

Newton 9 P52 – Seed orchard for the production of Hybrid larch seed

In 1948 when the Genetics Section was formed at the Forestry Commission Research Station at Alice Holt near Farnham, most of the early procedures for breeding forest trees had been devised in Denmark and Sweden. The Danes led by the late Dr Carl Syrach Larsen had established a small orchard of grafted clones of Japanese and European larches to produce seed of first generation Hybrid larch at Humleback north of Copenhagen so we knew that the seed orchard idea was sound and practical but needed development to meet the conditions in Britain.

In Scotland seed had been collected from the well known European and Japanese larch trees at Dunkeld in Perthshire. Hybrid larches had appeared among the seedlings raised in nurseries and when these were planted they grew satisfactorily and also appeared to be resistant to the larch canker that could be troublesome in certain origins of European larch. In 1931 and later Mr J Scrymgeour-Wedderburn had planted mixtures of European and Hybrid larch at wide spacing on his Birkhill Estate near Newport-on-Tay to produce commercial quantities of "hybrid" seed. The late Dr E V Laing at Aberdeen University had done work on the flowering and controlled pollination of the larches and was believed to have produced a few Hybrid larch plants. So in the years 1948 to 1950 the Genetics Section began to develop a seed orchard and following the established practice in Denmark my colleagues and I began by selecting plus trees as potential parents. These came from Dunkeld Estate (EL 6 and JL 2, 3, 8, 10 and 12), Dalbeattie forest (JL 40, 41 and 42), Glamis Estate (EL 141 and JL 20, 21), Montimer forest in Shropshire (JL 50 and 52) and Tintern forest in Monmouthshire (EL 120). Scions and cones (derived from open pollination) were collected during 1949 and 1950 and the scions were grafted on the Japanese larch seedlings and transplants on the Genetics nursery at Alice Holt and also at Newton nursery, Edinburgh and Grizedale in Lancashire. The plants of the 3 European larch and 12 Japanese larch clones were taken by road to the site reserved for the seed orchard at Newton nursery during the period 1951 to 1953. This spread in planting dates was caused by an accident on the Great North Road that damaged some plants and muddled the labels of others; all the lost plants had to be replaced by further grafting).

The clones at Newton 9 P52 were laid out at wide spacing in a pattern placing each of them in proximity to the others to aid natural cross pollination, but it later emerged from the observations of A F Mitchell (1958) that the flowering of the 2 species was not as closely synchronised as was hoped. The first flowering occurred in spring 1956 and this was used for controlled pollination to produce progenies for testing in the forest. The seeds from 115 crosses and 19 selfed lines were sown in 1957 and in 1959 planting of the first large scale progeny test was done at Clanna in the Forest of Dean on a very good site for larch (see Samuel, John and Lee 2000).

The Genetics Section was still in a steep learning curve and progeny testing depended on a good supply of seed from each parental combination. This was steadily improved as more skilled foresters were available, the management of seed orchards was improved and the planting of clone banks developed. (This latter technique can readily be seen at Newton nursery). See also the publication by Samuel, John and Lee 2000.

The establishment of the seed orchard and planting of progeny of first generation Hybrid larch took almost 10 years. As the progeny testing developed one of the controlled crosses made at Newton 9 P52 that combined European larch 6 from Dunkeld and Japanese larch 42 from Dalbeattie provided a measure of the standard required by new high performing hybrid combinations (Samuel, John and Lee 2000).

So full marks for all those who learned and worked the hard way in 1948.

References

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