

THE SEED MOVEMENT PROBLEM
IN THE DOUGLAS FIR REGION

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Why is there a problem?

First, let us pose the question, why is there a problem? An outsider might think that there should be no problem of forest tree seed movement in the Douglas fir region. After all, it has been widely known for some time that Douglas fir, like other far-ranging species, is composed of many strains; and that the local strain or source, with only rare exceptions, is the one that will do best under the local conditions. Why, then, would a forester be tempted to use other than this local strain for reforestation?

The generalized answer is simple enough and well known to most of you - local seed in sufficient quantities frequently is not available. Public agencies and private companies alike generally seek a local seed source. However, when the local seed is not available it is easy, and probably justifiable, to accept seed from a similar provenance before the growth of brush makes costly site preparation necessary. In response to a recent questionnaire, private companies invariably indicated a preference for local seed. However, they also freely admitted that reserves often were depleted and that seed from what was thought to be a suitable provenance was used. Sometimes this introduced strain was from considerable distance, though an attempt was made to match source and planting site as to elevation and climate.

It appears, then, that reason number one for the existence of the seed-movement problem is the lack of available seed from the proper source. As anybody knows, who is sitting on a nest of seed orchards with the hope that something will soon hatch, Douglas fir can be very erratic and infrequent in the production of cones. "Flowering", when present, is at a time of year when weather hazards are great, such as the late freezes of this past spring. Quite commonly, an otherwise good cone crop is lost to any one or more of the many insect hordes that find Douglas fir cones to their liking.

Reason number two is the urgency for immediate reforestation due to the capability of high site lands in this region to grow a dense cover of brush as fast or faster than Douglas fir. This needs little elaboration, since it is obvious in many areas that the new stand must be established within a short time following logging if an expensive brush control program is to be avoided.

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My reason number three for the existence of the problem is the lack of sufficient knowledge of the adaptability of other sources to the local situation. As stated earlier, most agencies appear to be conscious of local source superiority - but how far afield can they go when the local seed is not to be had? Some guide lines have been established with the realization that they may not be restrictive enough, and that some ecotypes may occur within a seed-collection zone.

Under most systems in use, a seed-collection zone is generally quite large and delineated by major geographic features such as mountain divides and broad valley's, as well as elevation zones. Classification schemes in common use divide western Oregon and Washington into from 9 to 32 geographical areas, with 500-foot elevation zones usually being recognized within these. Seed collection zones tend to be long north and south, with the maximum under one system of about 150 miles north and south by 75 miles east and west. One rule-of thumb states that Douglas fir seed should not be moved more than 100 miles north or 100 miles south of its origin; and that there should not be more than 2 F difference in mean annual temperature between point of origin and planting site. With an increase in provenance studies, it wouldn't be surprising to learn that some of these schemes and rules are too liberal.

In the past, and to some lesser extent today, it was thought that seed could safely be moved from north to south, from high elevation to low, and from the interior towards the coast. The only criterion of success in most cases was survival. There have been instances involving the movement of south Olympic seed to northern California, and Vancouver Island seed to southwestern Oregon - both movements of about 400 airline miles. Another being contemplated would involve a movement of over 100 airline miles from east to west across major water and mountain barriers.

In the past there have been cases of extreme disregard for provenance differences within Douglas fir; even to the extent of reforestation in western Oregon and Washington with interior British Columbia and Rocky Mountain forms of the species. A trial recently concluded by the Industrial Forestry Association at Nisqually, Washington, showed that after seven years the local strain of Douglas fir was 22 times as tall as Rocky Mountain Douglas fir, whereas the interior British Columbia form was intermediate.

A fourth reason for the seed-movement problem is the lack of controls on seed movement. Much of the cone buying is done on the open market with little more than the picker's word as to origin. Though the Rocky Mountain form of Douglas fir cones supposedly can be separated from the coast-type, separation within the coast-type on cone or seed characteristics has not been possible to date.

Magnitude of the problem.

This is difficult to answer in other than broad terms, such as "considerable". The last good seed year was 1959, and most public agencies

and private companies have found it necessary in recent years to use some seed from rather distant sources. To what extent seed is used on the wrong area is further confounded by the fact that most agencies and companies have not had rigid controls on their cone buying.

When we think in terms of the Douglas fir region of Oregon and Washington, we are considering 26 million acres of commercial forest. The number of acres on which artificial reforestation is attempted annually runs well into the 6-figure bracket. A small portion of this when not seeded or planted to the best-adapted strain can be of considerable consequence when one thinks of the years that the land will be occupied by a crop of poor to mediocre production. This does not take into consideration the possibilities of complete failures or extended rotations.

Outlook for the future.

The general post-war trend has been for an increase in artificial reforestation. Further pressure has been brought to bear on seed reserves because of the increase use of aerial seeding. These facts tend to make it easier to ignore rules of safe practice. On the other hand, agencies are more aware of known and suspected provenance differences and may make greater effort to avoid the more gross mistakes of the past. Therefore, it would seem that movement of seed considerable distances may decrease in practice; while minor movements (100 miles or less north and south) may continue at about the same magnitude for the near future.

A good cone crop in 1966 should help to solve some problems temporarily. However, with another depletion of stockpiles seed movement problems will again be with us. The distant future may be more promising with emphasis on seed production areas and seed orchards providing seed of positive origin.