LARSEN'S OWN -- A SPECTACULAR HYBRID LARCH

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The hybrid larches are among our most convincing examples of the value of interspecific crossings among conifers. Almost without exception, those that we have seen here in the Northeast are the result of open pollination, where the mother tree is known but where the identity of the pollen parent is no better than an educated guess. While we have made substantial progress in cultivating and observing these hybrids, there is still much to be learned about their genetic behavior and how to get even better trees in the forest.

Figure 1.--LARSEN'S OWN.

The hybrid swarm with which most of us are familiar is the Dunkeld larch, (Larix X eurolepis), which originated as a natural cross between European male parents and a group of Japanese mother trees at Dunkeld, in Scotland. Seedlings grown from bulk collections from these mother trees were segregated by the Scottish foresters on the basis of size and color and those appraised to be hybrids - probably including some big, pure Japanese - were set out in separate plantations. These F1 progenies were impressive and they proved able to transmit their vigor to succeeding generations, at least as far as the fourth.

We know that the reciprocal - Japanese onto European - happens naturally, too, and that the offsprings can be exceptionally vigorous.

All the Dunkeld larches, as we know them now, show hybrid vigor but they are genetically so mixed that the ancestry is always open to question. For reasons of pure science, we need to go back to working with F_1's.

In my own work with larches at Cooxrox Forest, the first hybrid planting stock available was of E. W. Littlefield's Seed Lot E-207, "collected from its original source in Perthshire in the autumn of 1933, from second generation hybrid larch." Since then, I have had other lots: two from Scottish origins of unknown generations and many more collected from my own trees and mostly open-pollinated progeny of certain outstanding trees of Seedlot E-207. Of course, these home-collected seed have more specific and more reliable ancestral data than does purchased seed but always, although we may know the female parent, the source of the pollen is speculative. The only remedy for this would be to hand pollinate!

LARSEN'S OWN, the subject of this report, is not only a fine tree but one on which I have good records of origin. Its mother is the well-known and much used "V.44" of the Tinghus Plantation on the Grib State Forest in North Zealand, Denmark. Opperman (1922) says that this Tinghus stand was established by sowing in 1777, with seed from the Mittlewald, in the Tyrol. The sowing was done under the supervision of C. C. Gram, a disciple of that famous forester, Johan Georg von Langen. It appears that,'in his work in Germany, Denmark, and Norway, von Langen consistently used Mittlewald seed, either direct from the Tyrol or from plantations of that origin established in the Harz Mountains. It seems reasonable to conclude that he considered this source the best available.

In 1946-48, H. Barner in Denmark established a European X Japanese larch seed orchard (F.H.201) where "V.44" Tinghus larch was the only mother clone on which seed was collected. This tree has been much used by Dr. Syrach Larsen, who rates it as the best specimen of European larch in Denmark.

The pollen parent of LARSEN'S OWN is a Japanese larch - "V.975" - from the Hadese Forest on the private estate, Gisselfeld, in middle Zealand. This, too, is one of Dr. Larsen's selections.

Back in 1952, Dr. Larsen very kindly sent me the seed from one hand-pollinated cone of the cross, Japanese larch "V.975" onto European larch "V.44." (This is the reciprocal of the usual "Dunkeld" larch.) The package label read "S.2250. Larix decidua X leptolepis. Controlled cross between two individuals, 30 grams of uncleaned seed." This sample went immediately to the Saratoga Nursery, where we sowed the whole of it, just as it came. The yield was disappointing - only two seedlings survived to planting size. In the spring of 1954, as bare-rooted 2-0 seedlings, these were set out at Cooxrox Forest. The site was on a hilltop fully exposed to the prevailing west wind, just inside the fence of the Goodrich Family Burying Ground, where I figured they would be safe from hazards such as the mowing maching cutting hay outside the fence. But I did not reckon well with one of the wildlife factors. The ruffed grouse found the dug-up spots and began using one as a dusting bath - and then there was only one little larch tree!

But that remaining one grew vigorously. In spite of the two dry seasons and the usual competition from grass, brambles, and light brush, the tree was just a little less than seven feet tall when five years planted. The next season was quite dry and very hot, but seemed to suit LARSEN'S OWN very well, as it put on a leader of 51½ inches. In 1965,

we showed this tree to the 13th NEFTIC. At that time it was 6.2 inches by 32 feet at 12 years, in spite of a tip injury. In the fall of 1971, I pruned the tree to twelve feet, which might well have slowed the breast-high diameter growth, but apparently did not, A little while ago, somewhat short of the end of its twentieth season planted, the tree measured 12.2 inches X 61 feet, a worthy specimen in any man's forest! The form is almost letter perfect, with a straight, upright, evenly-tapered stem and a compact crown of slender, ascending branches. As viewed against a bright winter sky, the twigs are light-colored and fine, like some races of European larch. It demonstrates that good breeding can indeed produce outstanding offsprings!

However, I have one complaint about LARSEN'S OWN. So far as I can find, it has borne few cones and these were too scattered and too far up to be hand-harvested, or even to interest the squirrels. Further evidence of the consistently scanty production is the absence of a midden heap at the base.

Never having been able to spot a female flower, I assume that they are light-colored -- certainly, they are not the bright crimson of some Europeans. Production of male flowers is consistently heavy. Three cones from the 1972 crop are 14 inches long; one whole one has 28 seed-bearing scales, which are straight and slightly truncated.

LARSEN'S OWN tends to strengthen at least four of my long-held ideas concerning hybrid larch:

1. Certainly, this F1 tree is very vigorous, especially good in volume growth. This is a subjective judgment but is based on long experience with larch on this site.

2. In crown form and branching, in twig color and in cone shape and size, it strongly resembles its female parent. This reinforces my belief that, as a practical matter, we can collect open-pollinated seed from outstanding hybrid larch trees with reasonable assurance of getting superior progeny.

3. The tendency to prolific fruiting, exhibited by "V.44" and by certain of my own larches, is a character that <u>may</u> not be strongly inherited. Other groups of Cooxrox Forest hybrids have shown great variation among siblings/half-sibs.

4. Most important of all, from the forester's viewpoint, the hybrid larches can develop into magnificent trees and produce large volumes of valuable wood on ordinary forest sites, with minimum silvicultural care.

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