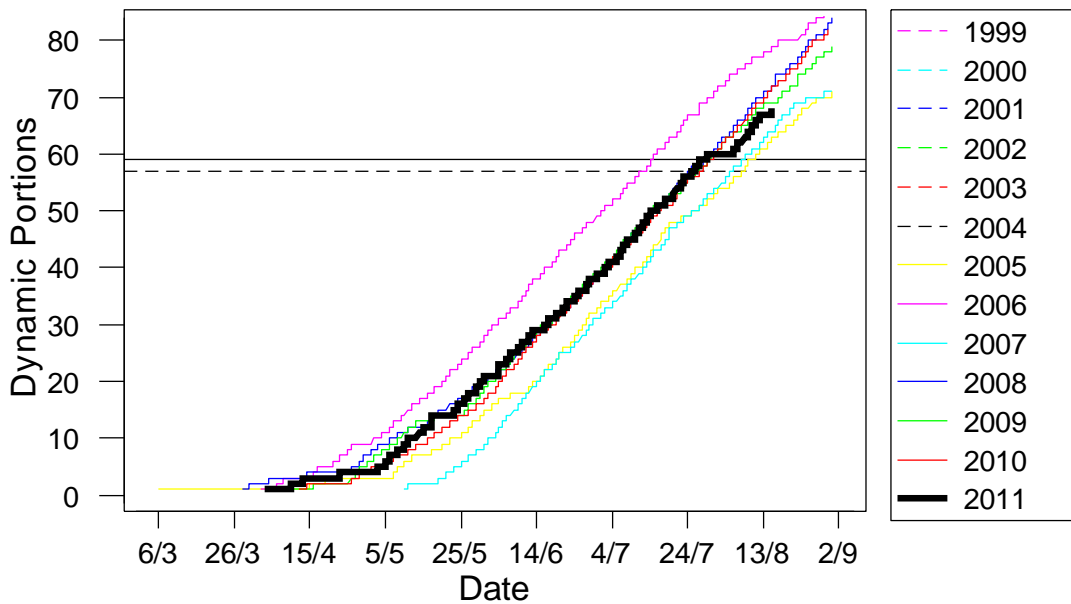
## Renmark



PGA research shows that 59 Dynamic Portions between 1st March and 31st August is sufficient chill. 57 Dynamic Portions to 15th August will in 95% of years produce 59 Portions by 31st August.

**Renmark – It is 53 Portions. This is below the required 57 Portions required by the 15<sup>th</sup> August. Riverland growers should be seriously considering remedial action as out lined in below.**

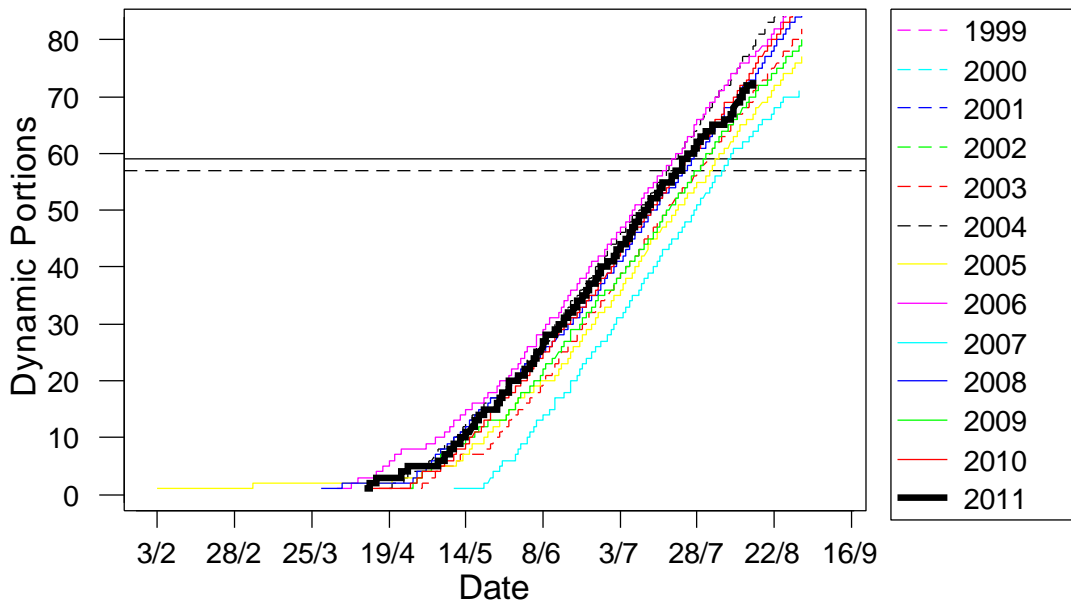
## Lameroo



PGA research shows that 59 Dynamic Portions between 1st March and 31st August is sufficient chill. 57 Dynamic Portions to 15th August will in 95% of years produce 59 Portions by 31st August.

**Lameroo – It is 68 Portions. This is above the required 59 Portions.**

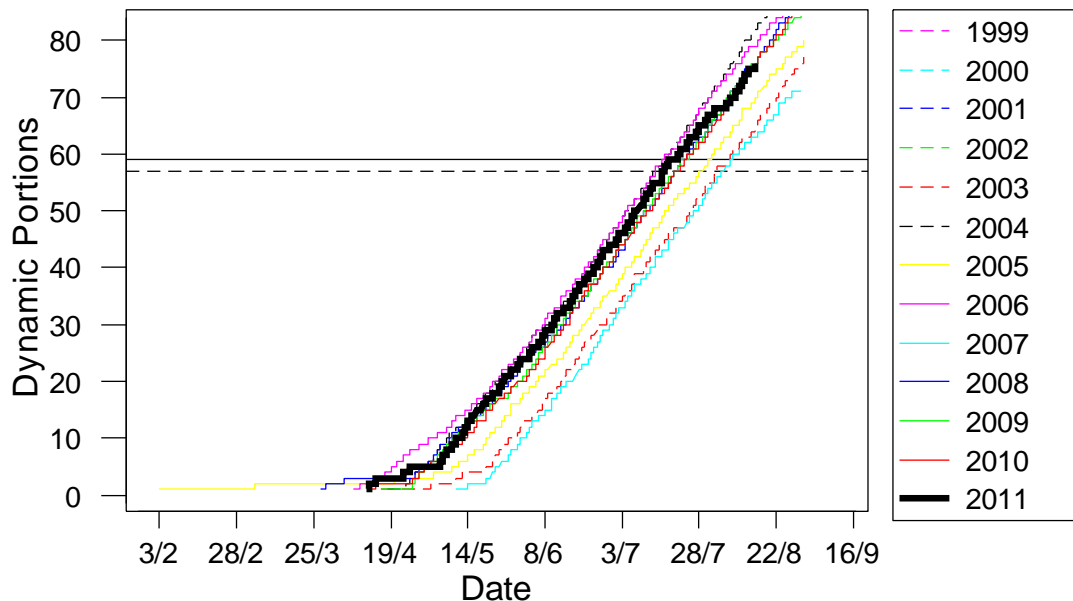
## Yarrowonga



PGA research shows that 59 Dynamic Portions between 1st March and 31st August is sufficient chill. 57 Dynamic Portions to 15th August will in 95% of years produce 59 Portions by 31st August.

**Yarrowonga – It is 73 Portions. This is well above the required 59 Portions.**

## Albury



PGA research shows that 59 Dynamic Portions between 1st March and 31st August is sufficient chill. 57 Dynamic Portions to 15th August will in 95% of years produce 59 Portions by 31st August.

**Albury – It is 76 Portions. This is well above the required 59 Portions.**

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### **Chill Background Information**

Pistachios are extremely sensitive to lack of winter chill.

Lack of chill will result in very uneven opening of flowering buds; some will not open until November or December, many buds will not open at all.

PGAI research, supported by the Australian Government through Horticulture Australia has shown the Dynamic Chill model to be the most appropriate method to measure the chill requirements 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> August will in 95% of years accumulate to 59 Portions by 31<sup>st</sup> August.

### **Mitigating the effect of low winter chill**

Insufficient winter chill causes uneven bud break and perhaps some buds not to open at all. Sometimes buds will delay opening until November or December resulting in poor or non-pollination. Late opening buds will have late maturing nuts; some buds will mature so late that they cannot be commercially harvested.

PGAI research by Dr Jianlu Zhang has shown that the Dynamic Model provides the best guide to measuring the amount of chill received each season. His work shows that less than 59 Dynamic Portions of chill between 1<sup>st</sup> March and 31<sup>st</sup> August are insufficient 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 15%. 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 have shown limited adverse affects from oil application. In the one 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

**Application rate:** Spray volume is dependent on tree size, but must be applied to the point of runoff. It is critical that bud scales are thoroughly wetted. On average size trees, the application rate is up to 1,800 litres/ha.

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  
16<sup>th</sup> August 2011