



Forest Service



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Woodland Improvement Scheme

**Silvicultural Guidance for
Tending and Thinning of Broadleaves**
(Woodland Improvement Scheme)

This element of the Woodland Improvement Scheme applies to young broadleaved woodlands (planted post 1980) that are suitable for tending or thinning. Area and width criteria as per the Afforestation Scheme apply. Grant aid for the treated area is available for either tending or thinning operations depending on which is the most appropriate to the site (i.e. it is not necessary to carry out both sets of operations for grant aid.)

Broadleaf sites and crops vary. Alternative silvicultural systems to those outlined in the tables below may be proposed where they provide value for money. Any alternative method must be provided with a similar level of detail to that provided below, in advance, in writing and attached to the Form 1.

The tables below refer to Potential Crop Trees (PCTs). These are the better trees in the forest (in terms of vigour, straightness, quality and freedom from diseases etc.) that are evenly distributed in the forest so that they will potentially form the final crop of high value trees after a number of thinning operations.

Table 1: Pure stands of Ash / Sycamore / Norway Maple / Alder

Grant	Top Height	Operation
Tending	<p>Minimum 8 m</p> <p>Tending should coincide with the shading out of the lower 3-4 metres of side branches.</p> <p>In cases where initial stocking was low or where there were many failures side branch suppression and consequently tending will be delayed.</p>	<ul style="list-style-type: none"> • At tending stage the current stocking should be reduced by 40 to 50%. • A line of trees to be removed every 7 to 10 lines for access purposes is advised (not mandatory). • Marking of 300-400 PCTs (potential crop trees) per hectare at this point is advised (not mandatory). • At least 2 strong competitors around each candidate PCT should be removed • Wolves, diseased and cankered trees and weaker trees should also be included in the trees to be removed. • The trees to be removed should be marked. • Pruning may be necessary but should concentrate only on the removal of disproportionately large side branches and forks of candidate PCTs. • Establish thinning control plots in line with the above, prior to thinning operations (\approx one per homogenous unit, 20m by 20m) • Cut trees should be delimitbed and stacked. Alternatively they can be windrowed in a safe manner allowing free access through the site.
Thinning	12-15 m	<ul style="list-style-type: none"> • Identify using a ring of paint approximately 300 potential crop trees per hectare • Carry out a heavy crown thinning favouring selected trees removing 2 to 3 competitors to PCTs • Any live branches remaining (or dead branches that haven't fallen off) up to 6 metres on PCTs shall be removed by pruning. (or less than 6 metres where 6m of straight stem is not available) • Cut trees should be delimitbed, cut into lengths and stacked • Establish thinning control plots in line with the above, prior to thinning operations (\approx one per homogenous unit, 20m by 20m)

Table 2: Oak / Scots Pine or Oak/European Larch

Grant	Top Height	Operation

Tending	<p>*8-10 m (oak)</p> <p>*Nurse trees must be removed if they begin to dominate or interfere with the height and crown development of oak regardless of the height of the oak and the amount of trees to be removed.</p>	<p><u>Mixtures (initial stocking 1250 conifer, 3300 oak)</u></p> <ul style="list-style-type: none"> • Two conifer lines in every three to be taken out and other conifers should also be removed where they interfere with the height and crown development of the oak. • Ring barking of some trees may be appropriate in certain situations. • <i>Where present, oak wolves (i.e. trees in the upper canopy (dominant/co-dominants) with defective stems and large, rough lateral branches) should be removed.</i> • Retain sub dominants to reduce epicormic branching. • Artificial pruning may be required where form is poor and should concentrate only on the removal of disproportionately large side branches and forks. • Establish thinning control plots in line with the above, prior to thinning operations (≈ one per homogenous unit, 20m by 20m) <p><u>Pure Oak Crops (initial stocking 6600 trees/ ha)</u></p> <ul style="list-style-type: none"> • No tending required just 1st thinning. (see below) <p><u>Pure Crops. (initial stocking < 2500 trees /ha)</u></p> <ul style="list-style-type: none"> • No tending required just 1st thinning. (see below)
Thinning	10 – 12m (oak)	<p><u>Mixtures</u></p> <ul style="list-style-type: none"> • Remove the remaining conifers when they begin to dominate or interfere with the height and crown development of the oak. • Identify using a circle of paint approx 300 - 500 candidate PCTs. • Remove strong competitors to the candidate PCT (normally one or two competing co-dominant per PCT) • Remove wolves. • Ensure suppressed trees and any understorey trees near PCT candidates remain to limit the development of epicormic branching. • A very small proportion of Scots pine and larch may be left in situ where appropriate • Establish thinning control plots (≈ one per homogenous unit, 20m by 20m) <p><u>Pure Crops (initial stocking 6600/ha)</u></p> <ul style="list-style-type: none"> • Establish racks every 14-20 m. • Remove strong competitors to the candidate PCTs. (one or two competing co-dominant per potential final crop tree) • Remove oak wolves, • Establish thinning control plots in line with the above, prior to thinning operations (≈ one per homogenous unit, 20m by 20m) <p><u>Pure Crops (initial stocking ≈ 2500 trees /ha)</u></p> <ul style="list-style-type: none"> • First thinning in these crops will not take place until the crop has reached a top height 13-15 metres, estimated at 30-35 years of age) • Establish thinning control plots in line with the above, prior to thinning operations (≈ one per homogenous unit, 20m by 20m)

Table 3: Beech / Scots Pine or European Larch

Grant	Top Height M's	Operation
Tending	*7-8 *Nurse trees must be removed if they begin to dominate or interfere with the height and crown development of the beech regardless of the height of the beech and the amount of trees to be removed.	<p><u>Mixtures (initial stocking 4400 beech, 833 conifer).</u></p> <ul style="list-style-type: none"> • Two conifer lines in every three to be taken out and other conifers where they interfere with the height and crown development of beech. • Ring barking of trees may be appropriate in certain situations • Where present beech wolves (i.e. a vigorous poorly formed tree) should be removed. • Artificial pruning may be required where form is poor and should concentrate on the removal of disproportionately large side branches and forks • Establish thinning control plots in line with the above, prior to thinning operations (≈ one per homogenous unit, 20m by 20m) <p><u>Pure Crops (initial stocking 6600 trees/ ha)</u></p> <ul style="list-style-type: none"> • No tending required just 1st thinning. (see below). <p><u>Pure Crops (initial stocking < 2500 trees /ha)</u></p> <ul style="list-style-type: none"> • No tending required just 1st thinning. (see below).
Thinning	12-15	<p><u>Mixtures</u></p> <ul style="list-style-type: none"> • Remove all lines of conifers where beech trees have reached 10 metres in height or when they begin to dominate or interfere with the height and crown development of the beech. • Identify using a circle of white paint approx 400-500 potential final crop trees per hectare and carry out a crown thinning • On exposed sites 10% of conifers should be left in groups to provide shelter to remaining beech crop. Some nurse trees may be allowed to grow to full rotation. • Remove strong competitors to the potential final crop trees. (one or two competing co-dominant per potential final crop tree) • Remove wolves, crooked and badly forked stems within beech lines • Establish thinning control plots in line with the above, prior to thinning operations (≈ one per homogenous unit, 20m by 20m) <p><u>Pure Crops</u></p> <ul style="list-style-type: none"> • Establish racks every 14-20 m. • Remove strong competitors to the candidate PCTs . (one or two competing co-dominant per potential final crop tree) • Remove beech wolves • Establish thinning control plots in line with the above, prior to thinning operations (≈ one per homogenous unit, 20m by 20m)

Table 4: Thinning Schedule Cherry

Grant	Top Height M's	Silvicultural Operations
Tending	6-8	<ul style="list-style-type: none"> • Identify using a circle of white paint approx 200 potential final crop trees per hectare and carry out a crown thinning • Crowns of cherry should not be touching after thinning

		<ul style="list-style-type: none"> • Maintain 40% live crown • Remove diseased trees • Prune selected final crop trees before branch diameter is greater than 3 cm. Green pruning of cherry is necessary every four years on good sites up to a minimum height of 6 metres, where available. • Establish thinning control plots in line with the above, prior to thinning operations (\approx one per homogenous unit, 20m by 20m)
Thinning	15	<ul style="list-style-type: none"> • Continue to release 200 final crop trees from competitors

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