# Crop Load

prepared by
Craig Hornblow and John Wilton
AgFirst

November 2006


There are two parts to crop load management, one is setting the appropriate target and secondly is achieving this with accuracy and consistency so there are no surprises after Christmas.

Crop loads for older trees should first be set by historical performance and knowing what is wanted for the market. Describe these targets in several ways i.e. per tree and per hectare. More often than not, with intensive plantings what seems a reasonable target per tree, when multiplied by density becomes exceptional performance. Be realistic and take steps each year to a mature yield, don't take big jumps.

Young developing canopies have little history and can be more difficult to set crop load targets for, as you are also trying to balance tree growth with yield.

As the tree develops using truck cross sectional area (TCA) is a very good guide to setting appropriate crop loads. Simply put :TCA measures the size of the pipe feeding the tree) This relationship is not as strong once you achieve full canopy as the trunk will keep growing while the canopy volume does not.

Measuring TCA is described in the loop 1 notes. Typical targets for NZ dwarfing rootstocks range from 8-12 fruit per cm² for developing canopies.

Example:

$TCA = pi * R^2$

Pi = 3.14
A truck of 2.5cm diameter has a TCA of $= 3.14*(2.5/2)^2$
$= 4.9 cm^2$

At 10 fruit per cm² the target should be $= 49$ fruit/tree


Targets should be set during the winter, and pruning strategies developed as the first step in crop load management. The next step is to chemically thin to approximately 120% of target and then hand thin to final target.

## Achieving crops loads with accuracy and consistency

**Simple**

A simple tree structure goes a long way to achieving this.

Eg. 20 branches/tree with 10 fruit/branch at a tree density of 2000 trees per hectare gives 72 tonnes/ha. Thinners and supervisors only need to count to 20 maximum to complete and manage the job effectively.

2.5 fruit tree at 2000 trees per ha is 1 tonne per ha.

**Supervise**

Count, Count, Count + Supervise, Supervise, Supervise.

**MAFCOT disc.**

Another approach to achieving consistent crop loads within a tree is to use a French developed system, similar to measuring the truck but instead measuring the branch diameter. The process is the same but the relationship is a little different. Branch targets are about 50% that of the truck target. Typically branch targets are 3-6 fruit per cm².