

Formative shaping of broadleaf trees



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Formative shaping of young trees is an essential operation to maximize the profitability of your forest crop. Ian Short outlines the reasons for and correct way to formative shape broadleaf trees.

The aim of formative shaping is to produce trees that exhibit good stem form. Shaping gives them the potential to grow on to provide high-value sawlogs, rather than lower-value firewood, as an end product. Mature trees that have not been pruned may externally appear to be similar to those that have been pruned due to natural pruning. In natural pruning branches die due to shading but may leave dead stubs that cause 'dead knots' in the timber. It is not until the logs have reached the mill that the dramatic internal effects of a pruning operation can be seen (see picture below).



Leaving branches to be naturally pruned results in a larger volume of wood with defects, a decreased volume of clean wood and dead knots that result in reduced timber strength and appearance.

Planting broadleaves in former agricultural fields, with no shelter, creates a very stressful environment for the young tree, resulting in decreased stem form. Research on the management of these mostly farmer-owned plantations has been ongoing at Teagasc Kinsealy since 1992. This work has been funded by CO-FORD since 1997. Initial research concentrated on the formative shaping of very young stems in order to maintain or improve stem quality. Much of the research on formative shaping has been completed and protocols for early management have been developed.

Stem form can be graded into four categories, as outlined in Table 1 and Figure 1. The aim of formative shaping is to increase the number of category 1 and 2 trees within a stand. Not all trees within a stand should be shaped: category 1 trees do not require shaping and, as a general rule, it is not worthwhile shaping category 4 trees unless there are insufficient category 2 and 3 trees.

Table 1 Description of stem form categories

Category	Description
1	Very good well balanced tree, straight stem, single dominant leader, no strong competing co-dominants, light branches.
2	Good quality tree, no single dominant leader, competing co-dominants, or stem can be slightly wavy, moderate stem straightness, not more than one disproportionately large branch or branch with an acute angle of insertion.
3	Poor quality tree, poor apical dominance or poor stem straightness, One or more forks, whorls or strong co—dominants. One or more disproportionately large branches or a moderate kink could be present.
4	Very poor tree, poor apical dominance and very poor or competing stems. Crooked stems. Multiple heavy branching or forking. Severe kinks or bayonet relays.

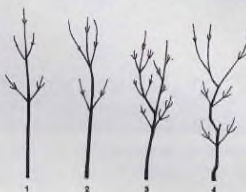


Figure 1
Ash, sycamore & beech shaping protocols

Shape when most stems are within the 1m to 2.5m height range. If possible, shape again when the taller stems are 2.5m to 4m in height. Shape only those stems above average height and only potentially good quality trees. Shape approximately 30% to 35% of stems (800 to 1,100) during the first operation. During the second operation, shape 700 to 800 of the stems already shaped.

Shape from the leader downwards. Concentrate on removing branches derived from nodes and whorls. Remove incipient forks and co-dominant branches if competing with the leading shoot. Remove disproportionately large branches. Fifty per cent of the foliage can be removed without affecting growth; 80% of foliage can be removed from potentially good trees or those in vital spatial positions. Shape in early June and July by preference, or during November or December.

Oak shaping protocol

Oak is a difficult tree to shape due to the frequency of disproportionately large branches,

forks, death of the leading shoot, and the development of a multiplicity of twiggy shoots with no discernible leader. Because some young oak retain their leaves during the dormant season, care should be taken in examining the stem for branches which may be concealed by the leaves.

Shape at least 50% of stems on first shaping. Avoid shaping stems of very poor quality. For forked stems with a distinct leader, favour the side of the fork with this leading shoot. Pay particular attention to the removal of disproportionately large branches from the lower stem. Where the stem has lost its leading shoot and has developed a multiplicity of green shoots, there is little advantage in shaping. Where the shoots have lignified it is worthwhile to select the strongest and remove the rest. Shape any time except February and March.

When shaping and pruning trees, it is vitally important that the cut is made in the correct position (see picture below). The cut should be made close to the main stem and just outside the branch collar. The branch collar produces tissue known as callus that will eventually cover and protect the wound.

Any damage to the branch collar will result in a slower healing process and increased risk of pest or disease incidence.

