

FUTURE ORCHARDS ` BUSINESS DEVELOPMENT PROGRAM

Fruit Size Progress Report – Mid December

For this report the focus is on the Gala group and Cripps Pink for which there are sufficient numbers of blocks being monitored to give robust national trend lines for fruit size behaviour. There is also sufficient participation from fruit growers in Southern Victoria and Tasmania to allow good regional trend lines to be drawn for these two production areas. Data from other Australian districts is limited and often the regional trend line relates only to the one or two blocks on the database, which may not give an accurate picture of the overall fruit size behaviour in the district. Until there is more participation among growers in these other districts, bench marking against the national trend lines will give a better basis for judging your fruit sizing progress.

The two figures below show Royal Gala VC40 fruit size progress and weekly growth rate for 2009, the very hot 2010 year and this year to date.

Figure 1: VC 40 Royal Gala Fruit Size Report - Diameter (mm)

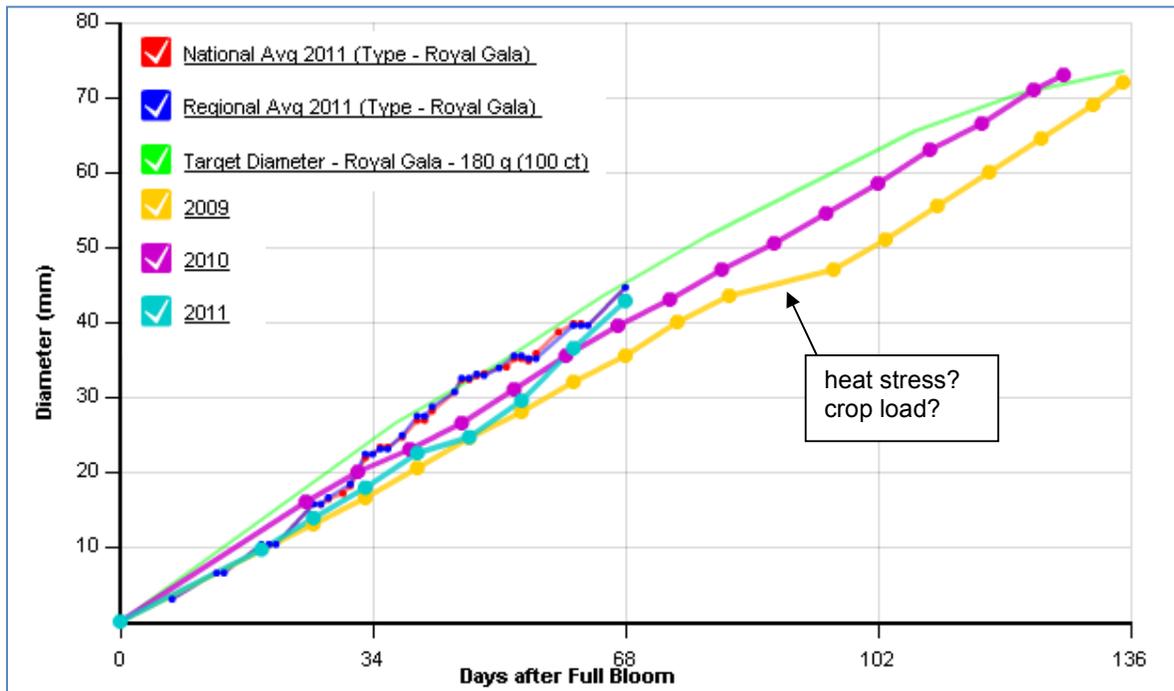
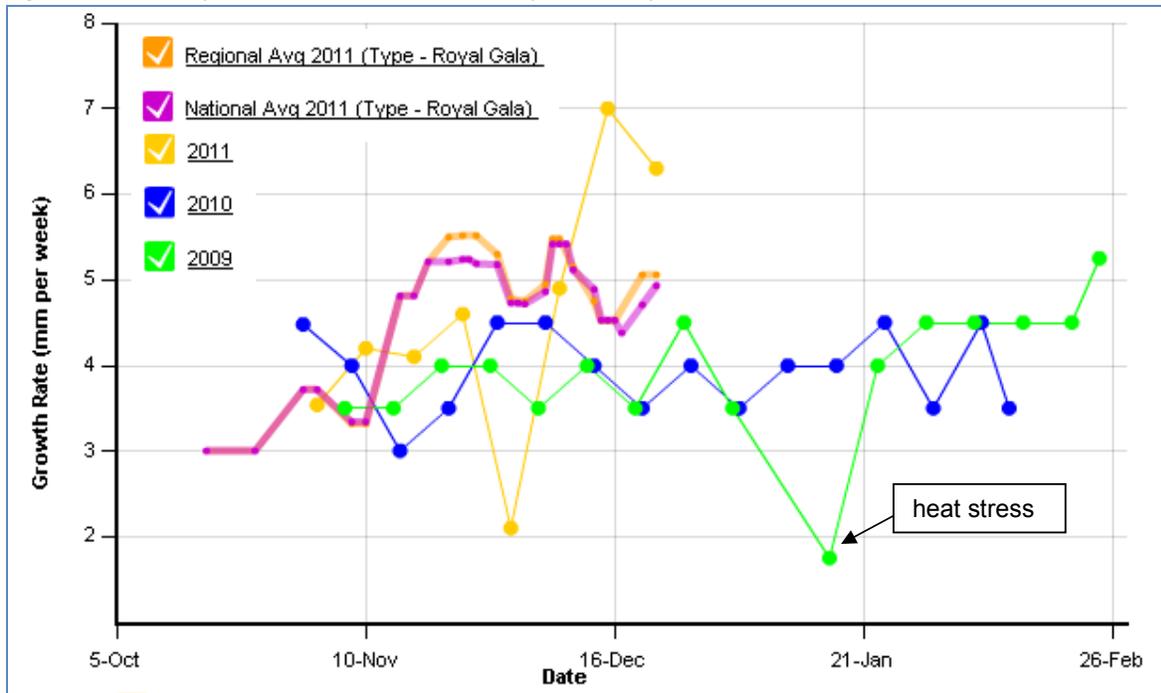


Figure 2: VC40 Royal Gala Fruit Growth Rate Report - mm per week



The green line on Figure 1 represents the 100 count average fruit size growth trend line based on the assumption of 130 days between full bloom and harvest. In the absence of robust Australian data this is a default size curve based on data we have built up over many years for Royal Gala fruit size growth. In reality, once there is adequate data on an Australian regional basis, the curve for different growing regions will differ in its gradient. Warmer districts with early harvest and a shorter period between full bloom and harvest will have a steeper gradient, but still curvilinear in form, while cooler growing districts, such as Tasmania which has a longer growing period between full bloom and harvest, will have a shallower trend line. With Royal Gala there is a fairly strong correlation between the heat units, base 10°C, accumulated over the first 42 days after full bloom and days from full bloom to harvest.

Average Royal Gala growth rate for this season has been fairly sluggish for the first four weeks after full bloom, then in the following six weeks has shown exceptionally good growth rates averaging around 5mm per week, with some blocks reaching growth rates as high as 7mm at times. These are higher fruit growth rates than normal for this period. Some blocks have shown very low fruit growth at times through this period too, which suggests that fruit growth has stalled for some reason. Perhaps water logged roots, cloudy weather shutting down photosynthesis rates, wind or heat stress. Where a block has fruit sizing rates well below the regional trend line or other blocks of the same variety in the orchard business it clearly has a problem which needs investigation.

One thing you need to be aware of with Royal Gala fruit sizing behaviour is that crop load does not have a big influence on fruit sizing until the fruit is around 90 days from full bloom, then if the crop load is too high the fruit growth just stalls. At that stage in its development it should be growing at around about 3 - 3.5mm a week, so if it suddenly drops off to below 1.5 - 2mm a week, it's unique to that block and cannot be explained by a period of high temperatures or water stress, which would tend to affect most blocks in the locality, it probably means that the crop load is more than the tree can manage to size. If you detect this happening get in and do a size thin, then you will have some chance of getting the fruit growing again.

The growth the fruit should have made while it was under excessive crop load stress is lost, but once the crop load level has been rectified the fruit will get back onto its normal growth curve. Where your lost fruit size needs to be captured application of Retain® can extend the growing period to recover the lost fruit size, VC 40 looks as if it may have suffered this kind of fruit size stalling around mid January 2009.

Cripps Pink

The figures below show an example of Cripps Pink fruit growth.

Figure 3: Cripps Pink Block Q Fruit Size Report - Diameter (mm)

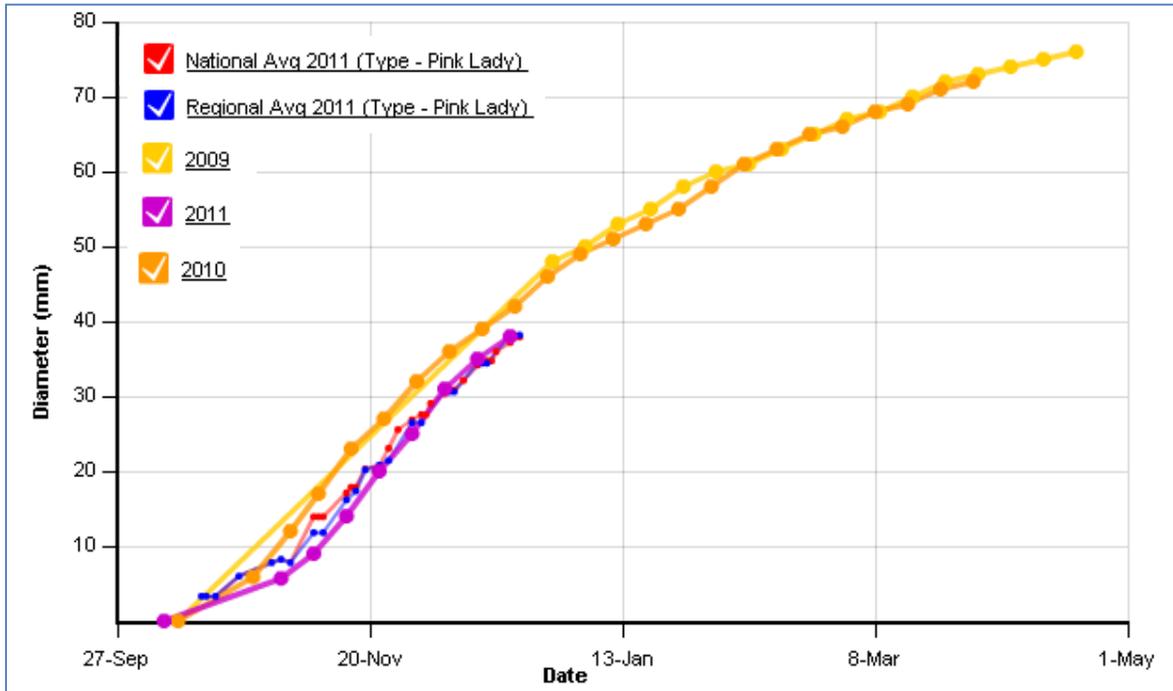
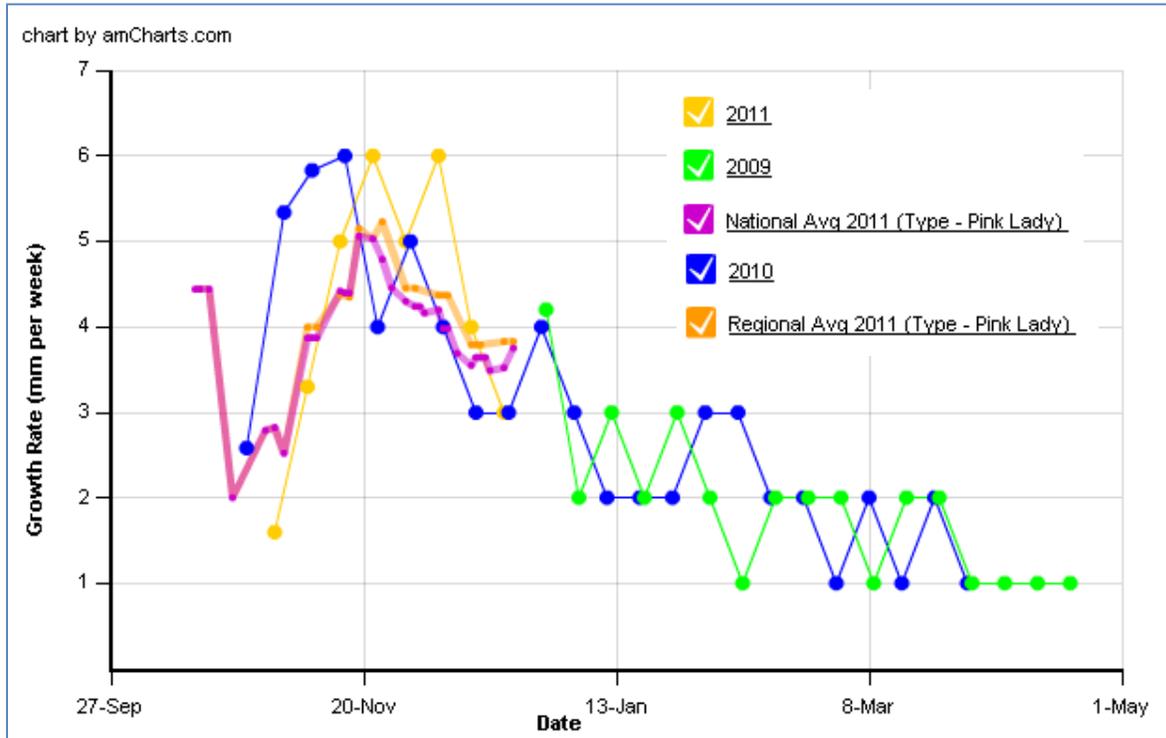


Figure 4: Cripps Pink Block Q Fruit Growth Rate Report - mm per week



We have not sufficient data yet to develop a size trend line for Cripps Pink yet so have not shown a 100 count trend line on the fruit size graph.

Cripps Pink Q is a relatively young block, with a history of large fruit which is typical of young trees in their first crops because it is necessary to crop conservatively in order to maintain good tree growth levels, to maximise tree canopy development. The target for this year is for smaller fruit size of around 100 count average fruit size and the initial fruit sizing when measured against previous crops indicates that the fruit is likely to be smaller than the larger fruit size of previous crops.

Data from previous years on this block indicates that high fruit growth rates of around 6mm a week through late November, early December may be normal behaviour, after which fruit sizing rates drop and appear to stabilise around 2 - 3mm a week until mid February, then slow up even further toward harvest.

Some growers have expressed concern about the apparent rapid sizing of Cripps Pink at this stage in the season and fear it will lead to oversize fruit problems at harvest.

Blocks which have a history of large fruit size are probably being under cropped, because crop load is the primary determinate of average fruit size. Where such blocks have good control of their limiting factors, notably adequate irrigation water supply, so they can carry larger crops through to harvest without running into excessive stress, fruit numbers per tree should be increased.

Where fruit size monitoring indicates that size by harvest will be too large, there are a number of orchard management strategies that may reduce fruit size. These include:

- Delaying hand thinning and then selectively thinning off the largest sized fruit.
- Reducing irrigation rates, but be careful not to stress the trees during periods of high temperature or create a situation which will pre-dispose the fruit to cracking by letting them dry out too much, then expose them to plentiful soil moisture late in the season.
- Do everything you can to advance colour development so that harvest can begin before the fruit gets too big. eg. reflective mulch, summer pruning, leaf plucking. Fruit sizing behaviour near harvest indicates fruit sizing rates of between 1 - 2mm a week, so if you can harvest two weeks early, average fruit size could be as much as 3mm smaller.
- An untried, but possible treatment to impose stress on the trees that may reduce the rate of fruit growth is summer root pruning. This is practised in Europe, where tree vigour is excessive, but we do not have a lot of experience with it here. Only root prune one side of the tree and make sure you have adequate irrigation to maintain the tree on its reduced root system if hot dry weather occurs. At this stage in our knowledge of root pruning under local conditions this is very much a trial treatment, so we would advise only attempting it on a few trial trees first rather than doing a large area.

Rapid early season fruit sizing could be an indicator of an early harvest season, in which case the fruit size at harvest would be similar to a normal season due to its shorter length of growing season.

OrchardNet

The reports you see within this report are all generated from the OrchardNet online database. We now have many Australian growers entering data either themselves or through a consultant or third party. APAL have funded 200 blocks this year and we still have some capacity. If you know of someone interested in participating please contact deanna.corbett@agfirst.co.nz or Richard Hawkes at tm@apal.org.au