PEAR PRUNING

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PEARS IN GENERAL ARE APICAL DOMINANCE

- Apical dominance of terminal bud with inhibition of lower buds
WHY PRUNE?

Fruit trees need pruning for two primary purposes:
- to establish the basic structure and to provide light channels throughout the tree so that all the fruit can mature well.
- a well pruned tree is easier to maintain and to harvest.
- the primary reason for pruning is to ensure good access to sunlight.
- did you ever notice that the best fruit always seems to be in the top of tree?
- That’s where the most light is available.
Training a tree that is open to the light, and easy to care for and to harvest, is the main consideration to keep in mind when pruning, whatever system you are using.
IN PEARs WE USE RENEWAL PRUNING.

- This involves a rotational strategy to produce new wood, develop 1-year-old wood and produce fruit on 2-year-old wood.
- It is important to use primarily 2 or 3-year-old wood that is fairly close to the central axis of the tree for production of large, high-quality fruit.
- Using both girdling and notching to remove apical dominance and stimulate lateral branching in 2-year-old wood to avoid the production of blind wood.
- You can use growth regulators to influence tree response to girdling and notching (e.g. combination of gibberellin plus cytokinin).
CENTRAL LEADER TREE.

- This is the best system for trees on dwarf rootstocks. If trees already have developed side branches before planting, only the leader needs to be lightly headed.

- Side branches should be selected to form the lowest or main scaffold and trained outward to a 45 degree angle with spreaders or tie-downs.

- Any branches that compete with the leader in vigor, or that would crowd the chosen scaffold branches, should be thinned out. Smaller branches can be left to set fruit and should not be headed.
Never allow the upper scaffolds to overgrow and shade the lower ones and prune out large diameter upright-growing branches.

Try to maintain about 60% of the tree’s total volume in the lower scaffold area.

This provides good access to light throughout the tree, and makes for easy care and picking.
TRELLIS TRAINING

- Trellis training is similar to the central leader, only in a more 2-dimensional framework.
- Choosing a tree on the right dwarf rootstock is important, so that the tree doesn’t outgrow its space.
PRUNING

- Prevention of unwanted development:
  - competition branches eliminated in early stage.
  - pruning back into dominant or dominated two-year-old wood.

- Insufficient fruit quality
  - improvement of fruit set capacity on terminal bud.
  - improving of quality of fruit bearing wood.
  - too much growth.
FERTILITY ON A BRINDLE SHOOT ON TRANSITION 2YR TO 1YR OLD WOOD
FLOWERBUD ORIENTATION - BRANCH DIAMETER

Central leader

Twig 1

Twig 2

2y

2y

1y

1y

(1)

(2)
Vegetative Growth

- Too strong → reason can be:
  - pruning
  - nutrition
  - yield
  - planting distance

- Too weak → reason can be:
  - replant problems → limited production volume: effect often underestimated
  - rootstock - soil interaction
  - soil suitability
TO STIMULATE MORE VIGOUR:

- Pruning in one-year-old wood.
- Pruning on stubs.
- Pruning back into two-year-old wood.
- Pruning one-year-old shoots on upperside of branch.
- Pruning in dormant bud.
NITROGEN - NUTRITION

- N reserve
  - in the fruit tree
  - in the soil

- Timing of N application and N disposability

- Need of the trees:
  - growth, yield, fruit quality
  - age dependent

- Leaf application urea

- Soil application NO$_3$, NH$_4$, slow release-N

- 30 - 60 kg N:
  - part early season
  - part before harvest
  - part urea after harvest
HIGH DENSITY PLANTING

- High density pear planting:
  - V-hedge
  - Cordon Systems
  - Free spindel
**Pruning**: Flowerbud formation and flowerbud quality on apple and pear

**Growth Regulation**: Regularity of the fertility is the best growth regulator.

Best flowerbud quality on pear is the terminal bud on a brindle shoot.

Fertility on 2yr old wood.

Good flowerbud quality on the spur on a bourse structure.
PRUNING: VERY HIGH PRODUCTIVITY OF PEARS IN A V SYSTEM
The major aim of pruning has been to promote methods that growers could use to calm trees down and restore the balance between vigour and cropping.

The emphasis is not on having a ‘recipe’ for pruning but growers understanding a number of different techniques that can improve production on their trees.
Replacement pruning 1-2-3:

- Year 1:
  choose well developed 1-year old shoots on upperside of branch and more basal position

- Year 2:
  Flowerbud formation on 2-year old wood.
  Reduction in branch diameter.

- Year 3:
  - Prune back on brindil shoot.
  - Thin-out the flowerbuds.

- Intensity changes with tree age.
Pear pruning is a subject always guaranteed to stimulate animated discussion amongst growers, particularly when it involves the ripping out of branches, cutting into stems and root pruning.
BREAKING
Vigorous upright growth and branches with bad angles/ratios are removed from trees through breaking. This allows better light penetration into the tree – helping maintain good bud development.

This could be done during winter or after harvest.

After harvest is the ideal time as it prevent the nutrients stored in this growth being translocated to the root system and contributing to vigorous growth in the following season.
Breaking branches out rather than cutting also helps to contain vigour as the tree has to spend more energy healing the wound from a break than a cut.

Many of the dormant buds around the base of the branch are also taken out with breaking which reduces the development of shoots from the wound.

This means that breaking should only be used where regrowth is not wanted.

It is a useful technique particularly for stopping the cycle of cutting water shoots every year in vigorous old pear trees.
In order to encourage fruit set and “prune pears onto the tree” shoots that were longer than 20cm were headed back (either through cutting or breaking) to at least 6-8 good fruit buds (preferably on two year old wood). Shoots could also be bent towards the horizontal which reduces terminal growth of the limb and encourages flower bud formation.

It is important to retain pencil wood (around 20cm) with a terminal bud, but they need to be spaced out to prevent overcrowding.
STEM INCISIONS AND ROOTPRUNING.
Stem incisions and root pruning are important tools that can be used in conjunction with breaking and bending to contain tree vigour.

- Stem incisions were cut 1/3 the width of the stem (or individual limbs) with a chainsaw in an alternating pattern on either side.

- At least 30cm was left between the incisions and the cuts did not overlap. These stem incisions would disrupt sap flow, slowing down tree growth and have a longer lasting effect than girdling.
ROOTPRUNING
Rootpruning has been used by some growers in Australia and is widely used in European systems.

Both fine and large roots are cut during rootpruning reducing the absorption of water and nutrients whilst also changing the hormone balance resulting in an overall reduction in shoot growth.
Both stem incisions and root pruning are best done in Spring and should occur no later than 4-6 weeks before flowering.

You have to be careful with managing irrigation and nutrition to prevent stress affecting fruit quality.
- Reduce vigour and good flower bud
'Soln.'

FIRST LESSON

ARE YOU A FRUIT-GROWER OR A SHOOT-GROWER?