

Growing Broadleaves for Quality Timber

Silviculture

This Guidance Note is one of a series summarising information presented at a seminar on “Growing Broadleaves for Quality Timber”, held in February 2010 as part of FC Scotland’s Timber Development Programme. These notes provide information on all the main aspects of growing quality broadleaved timber, from choice of planting stock through to timber marketing, together with relevant references and links to more detailed information.

This presentation, which was delivered by Gary Kerr (Forest Research), is available for download through the [seminar web page](#).

Introduction

Silviculture is the creation and manipulation of forests to achieve particular objectives. Forestry Commission Handbook 9 “Growing Broadleaves for Timber” ([Kerr and Evans, 1993](#)), provides a thorough account of all the main aspects of silviculture. The key points can be summarised as set out below.

Species Choice

Making the correct choice of species and seed origin dependent on site condition is crucial. The importance of correct choice of *seed origin* as well as species has become better appreciated in recent years as a result of research into the provenance of broadleaves, as explained in [Jason Hubert’s presentation](#).

Stocking

It is important to achieve a high initial stocking density. A minimum stocking density is currently considered to be 2500-3500 trees per hectare, with 5000 being ideal. On some sites high tree densities can be achieved by direct seeding and this is the subject of a [practice guide](#) ([Willoughby et al., 2004](#)).

Weed control

Effective weed control in at least the first three years of establishment is the key to good survival and growth. Herbicide is usually the most cost effective approach (see [Alan Harrison’s presentation](#) for details). One of the secondary benefits of the use of tree shelters is that they facilitate the application of herbicides by making the trees easier to locate and

protecting them from damage. In continuous cover forestry systems the canopy can be used to control the ground flora, leading to a reduced requirement for traditional weed control.

Protection

It is important to protect trees from mammal damage during establishment. Effective methods to control grey squirrels are required at vulnerable times and control of deer is vital. Deer damage is a function of both deer numbers and the amount of deer food available (Figure 1).

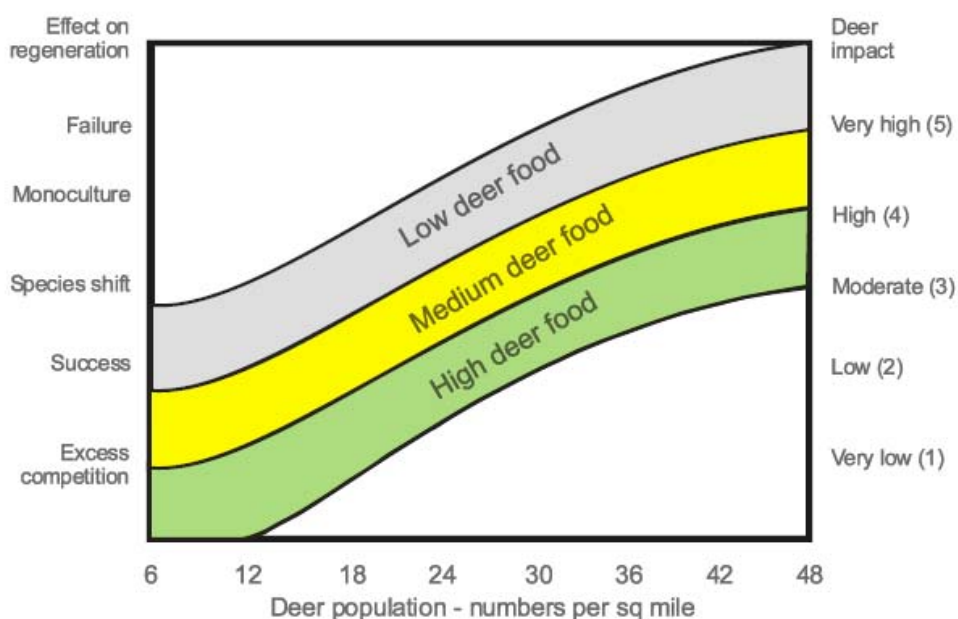


Figure 1: Influence of deer population and food availability on deer damage impact

Thinning

Different species need to be thinned according to their silvicultural characteristics with the primary aim of improving stand quality. Oak and beech should be thinned using a crown thinning approach. Other species should be thinned to promote 'free growth', once a clear, straight stem has been produced of at least 8 m. This means thinning to ensure that the crowns are effectively free of competition and equates to the following numbers of trees per hectare:

- Ash: 120-150
- Cherry: 140-160
- Sycamore: 140-170
- Sweet Chestnut: 100-190.

Free growth is feasible in broadleaves because growth rate has a relatively small effect on the physical and mechanical properties of broadleaved timber. Diffuse porous hardwoods such as birch, beech, sycamore and cherry can safely be grown under a free growth regime without any negative influences on timber quality. The balance between sapwood and heartwood can affect the value of some species, notably oak, although research in Britain has suggested that free growth thinning does not increase the sapwood area in oak (Kerr, 1996). Epicormics are a serious problem in oak that can be worsened by free growth, but arguably they are less detrimental than in the past due to the current market for 'character butts'.

References

- Kerr, G. 1996. The effect of heavy or "free-growth" thinning on oak (*Quercus petraea* and *Q. robur*). *Forestry* 69 (4) 303-317.
- Kerr, G. and Evans, J. 1993 *Growing Broadleaves for Timber*. Forestry Commission Handbook 9 HMSO London 95 pp.
- Willoughby, I., Jinks, R.L., Gosling, P.G., and Kerr, G. (2004). [Creating new broadleaved woodlands by direct seeding](#). Forestry Commission Practice Guide, 50pp.