

Ground Preparation Practice Guide

Ground preparation is simply the forestry term for cultivation. Just as you would cultivate the soil for sowing crops to give them the best possible start, so you would also for trees. Ground preparation provides a raised site for young roots to establish in, free from any water-logging. The dark surface of the exposed soil warms up and improves root growth and helps control weeds, as

well as deterring pests such as voles. Given the long time-cycle of a forest crop, getting the cultivation right at the start is a crucial step, and should be seen as an investment in the success of your crop. In this guide we look at a number of different types of ground preparation, considering their advantages and disadvantages, as well as guide costs.

Method	Double mould-board plough (forestry plough)
Description	Ploughs up to 50cm deep, throwing furrows to both sides
Where to use	Damp upland areas, peaty soils
Advantages	<ul style="list-style-type: none"> • Quick and low cost • Provides good drainage • Brings mineral soil to surface • Can be carried out by normal agricultural tractor (with double wheels) • Ability to alter plant spacing with ease
Disadvantages	<ul style="list-style-type: none"> • Unsightly • Causes tree roots to grow along furrows, potentially causing stability issues in future • Can lead to erosion, especially on loose soils and/or steep slopes • High disturbance of soil carbon • Set distance between furrows (2m) • Relies on planters to get correct spacing between trees • Furrows can roll over on very thick vegetation
Guide cost	£220-£260/ha



Forestry plough.

Method	Single-furrow agricultural plough
Description	Ploughs up to 20cm deep, throwing small furrow to one side
Where to use	Lowland areas with mineral soils
Advantages	<ul style="list-style-type: none"> • Quick and very low cost • Can be carried out by normal agricultural tractor • Spacing between furrows controlled by tractor driver • Ability to alter plant spacing with ease
Disadvantage	<ul style="list-style-type: none"> • Can lead to erosion on steeper sites • Relies on planters to get correct spacing between trees
Guide cost	£100-£130/ha



Single-furrow agricultural plough.

Method	Hinge mounding
Description	Mound of earth turned over by an excavator and placed next to the hole
Where to use	Wet/damp areas, but where drainage is not essential
Advantages	<ul style="list-style-type: none"> • Highly flexible spacing • One mound per tree, making planting quick and easy • Avoids erosion issues • Low visual impact • Low soil carbon disturbance
Disadvantages	<ul style="list-style-type: none"> • Slow and expensive • Mounds may flip over, or fail to settle, in thick vegetation • Does not provide any drainage • Requires highly skilled operator • Mounds at different positions relative to hole, making pedestrian access difficult
Guide cost	£350-650/ha, depending on density and location



Hinge mound.

Method	Inverted mounding
Description	Mound of earth turned over by an excavator and placed back into the hole
Where to use	Drier areas where mineral soil needs loosened
Advantages	<ul style="list-style-type: none"> • Highly flexible spacing • One mound per tree, making planting quick and easy • Avoids erosion issues • Very low visual impact • Low soil carbon disturbance
Disadvantages	<ul style="list-style-type: none"> • Slow and expensive • Does not provide any drainage • Requires highly skilled operator
Guide cost	£350-650/ha, depending on density



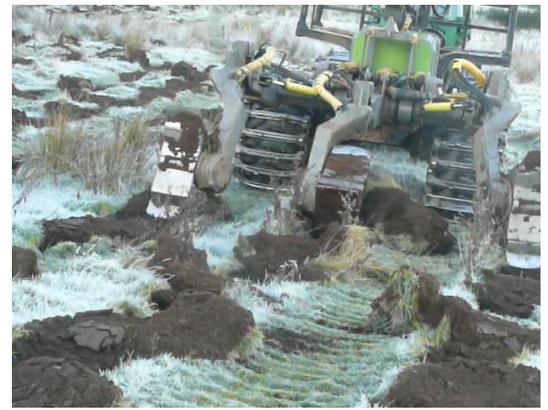
Inverted mound.

Method	Ditch mounding
Description	Excavation of open drain and spoil used to form mounds
Where to use	Primarily restock sites, also new planting where drainage is required
Advantages	<ul style="list-style-type: none"> • Highly flexible spacing • One mound per tree, making planting quick and easy • Good drainage • Low visual impact
Disadvantages	<ul style="list-style-type: none"> • Slow and expensive • Mounds may fail to settle in thick vegetation • Requires excavators to be fitted with additional protection for pipes and tracks if working in restock site • Requires highly skilled operator • Regularly spaced ditches can make ATV access difficult for maintenance
Guide cost	£550-750/ha, depending on density



Ditch mound.

Method	Continuous mounding
Description	Flips over mound of earth similar to hinge-mounding but carried out using purpose-built hydraulically-controlled spaded wheels
Where to use	Damp upland or lowland sites
Advantages	<ul style="list-style-type: none"> • Highly flexible spacing • One mound per tree, making planting quick and easy • Low visual impact • Quick and low cost • Mounds in-line, making pedestrian access easy
Disadvantages	<ul style="list-style-type: none"> • Mounds may fail to settle or fall back over in thick vegetation • Requires specialist equipment • Some machine options extremely heavy, limiting access according to ground conditions
Guide cost	£240-£280/ha



Continuous mound.

Method	Scarifying
Description	Toothed discs scrape vegetation off
Where to use	Upland freely-draining sites
Advantages	<ul style="list-style-type: none"> • Minimal soil disturbance • No erosion • Low visual impact • Quick and low cost • Highly flexible spacing and depth, scarify in strips or spots • Ability to alter plant spacing with ease • Low soil carbon disturbance
Disadvantages	<ul style="list-style-type: none"> • Little soil mixing • Requires specialist equipment
Guide cost	£240-£280/ha, depending on density



Scarifier.

Method	Screefing
Description	Vegetation scraped off manually using spade
Where to use	Small areas which machinery cannot access
Advantages	<ul style="list-style-type: none"> • Highly flexible spacing • One screef per tree • Low visual impact • Low soil carbon disturbance
Disadvantages	<ul style="list-style-type: none"> • Very slow and hard manual work • Does not provide drainage • Does not provide weed control
Guide cost	£220-500/ha, depending on density

Websites

www.ruralpayments.org/publicsite/futures/topics/all-schemes/forestry-grant-scheme/
www.farmingforabetterclimate.org
www.usewoodfuel.co.uk

Further information on events and publications on farm woodlands can be found at

www.fas.scot/topic/farm-woodlands/

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