

## **With such good Sitka spruce family forestry in the UK .... Clonal forestry? Why bother?**

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### **Abstract**

Cutting production in the form of half-sibling family forestry has now been practised in Great Britain for well over 10-years. Around 8 million rooted cuttings are planted annually in either state or private forests combined. These cuttings come from one main state nursery (approx. 4.5 million) and around three other smaller privately owned nurseries (approx. 3.5 million). The seed for these cuttings are derived from controlled pollinations carried out by Forest Research (FR) and then sold on. Initially, female flowers from 20 different genotypes would be pollinated with a polymix from 20 or so unrelated fathers. Seed would be bulked across half-sibling families so that the pedigree of each individual seed was lost. The predicted gain quoted was the mean breeding value of all the component parents based on replicated half-sibling progeny trials. This whole process is considered a success story in Britain. Managers know the gains are about 10-years ahead of seed orchards offering equivalent predicted gains and they have been prepared to pay a premium for the planting stock.

Since 2005 there has been an introduction of tested full-sibling families. Again these are produced following controlled pollination by FR and then sold on to nurseries. The full-sib families have proved popular due to perceived improvements in quality traits such as stem straightness and branching but also due to increased crop uniformity relative to half-sib mixes or seed orchard stock.

The technology employed to derive the rooted cuttings is low-tech, and it is tried and tested. No special equipment is required; staff can have a low-skill base. The planting stock is good quality and costs around x 1.5 to x 2.0 that of bare-rooted seedlings from a tested seed orchard.

The next-best level of improvement is deployment of tested clones. This implies investment in somatic embryogenesis and cryopreservation. There will be a need for a facility incorporating expensive specialist equipment and highly trained staff. There will have to be a delay of 10 years or so whilst clonal testing is carried out. Will the ultimate planting stock be cost effective over the 30 to 40 year rotations experienced in Britain? Would the demand to plant such stock be sufficient given the other objectives of sustainable, multi-purpose, certificated forestry?

This paper seeks to investigate the benefits of family forestry compared to clonal forestry and asks the question: Clonal forestry? Why bother?