

### **Broadleaved Forest in Norway**

Forest and other wooded land cover 39 percent of the land area in Norway, of that area broadleaved forest amounts to 17% (20.000km<sup>2</sup>). However, only small quanta of broadleaved timber are harvested each year. *Alnus glutinosa*, *Betula pendula* and *Betula pendula* f. *carelica* are the main species established for production of quality timber, but also *Prunus avium* is planted on a small scale. The Norwegian Forest Seed Center has a seed orchard for *Betula*, and in spring 2006 an *Alnus* seed orchard will be established to ensure the delivery of high quality seed.

In order to gain experience on seedling quality and regeneration of broadleaved species by planting, a 4-year industry supported research project at The Norwegian Institute for Agricultural and Environmental Research was running from 2002 to 2005. Experimental plots were established in the "Spind Hardwood Park". This is a research and demonstration area for broadleaved forest trees in the boreonemoral zone in the south of Norway. The focus in the project was seedling quality of *A. glutinosa*, *B. pendula* and *B. pendula* f. *carelica* intended for production of high value timber. The project will be followed further, with focus on silviculture for production of quality timber, and also protection against roe deer and rodents will be studied.

However, the majority of the broadleaved forests in Norway are being established using natural regeneration. Large areas are not treated with precommercial thinning, which has resulted in considerable areas where the stands are too dense for quality production. The Norwegian University of Life Sciences established 30 experimental plots in 1997-98 in order to examine the growth reaction of late thinning in dense stands (cutting class II & III) of several broadleaved species. The plots were remeasured in 2003-04 together with a new thinning. Growth and quality parameters were then recorded and selected trees were cut for detailed analysis of the growth reaction after thinning.