Precision Pipfruit Production

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Victoria Fruitgrowers Nov 2010

"Our job is to grow fruit that will compete with a candy bar!" Dave Allan

We have already started to set our crop loads for the coming season by pruning but what was the target? Blossom thinning will be the next opportunity to refine the capacity of our plant to produce a profitable fruit to leaf ratio. If you had a target that looks like, "Well we pruned the way we did last year." It is not too late to start changing how you think about hanging a crop on your trees.

It is likely that the 2010/2011 crop year will see a larger apple crop produced in Australia. This means there will be plenty of chances to lose money growing fruit that the market does not want. The good news is, as usual, that the supply of glamour fruit will be short and its pricing will justify your effort producing it. What is glamour fruit? It was probably picked in the first pass and has the right package of pressure, sugar, color, and size. This sort of fruit is produced from the edge of the canopy to a depth of about a half meter into the canopy. This is where there is enough sunlight to get the job done.

You can grow fruit deeper inside the tree but you will not get paid for this sort of fruit. Remember where your second and third picks came from in your tree last harvest. These are not profitable fruiting positions! The second pick positions may or may not recover your costs and the third pick positions will not recover the cost of production. Worse yet this fruit will drag the market down to its pricing levels and probably not have the eating quality required to drive the consumer return purchase decision.

Look at the blocks historical yield performance this will tell you where you are at in regard to the biennial bearing habits of your block. Fruit from blocks which are strongly biennial bearing are either over nourished or undernourished and do not perform well from an eating quality standpoint.

The genetic maximum yield for apple is estimated to be 135 to 150 tons per hectare. **However we are after marketable yield.** As yield is increased we may lose color, sugar, pressure, and worse yet we may inhibit flower bud development for next season.

So marketable maximum yield goals for the best blocks will look like this: Granny Smith should give 100 to 120 tons per hectare, Golden Delicious should give 100 to 120 tons per hectare, Pink Lady should give 80 to 85 tons per hectare, Gala should give 50 to 60 tons per hectare, Fuji should give 60 tons per hectare, Red Delicious should give 60 tons per hectare.

Blocks which do not do this have at least one problem and usually more. It could be too wide a spacing, a failure to fill vertical space, a poorly drained soil or a soil which does not hold water well, wrong rootstock or scion rooting, poor pruning practices, improper fertility, or shade.

Pick a size target and grow it. Try to grow most of you crop with a three box count band. Know the varieties performance at your site. If the crop is small fruited, like Gala aim for larger sizes and reduce your yield. If the fruit gets too big add yield to the tree to help reduce fruit size.

For varieties like Gala that set well and are small fruited I use one position to one fruit, for varieties that are very biennial like Fuji I like to have three positions to one fruit, and for varieties like Pink Lady that do not set strongly I like two positions to one fruit. Then I aim to develop this number of fruiting positions in my canopy. The intent is to have all fruiting positions developed to hang single a fruit in premium lighting conditions so I can grow top box fruit.

Take the tonnage goal and divide by the weight of the desired fruit size. This will give you a number of fruiting positions to grow per hectare. Divide this number by the number of trees per hectare and it will give you fruit per tree. Divide the fruit per tree by the number of limbs per tree to get down to fruit per limb. Use these numbers for the management of the crop. I like to do these counts prior to pruning, post pruning, confirm them at blossom, and reconfirm the numbers before and during any hand thinning operation. These counts should help to guide your walks in the orchard. Used properly the numbers should help you to ask better questions as you are looking at your orchard and trying to figure out what to do.

I am a counter. I will work on the same 10 trees every year within a block. Keep track of this yield data over time so you can compare the yield performance of the block against the estimates your sentinel trees generate. The only drawback of this method is if you do not get trees which are a representative sample of the block. Any lack of uniformity in the orchard will cause problems with this method. As a good manger you will become sensitive to things which cause a lack of uniformity to develop in your orchard.

Estimated Apple Sizes to Pack

Box Count	MILLIMETERS	GRAMS
45	88.9 +	300.5 - 345.86
50	85.6 - 88.9	263.65 - 300.5
55	84.07 - 85.6	238.14 - 263.65
60	80.77 - 84.07	215.46 - 238.14
65	76.2 - 80.77	192.78 - 215.46
70	74.42 - 76.2	170.1 - 192.78
75	71.37 - 74.42	153.09 - 170.1
80	69.85 - 71.37	138.91 - 153.09
85	68.07 - 69.85	124.74 - 138.91
90	66.5 - 68.07	

Target Fruit Size

Note: the gram weights range, depending on the density and shape of the cultivar. This affects how many apples fit into a particular tray and box size of a given weight.

Fruit per hectare @ 172.5 grams per 74mm apple

10 tons	=	57,971
20 tons	=	115,942
30 tons	=	173,913
40 tons	=	231,884
50 tons	=	289,855
60 tons	=	347,826
70 tons	=	405,797
80 tons	=	463,768
90 tons	=	512,739
100 tons	=	579,710
110 tons	=	637,681
120 tons	=	696,652