

Prepared by AgFirst 2006 Updated Nov 2015

TRV, TCA and PHOTOPOINT MEASUREMENTS

Both TRV and TCA measurements are to be taken once per season. This should be done after pruning but before budbreak. We suggest some time in July or August. Photopoints are to be taken twice in a season, once at the same time as the TRV/TCA measurement (i.e. dormant after pruning) and once just prior to harvest.

Tree Row Volume (TRV)

This measurement gives an indication of the canopy volume. This is a useful measurement to judge:

- ❖ the incremental growth of the block
- ❖ the potential light interception and hence yield potential
- ❖ spray water volumes required

Simple method

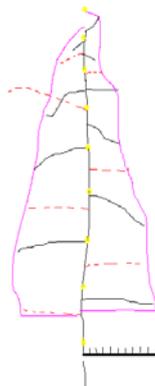
Go to a representative tree in the block and with a tape measure

- Measure the average height of the canopy (m) = H
- Measure the distance from ground level to the bottom of the canopy. = B
- Measure the average width of the canopy = W
- Measure the row space or collect it from the grower = RS

$$\text{TRV} = ((H-B)*W) * (10000 / \text{RS})$$

Eg Tree below is 4 m tall (H = 4m, Distance from ground to bottom of canopy B = 0.5 m, Average canopy width W = 1.5 m . Row space RS= 4.0m

$$\text{TRV} = ((4-0.5)* 1.5)*(10000/4.0) = 13,125 \text{ m}^3$$

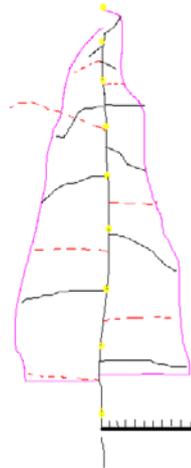


Stratified Method.

Choose a tree that represents the overall block. Mark that tree with tape to ensure you can re-measure the same tree with subsequent measurements. Only change trees if the sample tree becomes unrepresentative of the overall block. If the block is uneven we suggest that you measure two trees and calculate an average. The excel template is set up to allow you to do this.

This measurement is easiest done with 2 people although can be done with one. Use a pole with 0.5m increments to measure height above ground and to establish the centre of the canopy. (Alternatively mark an intermediate post at 0.5 m increments) Each person can then stand either side of the canopy using a steel tape and measure the total canopy width at 0.5m increments above ground. Alternatively you can have poles made up similar to those demonstrated during the training run. These make the job of TRV measurement very quick and more accurate.

At 0.5m intervals from ground level measure the width of the canopy from the centre position (left and right) to be able to calculate an overall canopy width at each 0.5 m level above ground. The measurement is from the centre of the row to the extremity of the canopy. The measurement at each height should represent the average value in that proximity. Enter these values in meters into the supplied excel spreadsheet calculator. Please refer to the diagram below.



Imagine you have drapped a sheet over the trees in the immediate location of your marked tree. The sheet is shown as the purple line. The tree you have set your pole against is shown as dark black lines and other branches within the bay are shown in dotted red lines. Note there is one red dotted line at the top left of the bay that is clearly well outside the average of the bays extremity. This branch is to be ignored.. Your measurements are from the centre of the row to the purple line. The 0.5m height intervals above ground are shown as the yellow dots.

If we use the right hand side of the tree as an example, the measurements would be entered as follows:

Height above ground	Distance from centre (m)
0.5	0.0
1.0	1.0
1.5	0.9
2.0	0.7
2.5	0.5
3.0	0.5
3.5	0.3
4.0	0.3

Take care when entering data into the spreadsheet whether your measurement is each side of the canopy or the total width of the canopy. You will understand if you have a good look at the excel spreadsheet.

If we use the same method as described above for a V canopy, we will overestimate TRV as the centre of the V is typically void of canopy. When measuring a V canopy, we therefore suggest the following technique. Think of the V as two trees, one left and the other right. Measure each side of the V separately. Use the excel template to record the left side of the V, as tree 1 and the right side of the V as tree 2. When entering the row spacing in the excel spreadsheet, for a V system enter that figure as half the actual row spacing. This is necessary for the calculator to work under V trellis systems.

Trunk Cross Sectional Area (TCA)

The trunk cross sectional area gives a measure of the trees potential cropping capacity particularly as a young tree. It also gives a good guide on the relative tree growth season to season.

Method

Use the same tree as in the TRV calculation as your first tree. Then mark 10 trees in total down the row. Make sure the row you choose initially is representative of the whole block (don't use rows next to shelter belts). Each measurement of TCA should involve 10 trees.

Measure the diameter of each tree 20 cm above the bud union.

Enter the average diameter in cm of the 10 trees into the metrics section on Orchardnet . Orchardnet will calculate the TCA.

For those of you mathematicians $TCA = R^2 * 3.14$

Photopoints

Photopoints are to be taken of each block twice per year. The first photopoint is to be taken at the same time as the TRV/TCA. The second photopoint is to be taken just prior to harvest to show the canopy with a complete crop.

Each photopoint will have 2 views, a tree view and a row view.

For the row view, fill the frame as much as possible. Try to focus on one side of the row, rather than down the middle of the row. Both rows need to be in the frame.

The tree view should take an image of an individual tree. For the tree photo, fill the frame of the picture as much as you can, while making sure to capture base and top of the tree. When the trees are small you can fill the frame with one tree. Once they become mature you will need to take the photo at approx 45 degrees to the row so that the whole tree is in the frame. If you can capture an intermediate post or measured pole in the frame this can be useful as a visual reference as to tree size and height.

Make sure you don't cut the photo in too close – include some sky above and some foreground below and Deanna will crop the photos for you in editing.

Try to avoid cluttering the photo with other subject eg vehicles, shelter belts and always ensure the sun is behind you if possible.

Photos should have a proportion of 0.75:1, ie, a 6" x 8" photo has these proportions – the shorter side being 0.75 of the longer side, with row view photos taken landscape, and tree view photos taken portrait.

Photos should be at a minimum of 1200 pixels wide on their longer edge, ie, 1200x900 pixels (if your camera specifies file size instead of pixels, select 1 megapixel or higher).

Minimum Photo Sizes:

If your camera specifies pixels:	1200 x 900
If your camera specifies megapixels:	1 megapixel
If your camera specifies file size:	1 megabyte (1,000 kb)

Examples of a good Row and tree view are shown over.

Naming Photos

Make sure each photo uses the following name format.

Blockname – row or tree – month and year

eg:

NW03-r-0307 = Block NW03 – row photo – March 07

QL07-t-0906 = Block QL07 – tree photo – September 06

Upload each photo to the relevant Focus Grower drop Box folder

NB: These photos have been cropped in the editing stage. You should aim to have some more sky above and some foreground below rather than cutting the photo in too close.

Row View



Tree View

