

# The Life of a Tree Chapter 2: Forest

## OAK 130-150 years from planting to harvesting

### PLANT

The planting season normally runs from October to April with containerised trees being used early and late in the season. Over the last 5 years (based on information from the Confor Nursery Group) the average number of oak (*Quercus robur* and *petraea*) **planted annually in the UK has been 2.7m [1]**. The numbers being planted seem to be stable and although it is difficult to fully collate the figures only about 15-20% are being planted for objectives that include timber production with the remainder for objectives such as habitat creation and landscaping.

Oak as part of PAWS restoration or new woodland creation is usually planted in mixture with other broadleaves and woody shrubs following guidance such as **FC bulletin 112 Creating new Native Woodlands [2]**. This type of planting is often at irregular spacing with stocking densities of 800-1600 stems per ha.

When oak is planted with timber production as a primary objective, normal practice is to plant at a higher density such as 2500-3000 stems per ha often with a nurse conifer such as Norway spruce or Scots pine.

Oak are grown on a wide range of soils but if the primary objective is timber production the



best soils would be fertile loams and brown earths.

Appropriate provenance selection is important for both conservation and timber production objectives.

Site preparation prior to planting would largely depend on the type of ground being planted but would typically involve one of the following methods; scarification, mounding or chemical screefing.

### MAINTAIN

Because oak are vulnerable to a wide range of damaging agents protection of the young trees is vital. This would normally take the form of a combination of individual protection and fencing. The combination required would depend on the type of damaging agent involved eg. deer, rabbits etc.

As with all young trees growing oak produces a number of **challenges for the grower [3]**.

For the first 2-3 years after planting the young trees will need to be maintained to enable successful establishment. This would typically involve chemical spot weeding and the replacement of missing trees (beating-up).

As the young trees develop additional maintenance work is likely to be required. This would typically include tree shelter removal and pruning/respacing where the oak was originally planted at a higher density for timber production.

Early respacing is particularly important where the oak has been planted in mixtures to prevent domination by a more vigorous species



## DOUGLAS FIR 60-80 years from planting to harvesting

### PLANT

The young Douglas fir (DF) plants would be delivered from the nursery and planted during the period November to April avoiding periods of extreme cold weather and frost. A wide range of provenance choices are now available for DF and planning and consultation with the supplying nursery is vital.

The number of DF produced and planted in the UK has averaged **1.42m per year over the last 5 years [1]**. This figure is based on information collated from the Confor Nursery Group so is possibly an underestimate. The requirement for DF seems to be increasing, possibly due to the requirement to plant a more diverse range of conifers to comply with the **UK Forest Standard (UKFS) [2]** and the reduction in the quantity of pine and larch species being planted due to pests and diseases.

To comply with standards and regulations DF is being planted on sites that could grow spruce but it is a more demanding species in terms of soil fertility and does best on brown earths and podsols and will not tolerate waterlogging [2].

Whether being planted as part of new woodland creation or replanting DF does best with some form of cultivation preferably scarification or mounding and as timber production would normally be a primary objective the planting spacing should be 2500-2800 plants per ha.



### MAINTAIN

In most parts of the UK there is a very high deer population and **DF as a species is very susceptible to browsing damage [3]**. As individual tree protection is not appropriate on a large scale most DF plantations will need to be protected by means of deer/rabbit fencing. In some circumstances it is possible to establish DF without fencing but a high level of deer control would be required on a continual basis.

As with all young trees maintenance is necessary and due to the fertility of the sites being planted this could involve chemical weeding, hand weeding and beating up for the first 3-4 years.

On restock sites additional maintenance works such as weevil control may be required. If the initial stocking density of 2500-2800 stems per ha is maintained this should encourage enough competition for the trees to grow tall and straight although most DF thicket to pole stage stands contain a high number of poorer stems.

**Douglas fir restocking and, right, felled ready for despatch.**

Following the first chapter in the Life of a Tree – Nursery, we now move from nursery to Forest.

Certain themes recur several times, numbered in text:

1. Prediction of future markets
2. Governance and external certification
3. Challenges for growers
4. Profits and purpose of growing

## MANAGE/THIN

### 7-8 interventions

Where oak is planted for timber production whether pure or in mixture with other species there are likely to be 7-8 interventions during the 130-150 year rotation. The first intervention would typically be at age 20-25 followed by subsequent thinning operations every 10-15 years. This regime highlights the intensity of management required to grow oak to achieve its potential, which may also include high pruning of the best trees.

Oak trees face a number of **tree health problems [3]**. These include acute oak decline, oak mildew and the oak processionary moth. With the increasing prevalence of tree pests and disease in the UK the challenges facing the grower multiply.

As the oak crop matures any nurse species will largely be removed and when the oak starts to produce acorns it would be possible to collect them for the nursery.

Initially the products realised from the thinning operations would be predominantly firewood but as the crop matures and tree size increases products such as fencing and construction grade oak should be recoverable.

Where oak has been planted at low density for habitat creation the management intensity would probably be greatly reduced. Thinning may be required if another species is threatening to dominate the oak or if it is possible to harvest a product such as firewood.

## HARVEST/FELL

Where the oak has been grown for timber production the rotation length would be 130-150 years. At this stage the trees would be ready to fell and hopefully the products realised would include a high proportion of construction grade material as well as fencing and firewood **producing significant returns [4]**.

In all likelihood rather than adopt a clear-fell system the oak plantation is likely to be either selectively felled only removing a proportion of the trees and replanted where required or managed under a Low Impact Silvicultural System (LISS) involving group felling and replanting the clearings.



## MANAGE/THIN

### 4-5 interventions

As well as the objective of planting a more diverse range of conifers to protect against pests and diseases and to take account of climate change (ESC), DF is a species of conifer where a **premium can be expected for good quality large diameter logs [4]**. To achieve this premium for size, DF in the UK would need to be grown on rotations of 60-80 years depending on whether the sites were west (60) or east (80) coast.

To achieve the tree size required a series of thinning operations are necessary and these would normally begin at age 20. The thinning would initially focus on removing smaller or poorer quality trees to give larger and straighter trees more room to develop. The thinning cycle would be every 5-8 years and 4 to 5 thinning operations (interventions) would be required to achieve the objective of producing good quality large sawlogs at age 60-80 years.

As the DF crop matured the thinning cycles would increase in length and depending on the silvicultural system being employed the thinning intensity may vary.

In the past it was common for good quality stands of DF to be high pruned; this is now less common and most 'pruning' is now carried out by natural processes.

DF as a species is generally resistant to most insect pests and diseases but is moderately susceptible to conifer butt rot and Honey Fungus.

In the latter stages of the rotation seed could be collected from the DF to supply the nurseries.

## HARVEST/FELL

With the correct provenance, site fertility and with careful management and an appropriate thinning regime it should be possible to produce **good quality large DF sawlogs and attract a premium price [4]**.

Occasionally opportunities arise to market DF poles for specialist items such as ships masts but the usual markets for DF timber would be construction, fencing and palletwood.

Although DF can be managed under a clearfell and replant silvicultural system because it is a partial shade bearer it does lend itself to LISS such as group selection. Under the correct conditions and with appropriate protection it does produce good natural regeneration.

In summation DF is a species that could be more widely grown in the UK as part of species diversification rather than planting spruce and is capable of producing highly marketable products.

The tallest tree in the UK is thought to be a DF growing in Reelig Glen, Inverness.

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