



Oak grafted seed orchard project update report

March 2018

Oak rarely produces sufficient acorns to meet the market's demands and there is increasing concern over the use of imported acorns, not only because of maladaptation to British climate but also the increase in pests and diseases often associated with the import of planting stock.

The aim of this project is to create 10 grafted seed orchards (GSOs) for oak - five for each of the two species native to Great Britain and Ireland. Six are planned for Great Britain and four for Ireland (including two in Northern Ireland).

The GSOs planned by Future Trees Trust address this need for home grown acorns, with the added objective of producing planting stock of superior quality in terms of form and vigour, important traits for timber production. Such material is classed as *qualified* under the Forestry Commission's Forest Reproductive Material regulations.

For most species, for the production of GSOs, scion material or cuttings are usually shot out of the crown with a shotgun. However, grafting mature oak is notoriously difficult and our success rates have previously been low – typically 10 - 20%. We therefore decided to use climbers, which ensures that grafting material comes from the top of the crown (i.e. the youngest, most vigorous material) and is undamaged by shooting. With higher quality scion material, we expect greater grafting success. However, this work is costly and time consuming.

We started grafting plus trees – phenotypically superior trees based on form and vigour – in January 2016, collecting material from stock hedges that had previously been secured clonally. However, the majority of plus trees were still in situ in forest stands. In January 2017 and 2018 we employed a team of climbers from Oakleaf Forestry Services to climb some of our mature plus trees (Figure 1). This ensures that we obtain the highest quality scion material possible, to maximise successful grafting. Table 1 shows the number of trees grafted from 1) stock hedges and 2) from in situ plus trees and the success rate. As stock hedges have already been rejuvenated, the success rate is much higher than for mature plus trees. These trees are all from the Forest of Dean and surrounding counties. Many plus trees across the country remain unclimbed at present, but will be addressed over the next 3 – 5 years.

Table 1. Number of accessions from which scion material was collected from hedge material or mature plus trees, number of grafts (ramets) made and the success rate of grafting.

	Jan 2016	Jan 2017	Jan 2018
No accessions collected from rejuvenated hedges	37	37	None
No ramets grafted	515	Not recorded	None
Success rate	346 (67%)	548	None
No accession collected from mature plus trees using climbers	None	27	21
No ramets grafted		Not recorded	495
Success rate		141	Awaiting data

Successfully grafted trees have been potted up and are being grown on for a year at Forestart Ltd in Shropshire. We will commence planting some GSOs in January 2019.

In addition to the ten GSOs planned, we are also creating clonal archives of all oak plus trees at the JKF Arboretum in Ireland and on a private estate in Kent (Figure 2). At archive sites, three ramets of each accession are planted in rows for conservation purposes, but also to provide a readily available stock of grafting material for future needs.

These archive sites are planted as plus trees are grafted, and will take several years to complete.



Figure 1. Climbing mature plus trees.



Figure 2. Planting the clonal archive, Kent. January 2017

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