

# QUALIBROAD

## Improving the uniformity and quality of broadleaf planting stock

### PROJECT TEAM

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December 2008

### OBJECTIVES

The overall aim is to improve seed germination, plant growth and planting stock quality in important broadleaf species, with the objectives:

- to develop pretreatments and storage methods to improved seed germination;
- to assess sowing date, seedbed covers (mulches, cloches, windbreaks), mini-plug transplanting and fertiliser amendments on seedling growth and quality.

### PROGRESS

Research on oak acorns continued in 2007. The effect of freezing stress and moisture content (MC) on acorn viability was assessed in one study. In another study, the effect of drying and soaking treatment on seedling emergence and plant quality was assessed in the nursery. The results confirmed that the yield and quality of seedlings increased in beds sown with acorns that received this new pretreatment, compared with beds sown with acorns given the standard (dried only) treatment.

Work on ash involved experiments to evaluate the effects of priming, freezing and chilling pretreatments on laboratory germination. Ash seeds have a complex dormancy mechanism, requiring a warm phase, followed by a cold phase to break dormancy. Ash seeds responded

better to warm phase treatments than to chilling, suggesting that the warm phase is more critical in dormancy development and release. The results also suggest that a longer warm phase may reduce the sensitivity of the seeds to post-germination temperatures.

Data from both the oak and the ash experiments are being analysed.

### ACTIVITIES PLANNED

Research on ash and oak seed will be completed by mid-2008. Research on rowan (*Sorbus aucuparia*) and spindle tree (*Euonymus europaeus*) seed will commence in 2008. New field experiments are planned to assess the potential for using a miniplug system for transplanting alder seedlings, with the main aim of increasing the yield of planting stock from nursery beds. Miniplug seedlings will be grown in Sweden from seeds supplied from Ireland.

### OUTPUTS

De Atrip, N. and O'Reilly, C. 2007. Effect of seed coverings and seed pretreatments on the germination response of *Alnus glutinosa* and *Betula pubescens* seeds. *European Journal Forest Research* 126: 271-278.

De Atrip, N. and O'Reilly, C. 2007. Germination response of alder and birch seeds to applied gibberellic acid and priming treatments in combination with chilling. *Annals Forest Science* 64: 385-394.

O'Reilly, C. and De Atrip, N. 2007. Seed moisture content during chilling and heat stress effects after chilling on the germination of common alder and downy birch seeds. *Silva Fennica* 41: 235-246.

De Atrip, N., O'Reilly, C. and Bannon, F. 2007. Target seed moisture content, chilling and priming pretreatments influence germination temperature response in *Alnus glutinosa* and *Betula pubescens*. *Scandinavian Journal Forest Research* 22: 273-279.