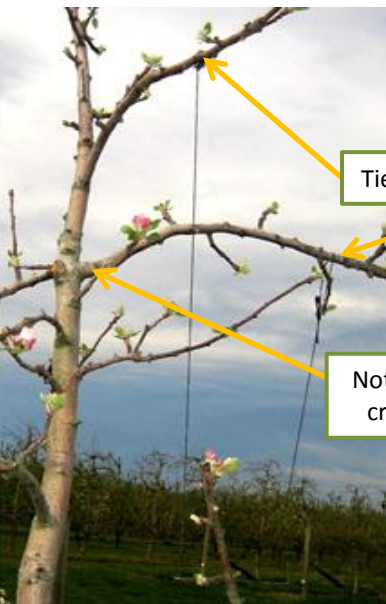


Spur Extinction - a natural phenomenon

Bud or spur extinction occurs naturally and is the phenomenon where some buds die off completely and the remaining floral buds continue to flower each spring. Regular bearing cultivars are most often those that display high natural spur extinction eg 'Granny Smith', 'Cripps Pink', 'Royal Gala'.



Remove unbalanced branches



Tie down upright branches

Note improved crotch angle

What is Artificial Spur Extinction (ASE)?

ASE, also referred to as Bud Extinction, is a crop load management method which uses bud thinning techniques to precisely define where and how much fruit is set on the tree.

The aim of ASE is to achieve accurate, predictable setting of crop load and promote the vigour and performance of floral spurs, stimulate spur strength and improve fruit quality and regularity of production.

At bud burst, ASE trees will be carrying fewer but stronger flower buds than conventional trees. Hence trees can direct more resources into these buds, potentially carrying a more optimum crop load of quality fruit for the tree size and structure. ASE eliminates the need for chemical thinning.

Hand thinning of ASE trees is very simple, as spacing, position and number of clusters are already set – all that is required is to thin the clusters to singles and the occasional double according to the total number of fruit per tree that is required.



Before limb removal



After limb removal

Setting up the tree for ASE

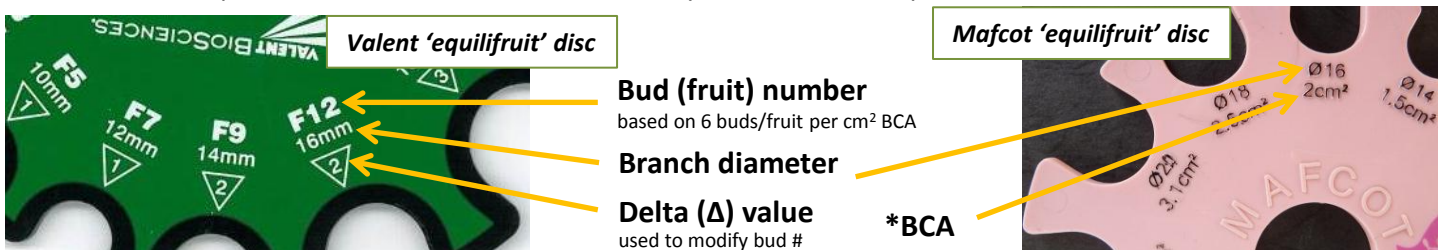
To maximise the success of ASE, the tree canopy needs to be set up to optimise light penetration and productive potential of the tree.

1. Remove unbalanced (large, vigorous) branches
2. Reduce branch number to 6 per metre of canopy height
 - ⇒ lowest branch approx. 1 m above the ground
3. Tie down upright branches to a slightly pendulous or drooping position
 - ⇒ flat crotch angles help to subdue vigour and optimise fruiting.

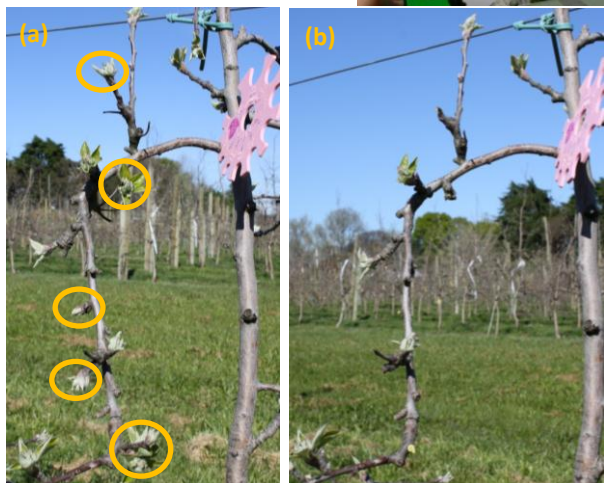
OK, so I've set up the tree, what's next?

Set bud numbers in **late winter**, before the onset of growth in early spring, this means that trees commence spring growth in an already significantly 'crop thinned' state.

To determine required number of buds for each branch you will need an equilfruit disc.



Interpreting the numbers on equilfruit disc (eg 16 mm diameter branch): F value tells us to thin to 12 buds to get 6 buds/cm², alternately calculate bud number for any desired bud density using BCA*, eg BCA of 2 cm² x 6 buds/cm² = 12
BCA of 2 cm² x 4 buds/cm² = 8

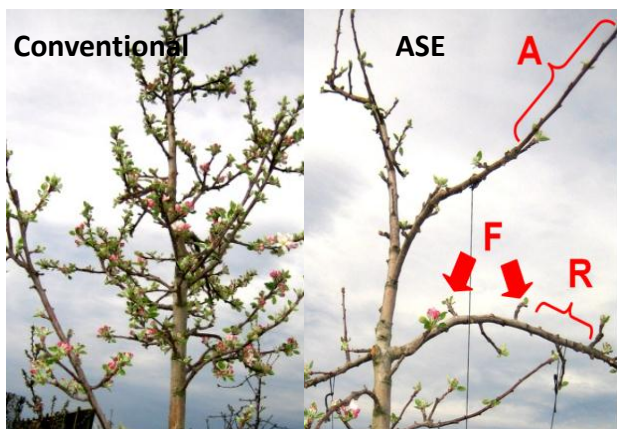


Setting bud numbers

1. Impose ASE at branch unit level
 - ⇒ work one branch at a time, starting at lowest branch
 - ⇒ treat top of tree as a branch
1. Use equilfruit disc to measure branch diameter
 - ⇒ check disc for bud number required
2. Selectively remove floral buds from branch to required type, position and number
 - ⇒ remove weak, crowded & poorly positioned spurs; run secateurs along underside of branches to rapidly remove shaded spurs
 - ⇒ space spurs along branch, selectively retaining strong, large spurs and short-medium bourse shoots; simplify multiple bourse shoots
3. Remove majority of axillary buds at tight cluster stage by running thumb and forefinger down 1st year wood
 - ⇒ this will leave 1 bud every 10-15 cm

General guidelines

1. Get the tree structure right – 6 branches per metre of tree; dominant branches removed; upright branches tied down
2. Accurately apply ASE to several representative trees in the orchard; use these trees to demonstrate to staff how to select buds and spacing
 - ⇒ orchard workers use these trees as references rather than using discs
 - ⇒ devise simple rules (eg. 1 hand width between spurs)
3. Monitor that staff do not drift from target spur density by periodically measuring bud density on random branches and checking it against the target spur density and reference trees
4. ASE eliminates the need for chemical thinning and simplifies hand thinning because:
 - ⇒ fruit bud number & spacing already set
 - ⇒ hand thinners able to focus solely on breaking up fruit bunches and removing fruit with defects



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