

PRUNING YOUNG TREES

A FACTSHEET ON FORMATIVE PRUNING



European
Arboricultural
Standards

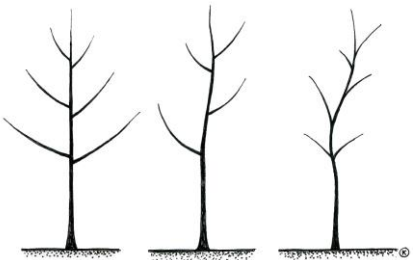


Co-funded by the
Erasmus+ Programme
of the European Union

THIS FACTSHEET IS MAINLY INTENDED FOR YOUNG/SEMI-MATURE TREES WITH TEMPORARY CROWN, LOCATED ALONG STREETS AND AVENUES. THE SAME GUIDANCE CAN BE APPLIED TO PARK TREES AND TREES IN THE FREE LANDSCAPE, EVEN IF THE GOALS MAY DIFFER SIGNIFICANTLY. IT DOES NOT DEAL WITH PRUNING ORNAMENTAL TREES TO KEEP THEM IN SPECIAL OR ARTIFICIAL FORMS.

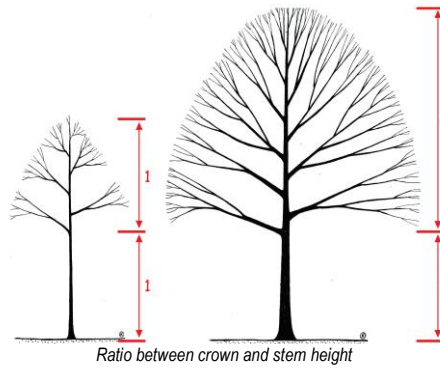
PURPOSE OF THIS FACTSHEET

The purpose of this factsheet is to show you 'how to prune properly young trees in a nutshell'.

PRIOR TO PRUNING	PURPOSE OF TREE PRUNING	SAFETY REQUIREMENTS
<p>Each tree to be pruned should be assessed for:</p> <ol style="list-style-type: none"> 1. Tree condition and safety; 2. Definition of clear pruning objectives; 3. The tree's ability to respond to the wounds caused by pruning. <ul style="list-style-type: none"> • The aim of any intervention is to achieve wound closure as soon as possible, and pruning should not negatively influence the tree's life expectancy. Therefore, optimum conditions for pruning include good tree vitality, and overall good tree health. • Poor tree vitality and health include the presence of significant damage, a prolonged or repeated periods of drought, or hard frost. If possible, pruning should be postponed until the tree recovers or the environmental conditions are suitable. • Tree pruning should preferably be carried out using hand tools (hand saws or pruning shears/secateurs). Chainsaws can be used if strictly necessary, to prune branches with diameter over 5 cm, but are not a tool of common usage while pruning and training young trees. • All tools used while pruning trees must be sharp, clean and suited to the task being performed. • It is advised that wound sizes should not exceed a maximum diameter of: <ul style="list-style-type: none"> • 5 cm in tree species with weak compartmentalisation, • 10 cm in tree species with good compartmentalisation. • Exceptions can apply in the case of removal of dead branches Dead and dying branches in the temporary crown should be removed regularly and completely 	<ul style="list-style-type: none"> • Tree pruning is aimed to create a healthy and structural well-formed tree suitable to a urban life and with the purpose to offer exosystemic services safely for many decades, in accordance with the tree species and tree size. • Tree pruning and management are performed in conjunction with and according to the other public functions of the site where the tree is place. • Young trees are characterised by a strong apical dominance and hierarchy (even if the architecture may vary, depending on the species). Young and semi-mature trees have not reached their final height and crown spread, as opposed to mature trees  <p style="text-align: center;"><i>Different tree architectures</i></p>	<ul style="list-style-type: none"> • Tools and equipment used while pruning trees must comply to the requirements of CE and EN standards and certification. • A job briefing and site-specific risk assessment must be communicated to all workers by the qualified arborist/supervisor on site. Traffic and pedestrian control around the job site must be established prior to the start of any arboriculture operations. • Arborists and other workers working on or near roads and high traffic zones and operating temporary traffic control zones must be trained in temporary traffic control procedures, usage and placement of protective devices, and how to work safely. • Arborists and other workers exposed to risk of road traffic must wear high-visibility safety clothing which meets the requirements of national regulations. • Arborists and other workers using any equipment, tools and machinery must be familiar with safe work practices and appropriate personal protective equipment (PPE) usage, according to manufacturers' instructions for these tools, machinery and equipment. • Emergency action planning must be performed prior to the start of pruning • Arborists and other workers must be instructed as to the specific location of the following equipment and information: <ul style="list-style-type: none"> • emergency phone numbers, • work site address, • first aid kit.

**REGULAR STRUCTURAL PRUNING
YOUNG TREES (A 1 ETPS – Matrix)**

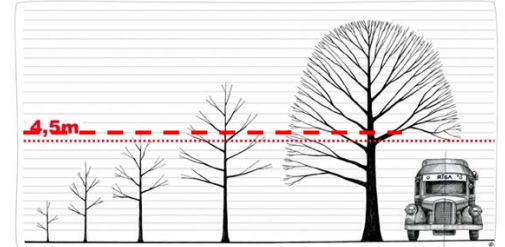
- The maximum crown volume to be removed in one intervention is normally 20-25%, and proportional to effective needs
- The final crown base height has to be determined in advance
- Always remove dead- and broken branches
- Clearance the traffic zone
minimum clearance is defined as:
 - for pedestrians, cyclists 2,5m.
 - for vehicles..... 4,5m.
- Always consider the tendency of branches to bend down over time.
- It is advisable to aim:
For a clear stem of 3 m (pedestrians)
For a clear stem of 5-7 m (vehicles)
- The location and tree species must be taken into account.
- Ideally, crown raising should take place in successive steps, maintaining an acceptable ratio between crown and stem height, see upper right illustration



Depending on the objectives, we can distinguish between two major crown parts:

The **Temporary crown** is made of all branches that are not going to be part of the permanent tree structure. In semi-natural trees these are the branches **below** the desired clearance height.

The **Permanent crown** is made of all branches that are supposed to be part of the permanent tree structure. In semi-natural trees these are the branches **above** the desired clearance height.



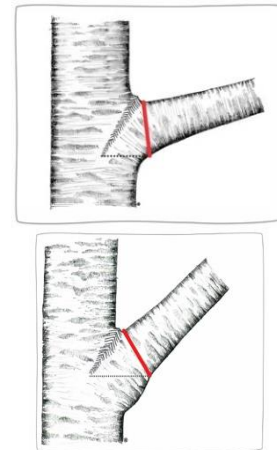
Red dashed line is base of the permanent crown Source picture: ETPS

IMPORTANT RULES

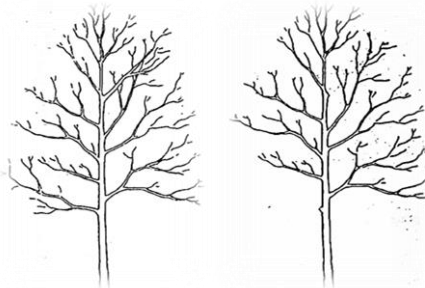
- The optimal **pruning season** is determined considering the goals of minimising physiological stress and supporting natural wound reactions and/or regrowth of the tree.
- Pruning during the growing season is preferred, but the dormant period can be acceptable as well.
- In order to keep pruning interventions minimal, pruning must start as early as possible in the tree's life (in case of predictable issues) and be repeated regularly, over suitable time intervals.
Short intervals between pruning interventions are advisable, maximum 3 years.
- Target pruning is the removal of a side (lateral) branch just beyond the branch collar without damaging the branch collar.
- The main purpose of this technique is to remove a branch while minimising regrowth and the extent of dysfunctional wood, supporting the natural wound reaction processes
- Always remove dead and broken branches
- Less living mass removal in one intervention
- Foresee future problems
- Remove complete branches, not branch parts
- Make proper cuts
In the temporary crown, remove the thickest branches first



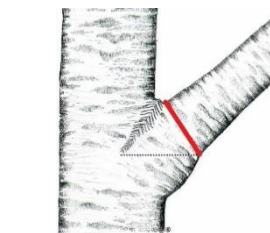
Pruning young trees by using hand tools



Target pruning: right cuts positioning Source pictures: ETPS



Young tree before- & after pruning
Source picture IPC Arnhem NL



Branch with a branch collar

NEGLECTED AND / OR MISMANAGED TREES

(see Pruning Matrix stage 5 - 6)

- Maximum mass removal in one intervention up to 40 % of crown volume
- A follow-up after 1- or 2 years is needed
- Prior to the intervention, the pruner should ask him/herself if it is possible and useful to correct the tree shape, or just manage it as it is.



Mismanaged (young) trees

If it is necessary to remove multiple branches in one area of the stem (e.g. "stacked branches" growing in pairs or rings), enough space between the cuts should be maintained, in order to avoid a significant bottleneck in the tree's vascular system and the overlapping of the reaction zones that would lead to dysfunction in the parent stem.

It is advisable to leave an intact "bark bridge" between multiple wounds in the same area, at least as large as the bigger of the two wounds.

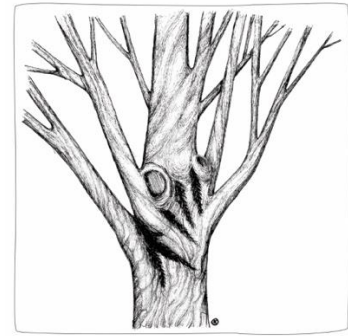
If this cannot be achieved, the cuts should be spread over time, over a number of years.

TO PRUNE PROPERLY AND MAKE PROPER PRUNING CUTS

- Use correct and sharp tools
 - The aim is to achieve wound closure as soon as possible.
- Target pruning** is the removal of a side (lateral) branch just beyond the branch collar without damaging the branch collar. The main purpose of this technique is to remove a branch while minimising regrowth and the extent of dysfunction, while supporting natural processes of wound reaction.
- If a branch collar is **not clearly visible**, the cut must be positioned outside of the branch bark ridge without damaging it
 - Removing a co-dominant stem, the cut must be positioned outside of the bark ridge without damaging it, as close as possible to the shoot that is left.
 - **Bark inclusion** is the condition whereby inner and outer bark form between the branch and the trunk or between co-dominant shoots in V-shaped forks.
 - If included bark is present between branch and stem, the cut must be made as close as possible to the stem, without injuring the stem tissues above the branch base.
 - At the base of **dead branches**, a swollen branch collar often naturally forms. The collar must not be damaged when removing these branches, even if this means cutting at a distance from the main stem

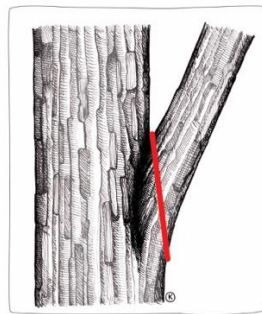


Proper target cut

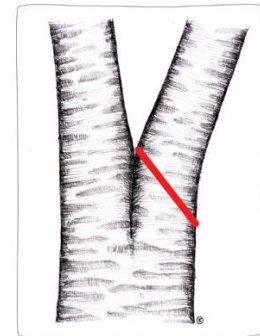


Stacked branches growing in pairs or rings: leave an intact bark bridge

- In order to prevent ripping of the tissues below the pruning point, it is advisable to perform a **step cut** when removing larger branches



Weak V-fork without a branch collar - target cut



Co-dominant stem

WRONG WAYS OF PRUNING

- Removing too much crown volume at one pruning intervention: e.g. >30% of crown volume
- Using wrong tools
- Pruning without any education and knowledge of trees, tree biology, tree architecture and anatomy.



Using wrong tools and wrong pruning



A tree pruned without knowledge

PROTECTION NATURE AND WILDLIFE

Nature protection legislation applies in the EU. Make sure you are aware of the national, regional and local laws and regulations in this regard. Protection of nests, birds, bats and wildlife is necessary.



Well-formed Mature trees along an avenue



Wrong pruning with wrong tools

Photos: Henk van Scherpenzeel

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