



The Future Trees Trust Oak Improvement Programme

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What is the Future Trees Trust Oak Improvement Programme?

- Oak is one of seven species programmes -1997.
- The Future Trees Trust Oak Improvement Programme is dedicated to improve the productivity and quality of oak woodland in Ireland and UK.
- Conventional methods improvement – selected best stands (**seed stands**) and making individual selections within these stands (**plus-trees**). These are grafted - scion wood from these plus trees used to establish clonal (grafted) seed orchards.



FTT Approaches to Oak Improvement

– ‘Objectives’

- To secure, conserve and fully utilize key genetic resources of the oak forest resource Ireland/UK.
- To increase the volume of recoverable timber of oak woods for forest owner by implementing best genetic and silvicultural practices.
- Increase the value and utility of oak timber including supportive advice to the grower on best genetic resources available nationally and internationally.
- Prepare and adapt current oak resource for threat of developing future climate changes.



First oak plus-tree selections in Ireland

- ECLAIRE - EU Programme – 1990's: oak, ash, sycamore and cherry. This programme was only in Ireland, not in the UK.
- Approximately 100 oak plus-trees selected.
- Difficulty in grafting oak - mainly clonal (?).
- However some were successfully grafted – located - clone bank at Kilmacurragh.
- Possibility of further grafting.



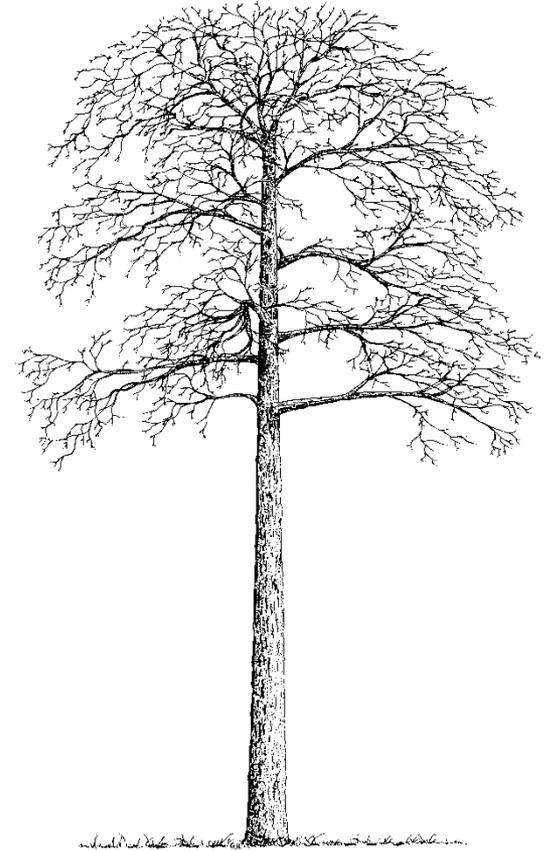
Oak plus-tree selection

- In 2000 Future Trees Trust (then BIHIP) commenced a plus-tree selection in UK, northern France, Netherlands and further selections (20?) in Ireland.
- However a poor mast years - acorn collection from these trees but only 61 trees represented.
- However resulted in eight seedling seed orchards (2003), including one at Rathluirc – 46 families/48 replications/total of 2,332 trees but only three Irish plus-trees included.



Desirable characteristics of potential oak plus tree.

- Show early vigour and rapid growth.
- Be well adapted to local conditions.
- Be free of pest and disease attack.
- Possess a straight stem with good apical dominance.
- Have good straight stem with circularity
- Posses fine regular flat branches.
- Desirable wood properties – vessel size of less than 160(microns)



Future Trees Trust – The Future

FTT wants to ensure that by 2050 all broadleaved trees in Great Britain and Ireland are grown from seed that has been improved by conventional selection and breeding to a “**tested**” or “**qualified**” level according to EU regulations, with the aim of increasing recoverable volumes of timber by up to 20% over current levels’



Future Trees Trust – Oak Programme – How can this be achieved?

- Initially about 250 plus-trees selected across Ireland, Great Britain, the Netherlands and northern France and Ireland including Northern Ireland.
- This number subsequently reduced to about 100/120 when wood properties were examined
- – it has been established that trees with large vessel size are more prone to shake which is a major and serious defect in oak wood.



Oak shake and vessel size

- A strong relationship exists between vessel size and shake.
- Original plus-trees checked for vessel size and those over a certain vessel size ($160 >$ microns) rejected – Original studies at Oxford Forestry Institute.
- Vessel size checks have recently been made in many of the Irish plus-trees previously unchecked.
- Vessel size work undertaken by the Wood Technology Department in the Civil Engineering Section in University College Galway.



BSO Oak - Rathluirc

- One of eight, others seven in UK.
- All planted in 2003.
- Irish orchard has 46 families.
- Replicated 48 times in a random scientific design.
- Contains a total of 2,208 individual trees.
- Almost one hectare (0.88) in extent.
- Continues to be monitored to provide information.



Current Issues and future Challenges for FTT Oak Group

- Flowering/acorn production – study ongoing in NI trials by the Agri-Food & Bioscience Institute in NI.
- Establishment of new clonal orchards in UK and Ireland – ten new orchards planned – sites required in Ireland.
- Discussion on the possibility of establishing linear seed stands in the future.
- Addressing effects of climate change – new suite of oak plus-trees? (possibly from central Europe/France).
- ‘By 2050 all broadleaved trees planted in Great Britain and Ireland are grown from improved seed’.



Linear Seed Stands in the Netherlands

Seed Stand at Ede de Klomp, NL.



Seed Stand at Nunspeet, NL.



Achievements of FTT Oak Group to-date

- Established eight seedling seed orchards (2003).
- Have selected an adequate number of oak plus trees to create clonal seed orchards in UK and Ireland – all undergone vessel size checks.
- Published ‘Oak: fine timber in 100 years’ – a new approach in France for growing high-quality oak in less than a century.
- Well advanced plans for to establish ten new clonal oak seed orchards in UK(6) and Ireland(4).



And to Conclude

The Future Trees Trust Oak Improvement Group would wish to sincerely thank the following:

Forest Sector Development/COFORD for their unstinting support throughout the entire project.

The following organisations who have provided sites and other support – Including **Teagasc**, The **National Botanical Gardens**, **Coillte** and the **Agri-Food & Bioscience Institute** in NI. Finally I want to thank **Wood Technology Division** at UCG for their work on oak vessel size assessment.



On behalf of the Future Trees Trust
Oak Improvement Group a '**Special
Thanks**' to all our supporters.

