

FUTURE ORCHARDS ` BUSINESS DEVELOPMENT PROGRAM

Fruit Size Progress Report – Mid December 2011

Although many growers are well into fruit size monitoring this season and reporting real benefits, there are still a number of you that have indicated you want to use OrchardNet but have not yet had the time or given it the priority. For those of you that used the system last year, your login details are still active so when you're ready jump straight into it. For those of you that want to track additional blocks there is still that opportunity. Please contact either myself at ross.wilson@agfirst.co.nz or deanna.corbett@agfirst.co.nz to set you up.

The 2011~ 12 season is now well underway. Pipfruit Full Bloom (FB) dates were on average 14 days ahead of last year. Although it's hard for us to judge the local weather conditions in each state, I'm told the drought has well and truly broken with many growing regions recording excess rainfall. Although that can lead to good fruit growth there are negatives such as reports of blackspot, hail damage in Batlow and even some tree deaths due to wet feet and phytophthora. If you've managed to get through the early season relatively clean of disease and clear of hail, then crop potential looks positive.

With bloom dates being early, cell division will now be largely over, with most blocks being 60-70 days after full bloom (DAFB). The fruit size potential has been set, it now up to you as the grower to try and manipulate that potential to the fruit size outcome that delivers the best balance of volume and net value per kg.

Crop loading is obviously the biggest determinant of yield and fruit size, however other management inputs can also have a significant impact, including soil moisture, tree nutrition, light management, tree vigour and growth regulators such as Retain.

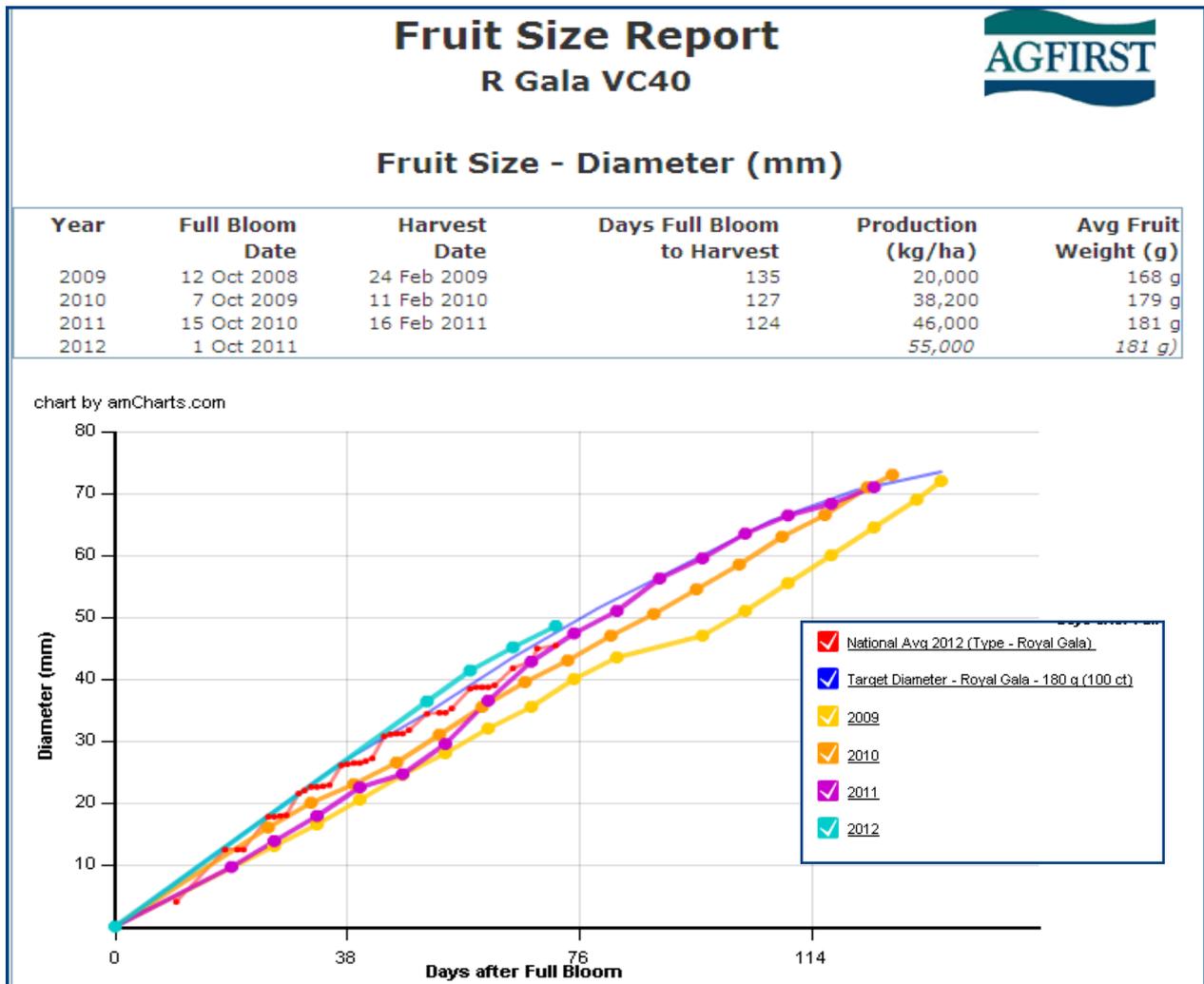
As we have discussed during Future Orchard walks, the key is to set a target for each block, monitor progress throughout season, then finetune your management to suit. After fruit counts, fruit growth monitoring is one of the best ways to monitor the state of your trees, giving almost instantaneous feedback if growth rates are good, poor or normal. To be accurate, you need to monitor the same fruit and those fruit need to be representative. To remind yourself of the fruit sizing protocols, go to Future Orchards library, and look for Protocol under the Business Development section.

In this report we focus on the Gala group and Cripps Pink both of which have sufficient numbers of blocks being monitored to give robust national trend lines for fruit size behaviour.

Gala

I always find it good to use a case study block to illustrate the trends and for Gala I've used block VC40. The two figures below show Royal Gala VC40 fruit size progress and weekly growth rate for 2009, the very hot 2010 year, 2011 and 2012 YTD. With the Full Bloom dates being so different between years, the best graph we can look at to compare between years is DAFB.

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



This graph shows a lot of information. The first point to note is that the “National Average” (Red line) is falling below the 180 gm Target Line which is suggesting average Gala size is currently forecast to be approx 170 gms for the growers in the database.

You can also see that the fruit size on VC40 is very good in 2012, well above any of the previous 3 years (DAFB). Interestingly VC40 achieved a 180 gm average in the 2010 and 2011 years. Although both lines ended up at the same point by harvest the growth trend was quite different between seasons with 2010 having a higher growth rate later in the season. That may be a tree age factor as they were only 4th leaf in 2010.

Due to the knowledge of this good start to the 2012 crop, the grower has decided to increase the crop load on VC40 by 10% to take advantage of the kind weather conditions. His theory is that he can now afford to carry more fruit and still achieve his target of 180 gm average at harvest.

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

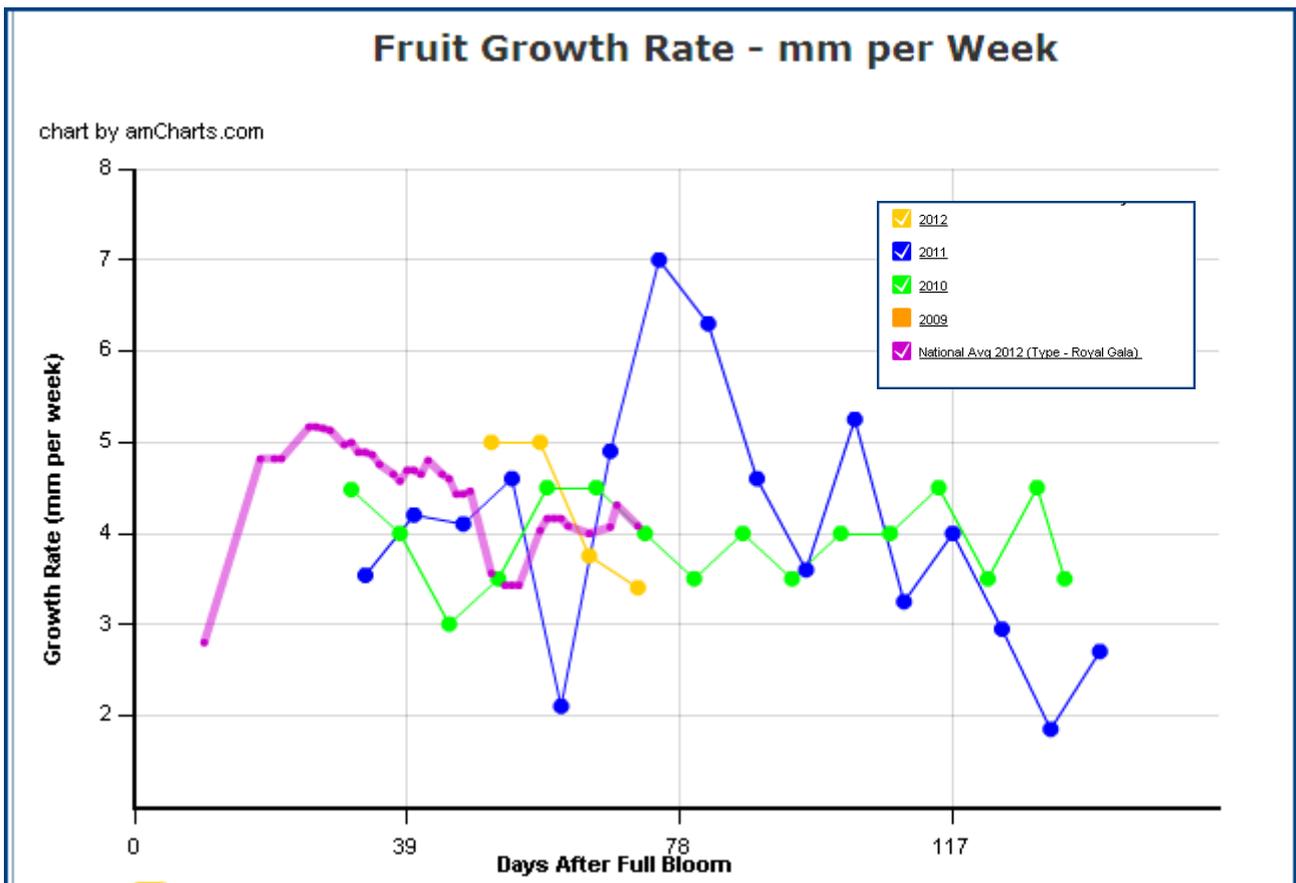


Figure 2 shows the growth rate of VC40 in mm/week. This shows a great start to 2012 (yellow line) with growth rate averaging 5mm per week from FB to 60 DAFB. This compares with the national average of 4.5 mm per week (purple line), a significant advantage. However there's a warning bell being sounded. Notice how the last 2 weeks readings have fallen below previous years and below the national average. Clearly something is not quite right.

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.

In this situation, I'm told to relax. Hand thinning got a little behind schedule and the block has been hand thinned this week. It was a number and size thin so the average size of the sample will improve. The growth rate of the fruit was clearly suffering due to crop load and with that now rectified. The grower expects to see a fruit growth lift during the next measurement. If not, then the fertigation and water inputs will be closely scrutinised and increased if necessary.



Figure 3: VC40 tree just after thinning 2011

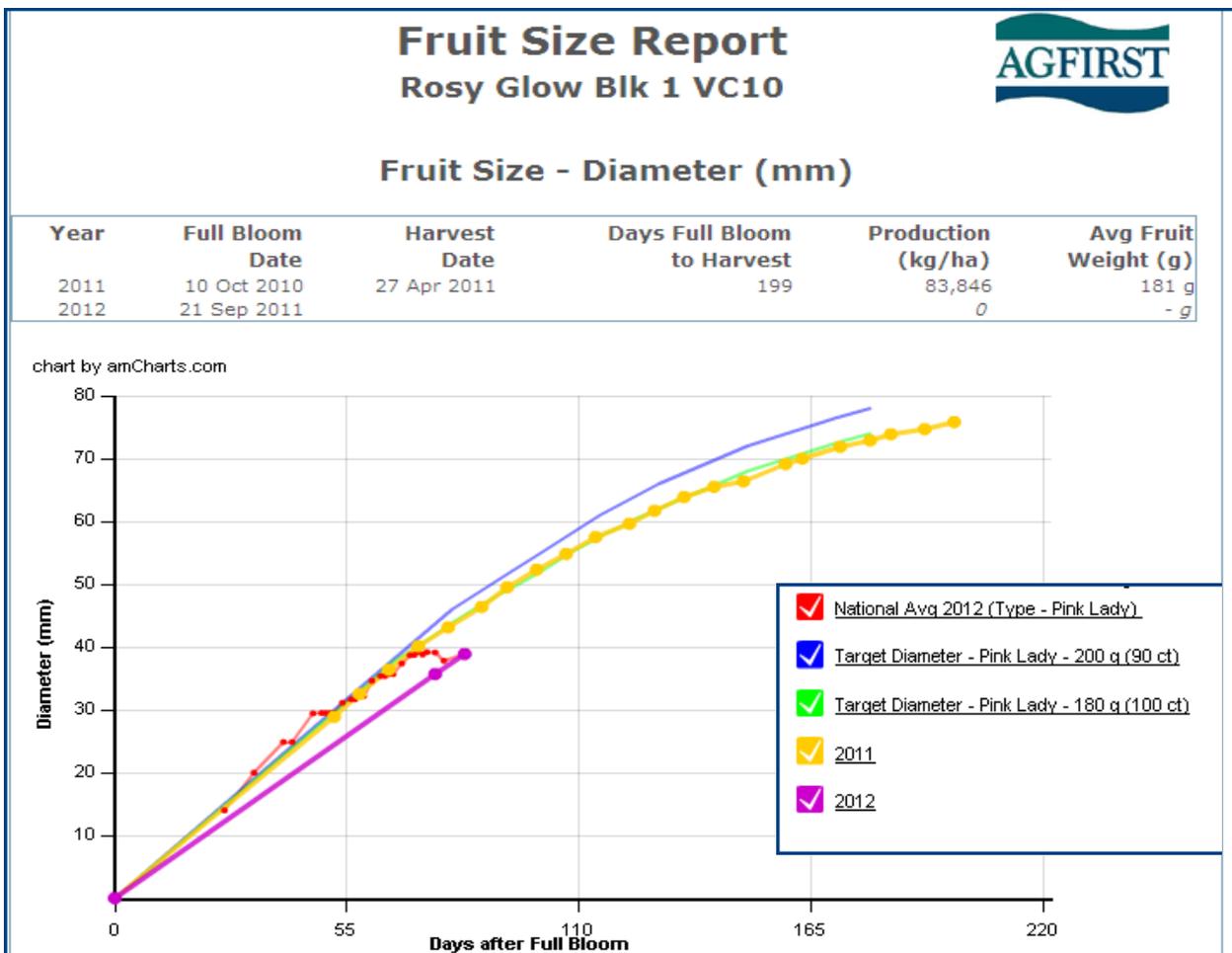
Cripps Pink

Over the past week, we have analysed all of last year's Cripps Pink fruit size monitoring and developed two target lines. One target line is to produce a 180 gm average and the other target line 200 gms. These have been based on a typical length of growing season of approx 190 days from FB to harvest. If your growing season is shorter or longer this will need to be factored in. Please treat the target lines as a guide, they won't always be perfect.

Figure 3 below shows an example of Cripps Pink fruit growth. In 2011 this block achieved the stunning result of 88 tonne/ha, 94% Class 1 and a 180gm average. Now that's what I call smokin'. To view the early details of the block go to the Monitor Block part of the Future Orchards website and look for VC10.

This was one of the many blocks we used recently to help create the Cripps Pink target lines. You will notice that last year's growth curve for VC10 lies right on top of our 180 gm target (Green line).

Figure 3: Rosy Glow Blk 1 VC10 - Diameter (mm)



The interesting feature of VC10 this year is the extremely early FB date (21/9/11, 19 days ahead of last year) and the resulting poor fruit size when compared with last year in terms of DAFB. If the early FB date translates into an early harvest by the same magnitude then the grower could expect fruit size to be below 180gm average. The only reason we can attribute to this poor start is cross pollination. The block flowered very early on its own and in poor weather. The cross pollination conditions were very poor, hence seed numbers are likely to be low and a significant proportion of the fruit is being carried on inferior wood.

On the positive side, it is extremely unlikely that the harvest date will be 19 days ahead of last year's harvest date, so the length of growing season in 2012 could be longer. This will help compensate.

Fruit size management

When fruit sizing is dropping below target and a boost is required, these are some management options you might consider:

- Ensure soil moisture is optimised
- Make sure the plants are not competing with weeds or a strong understorey
- Optimise nutrition, sometimes a nutrient deficiency can be enough to slow growth rate
- Consider a crop load reduction if other factors are all OK. Make sure this is a size thin removing the non profitable sizes and lifting the growth rates of the rest.
- Retain is useful on some varieties to extend the growing season by 7-14 days which can translate to a significant fruit size increase of 2-3 mm.

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

- Firstly increase your crop loads, more fruit of the right size pays the bills.
- Delay hand thinning and then selectively thin off the largest sized fruit.
- Reduce 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.
- 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.

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 300 blocks this year and we still have spare capacity. If you know of someone interested in participating please contact Deanna Corbett at deanna.corbett@agfirst.co.nz or Jesse Reader at tm@apal.org.au



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