## **Experiments on Lodgepole Pine Seed Origins in Britain**

By Roger Lines. 1996. Forestry Commission Technical Paper 10. Forestry Commission, Edinburgh. ISBN 0 85538 336 4. 141 pages.

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Unlike many publications reviewed in *Irish Forestry*, which often cover rather general subjects such as the environment, forest policy or biographies of botanists and foresters, this is a highly specialised book. It discusses a single species, lodgepole pine (*Pinus contorta* Dougl.), and although the title suggests it concentrates only on seed origin of that species, this is not entirely true. Nevertheless, as lodgepole pine has been, and continues to be, an important commercial species on this island, the publication merits review.

Lodgepole pine covers over 26 million ha in its native range from Alaska to California and at elevations from sea level to 3,900 m. As a result, a very wide range of 'varieties' (coastal versus interior as well as north verses south) are available. This has led to some confusion as to which is the 'best' seed origin for use in this country. This is further complicated by the fact that the species grows on a wide range of sites. Although originally thought to serve mainly as a nurse species, in recent years it has also been grown as a pure crop.

Although now retired for several years, Dr Roger Lines was previously in charge of species and provenance research in the Forestry Commission. This publication represents the culmination of his work with the species, which began in the mid 1950s. He explains the reasons for this book, "Many mistakes have been made in European forestry (not least in Britain) due to a lack of knowledge of the inherent properties of the very varied seed origins that were commercially available. In addition, different origins of lodgepole pine have such different silvicultural properties that they can almost be considered as separate species. Each must be used in its correct role in silviculture, whether it is a fast-growing pioneer, or as a bushy tree in mixture with spruce. Incorrect choice of origin by the forest manager for its role, site type and climatic province can lead to heavy financial loss. He also needs to know which origins can be used as substitutes should the most desirable ones not be available." This publication provides a summary of the effect of seed source on the performance of lodgepole pine in Britain, based on results from over 90 field trials established between 1928 and 1973.

Although the title and introduction stress the importance of seed origin, this publication contains much more, indeed perhaps more than most readers may care to know about the species. Chapters cover such subjects as species distribution and variation, seed zones, introduction and use in Britain, seed origin experiments, seed characteristics, nursery performance, relationship of root/shoot ratios and instability, growth habit, field trial results, use in mixture with Sitka spruce (*Picea sitchensis* (Bong.) Carr.), susceptibility to wind and snow, morphology (stem form, crown form, bark and cone characteristics) and finally,

a discussion on the choice of seed origin including some conclusions and recommendations.

Experiments on Lodgepole Pine Seed Origins in Britain is therefore more like a complete monograph on the species than a simple recommendation as to which seed origins should be used. Indeed, the key question in most readers' minds regarding the best seed origin of lodgepole pine, is left to Chapter 18, which begins on page 123. Nevertheless, the results presented confirm the results of 'sister trials' of most of the same origins in this country. The answer to the 'best' origin question depends both in the role (nurse or pure crop) and the site (exposed infertile or sheltered mineral soil). For mixtures, Alaskan or Queen Charlotte origins are best. For pure crops on exposed infertile sites, Queen Charlotte or Vancouver Island origins are recommended. On less exposed mineral soils, the lower Skeena River origins are best. Detailed information on the performance of 13 different origins of lodgepole in Britain is presented on a 1-page summary table on page 125. Results from Irish trials confirm these recommendations but also provide several other options. Firstly, the inter-provenance hybrids (a hybrid to combine the vigour of the south coastal origins with the straight stem of the north coastal origins), which are mentioned only in the last two sentences of this publication, can be planted in pure crops on both exposed and sheltered sites. Additionally, genetically improved south coastal material produced in seed orchards can be used successfully in sheltered fertile sites. Therefore, there is no one single 'best' seed source of lodgepole pine, which perhaps explains why it has taken so long to get the answer.

Now having given away the main point of the book, why should you read it? This reviewer must admit that *Experiments on Lodgepole Pine Seed Origins in Britain* is not the type of book that will find its way onto the bookshelves of most practising foresters, except those few who have a strong interest in the species. Nor is it the type of publication that most people will read from cover to cover. It will, however, serve as a reference book both on the best seed origins and the species as a whole. If you have a question about lodgepole pine, look here first and you'll probably find the answer.