

## FUTURE ORCHARDS ` BUSINESS DEVELOPMENT PROGRAM

### Fruit Size Progress Report – Mid March 2011

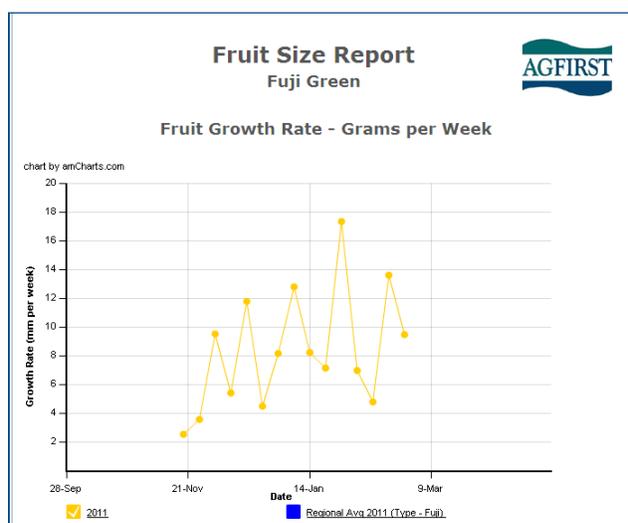
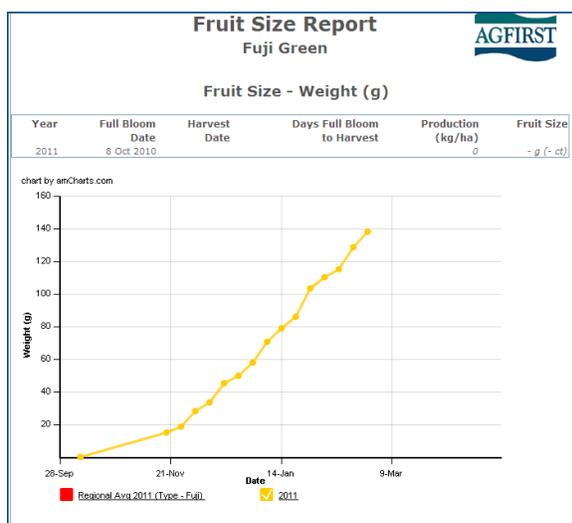
#### Understanding Fruit Growth

Monitoring fruit diameter throughout a season is a great tool to give the orchard decision maker real feedback on progress of the crop. The easiest measurement to take is a single diameter measurement. Typically fruit growth when measuring diameter follows a curvilinear pattern with growth rate in mm/week gradually dropping throughout a season from 4-5 mm at the start to sometimes as low as 1mm/week close to harvest.

It is important as growers that you know how to interpret this information. Just because mm/week is slowing, it does not mean that the absolute growth rate is slowing. Keep reminding yourself that a 1mm increase on a 60mm apple is a much bigger increase than a 1mm increase on a 30 mm apple.

The actual situation is that the real growth rate of an apple is actually fairly constant throughout the entire growing season (provided there are no limitations). For many blocks that we monitor in our local region, we measure 2 diameters and height. This gives us the ability to calculate fruit volume and then relate that to fruit weight. When we plot fruit weight throughout a season, the growth rate line is quite straight. That means that the fruit is growing at a similar rate each week.

The plots shown below are of a block of light cropping Fuji taken this year. From about late November , the plot on the left shows a straight line. When we look at the plot on the right, you can see normal variation week to week but the average growth rate is fairly constant at about 9gms/week. In this block the weight increase is higher close to harvest than earlier in the season.



Measuring one diameter has many benefits, the main one being its simple and anyone can do it. Just be very clear how you interpret the data.

## CASE STUDY

Shaun Witchell in Southern Victoria has an interesting Rosy Glow case study. The photo to the right shows the block last year in its third leaf. The block was planted in 2007 so was in its 3rd leaf last year (2010) and 4<sup>th</sup> leaf this year (2011). The thinning report below shows it achieved 55 t/ha (10.5 fruit/cm<sup>2</sup>) in its third leaf and had average fruit size of a 95 count average (195gm).

This years target was 74 t/ha (12.8 fruit/cm<sup>2</sup>) and a 100 count average (180 gms). So how's it looking?

Company: Witchell Orchards Property: Young Orchard Block: Rosy Glow		<b>Thinning Report</b> Season Ending 2011								
Blockname	Ssn	Gross Kg/ha	Class1 Kg/ha	Fruit Harvested Size	Fruit /Tree	TCA Harvested Fruit /TCA	Tree Pickout %	Target Fruit/Tree post-thin	Actual Fruit/Tree pre-thin	Actual Fruit/Tree post-thin
<b>Young Orchard</b>										
<b>Cripps Pink</b>										
Rosy Glow	2011	74,286	66,857	100	143	11.20	12.8	90	159	-
	2010	55,429	49,331	95	101	9.60	10.5	90	113	-
	2009	0	0		-	-	-	90	-	-
	2008	0	0		-	-	-	90	-	-

Figure 5 Witchell Block of Rosy Glow

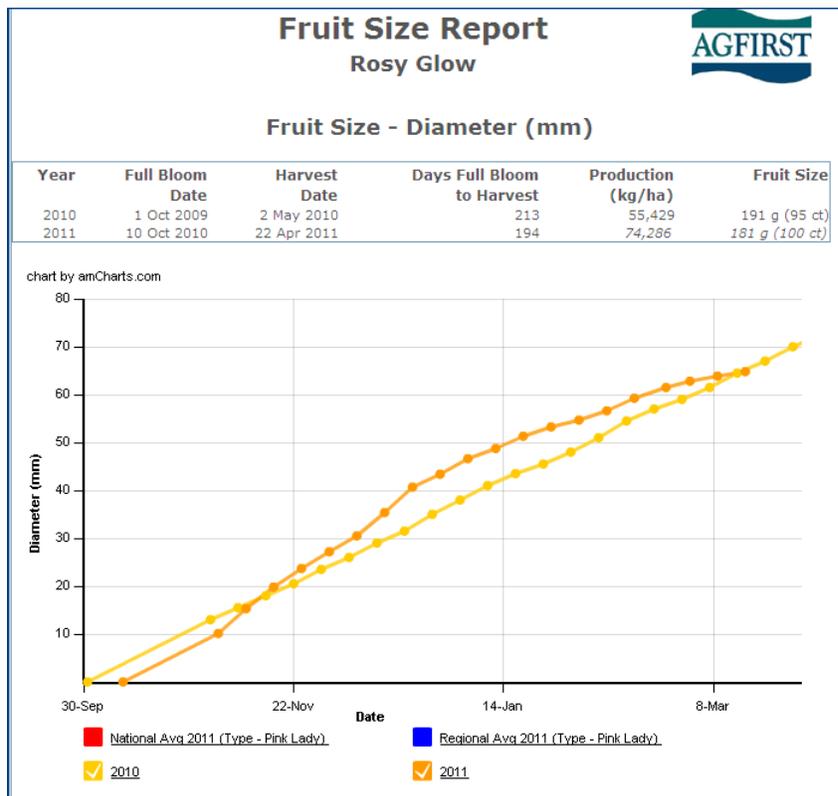


Figure 6 Witchell Rosy Glow growth rate (mm/week)

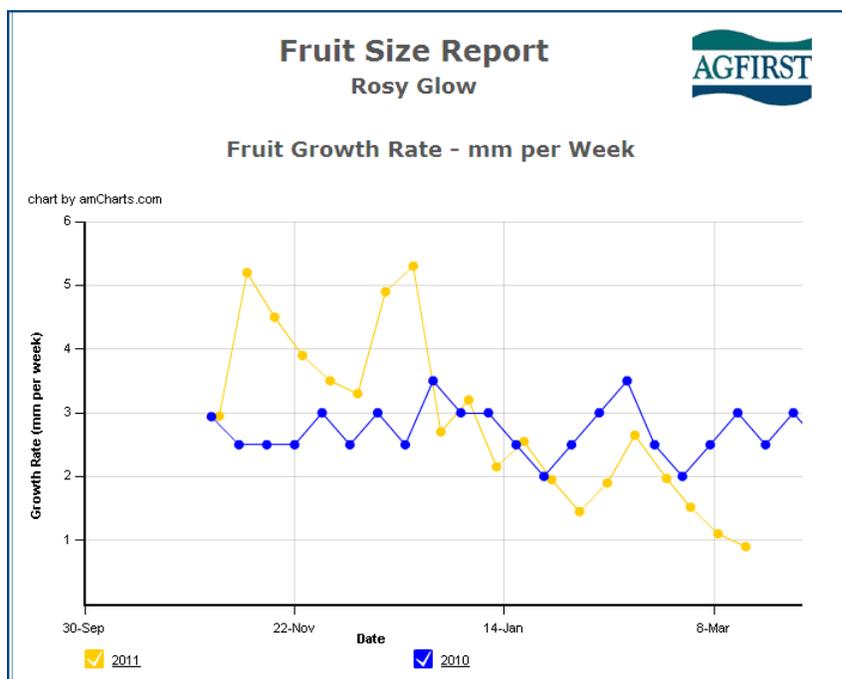


Figure 5 and Figure 6 show two very different growth curves for the last two seasons. In their third leaf the fruit kept growing at an amazing rate of about 2.75mm/week for the entire season. This was most unusual as the normal pattern is for growth rates to start out at 4.5 mm/week and then gradually slow to 1.0 mm/week as they have done in 2011.

The 2011 crop was looking to have very large fruit at the start of the growing season with growth rates peaking over 5.0mm/week. At that time Shaun was concerned that the fruit size would be too big to optimise crop value. However as the season progressed, Shaun finetuned his management strategy. More fruit was left on at hand thinning (80t/ha equivalent not 74t/ha), and irrigation was cut back to manage sunburn and bleaching only.

Consequently the growth rates have slowed considerably and are currently averaging 1.0mm per week. You will now see that absolute fruit size is the same as this time last year but the weekly growth rate is much lower. Assuming the current growth rate is maintained at 1.0mm/week, if we predict the harvest date, we can accurately predict final fruit size and start to plan our marketing/storage strategy. Shaun expects the harvest to be earlier this year due to the fruit being carried more on spurs as the trees have aged. With an expected first harvest date of 22/4/2011, there is 5.3 weeks between the last reading (64.8mm taken 16/3/2011) and harvest. This would mean the fruit diameter at the commencement of harvest would be 70.1mm. According to measurement's we have made here at AgFirst this is likely to deliver Shaun a 105 count average or 177 gm.

This is slightly smaller than the original target but very very close. With 5.3 weeks till harvest Shaun has the ability to irrigate now to see if he can increase growth rate say up to 1.5 mm/week. He won't want to overdo it too close to harvest, to make sure there is no negative impact on brix, pressure and calyx cracking. The Extenday reflective mulch will be laid out 3-4 week preharvest.

Whatever is done in the next 5 weeks will be fine tuning, Shaun can be confident that the crop is going to be of good volume, colour and size. This gives him maximum flexibility with regard to storage and market timing.

You don't have to be a brain surgeon to work out the value of this crop. 80t/ha, 4<sup>th</sup> leaf, Rosy Glow and a 180gm average fruit size. This case study is a great example of how precision management can pay big dividends if the information is used correctly and on time.

## OrchardNet Reminder

With harvest underway and some blocks now complete, you can enter some of the key block information such as the production you have achieved, a guesstimate of packout and the likely fruit size. This will allow you to run various block reports to see how your block shaped up against your own expectations and with the various Australian benchmarks.

We would also like you to make sure the date of the first commercial harvest is entered. If all 2011 business development growers do this it will allow us to refine our target lines for Australian growing condition which will improve the usefulness of OrchardNet in the future.