

Quality Control System for Regeneration Activities in Private Forests in Finland

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The annual forest regeneration area in Finland is about 185 000 ha. Of this area, planting Norway spruce (*Picea abies* L. Karst) and Scots pine (*Pinus sylvestris* L.) cover about 50%, direct seeding (mainly Scots pine) about 20% and the rest of the area is naturally regenerated (mainly Scots pine). According to the forest law, the forest owner is responsible for regeneration activities. Local forestry associations (covering one or several municipalities in area) and its professionals act only as advisers, but can also offer a full service of regeneration activities to the forest owner.

During the last five years, quality work methods have been introduced in practical forest regeneration work in 30 different forestry associations in southern Finland. According to the main principle of quality work **Plan–Do–Check–Act** (PDCA –cycle), the targets of good regeneration results based on wood production facilities in future were decided first. Then the current regeneration results were measured through a full-cover ground survey in young, 3-5 years old seedling stands. Inventory results in different regeneration chains were compared to the targets and analysed in order to find out the effects of different factors (site type, soil type, soil treatment, seedling type etc.) on the quality of seedling stands achieved.

In order to further develop the forest regeneration activities, the basic processes and factors behind them in different regeneration chains were analysed on forest association level. Using this kind of approach local professionals were obliged to consider the most critical points in the regeneration chain and to find the most important 'bottlenecks' to improve their own working habits. The results and manners of nearby associations were compared in order to find out the 'best practice' in a certain regeneration chain and to deliver it also to other users.

The quality work requires a new checkup of the regeneration results after 3-5 years, before a new cycle of development starts again. The efficiency of 'quality control' and the effect of feedback from own regeneration results will be evaluated in the coming years.

The variation in regeneration results among the forest associations was larger than expected. In planting (spruce or pine), direct seeding (pine) or natural regeneration (pine), the 'best' forest associations have reached the level of 70-90% of good regeneration results, but, at the same time, in some regions the corresponding level was 30-50%. For instance, in spruce planting the soil preparation methods and planting density were the reasons behind these differences but there were also some partly unknown factors related to the working manners etc. of the local forest association professionals.