

# BIRCH

## Selection and improvement of Irish birch and alder

### PROJECT TEAM

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### COMPLETION DATE

December 2008

### OBJECTIVES

The overall objective is to provide improved planting stock of native tree species, given the increase in their use in recent years. The project continues the native birch improvement that began in 1998, with the addition in 2005 of work on alder (*Alnus glutinosa*).

Specific objectives of the current phase of work include:

- testing of the genetic diversity of Irish birch, with a view to selecting lines suitable for afforestation, by assessment of established field trials for productivity and form;
- selection of new superior birch phenotypes, with emphasis on *Betula pendula*, for inclusion in the improvement programme;

- identification of superior stands of Irish birch for registration as seed stands;
- selection of superior alder phenotypes, with a target of 200 trees in total;
- development of an alder clonal genebank to conserve the collected material;
- initiation of alder progeny trials to test the progeny of the selected plus-trees.

### PROGRESS

#### Birch

Three birch breeding seedling orchards were established in 2001. Height and diameter were assessed at planting and after one, two, four and six growing seasons. Stem quality was measured, using a qualitative scale, after four and six growing seasons. During 2006/07 at the Castletown site both birch species had an annual height increment of about 0.87 m/yr. At Ballyredmond annual height increment was 0.80 and 0.78 m/yr for *B. pendula* and *B. pubescens*, respectively. Results indicate that there are differences in performance between the different groups: species/provenance/progeny. For example, Figure 1 demonstrates height variation among nineteen *B. pendula* provenances. New individuals have been earmarked for inclusion in the programme but *B. pendula* plus trees are scarce.

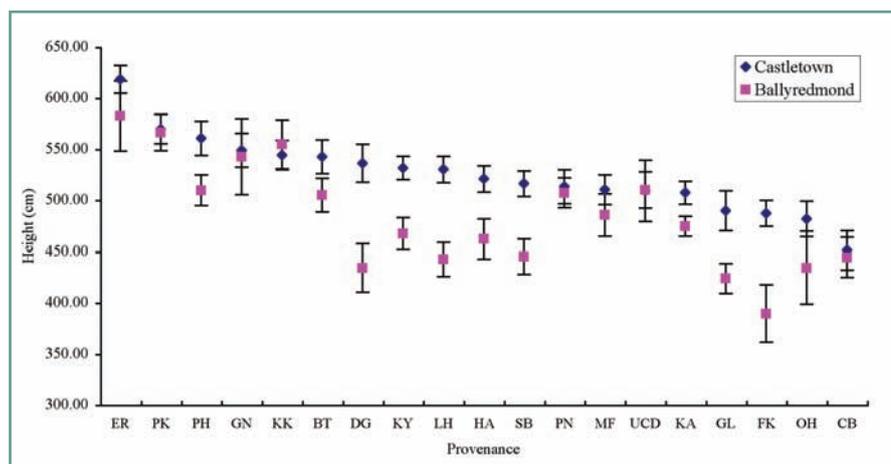


Figure 1: The mean height (cm  $\pm$  se) of 19 *B. pendula* provenances after six years growth at two sites (Castletown and Ballyredmond).



Figure 2: Alder seedlings from selected plus trees at Teagasc, Kinsealy, Co Dublin.

### *Alder*

Seed collected from alder plus trees in 2006 was germinated and grown-on for the establishment of progeny trials in 2008. About 70 new alder plus trees have been identified to add to 88 collected in 2006. Grafts of 73 of the original 88 are now available to initiate a clonal genebank to conserve collected material.

### **ACTIVITIES PLANNED**

The best trees from the best families in the birch trials will be grafted to establish a birch seed orchard in each species. Grafts from the newly located birch plus trees will be added to the programme. Growth and quality will be assessed in the birch trials.

Three to four alder progeny trials will be established early in 2008. Grafts of newly selected alder will increase the genetic base of the improvement programme in the species and provide more material for the clonal genebank.

### **OUTPUTS**

The two birch sites were visited by the Growing Broadleaves Review Group and a short report was prepared on each of the sites.