Methods of Western Larch Regeneration
Champion Timberlands Rocky Mountain Operation

Tim Beebe
Iowa State University

Follow this and additional works at: https://lib.dr.iastate.edu/amesforester
Part of the Forest Sciences Commons

Recommended Citation
Beebe, Tim (1979) "Methods of Western Larch Regeneration Champion Timberlands Rocky Mountain Operation," Ames Forester: Vol. 66 , Article 10. Available at: https://lib.dr.iastate.edu/amesforester/vol66/iss2/10

This Article is brought to you for free and open access by the Journals at Iowa State University Digital Repository. It has been accepted for inclusion in Ames Forester by an authorized editor of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
Western larch (Larix occidentalis) plays an important role on Champion’s western Montana timberlands, providing large volumes of sawlogs and veneer to the largest plywood plant in the northwest (located in Bonner, Montana). In addition, western larch fits uniquely into Champion’s policy of converting old-growth, stagnant stands of timber into young and vigorous stands, thus insuring a permanent productive source of goods and benefits.

We manage larch on habitat types where we can take full advantage of its ability of rapid juvenile growth and response. In our area of western Montana, good western larch habitat types range from the wetter, Douglas-fir sites to grand fir and subalpine fir climax types. On these habitat types, western larch is considered a major seral species which is important to us as land managers. Larch is a prolific seeder and regenerates best on bare mineral soil where it can take maximum advantage of all sunlight and moisture availability. Larch is able to withstand fairly high temperatures in the summer and endure cold in the winter with a minimum of stress. In our area larch appears mainly on cooler north facing aspects, in valley bottoms, benches and rolling topography.

In establishing new larch stands, we rely heavily on natural regeneration. This method provides a healthy, most cost effective seedling compared to planting or direct seeding. In natural regeneration, we eliminate several problems associated with the artificial means of reforestation, i.e.; shock caused by transplanting, root damage, soil compaction from using planting tools or off-site planting which may cause initial growth loss or mortality in later years. Economics also plays an important role in natural regeneration. It is more economical to take immediate advantage of the scarification obtained through logging and brush clearing, obtain...
natural seed fall on the site and regenerate the block within two potential seed crop periods. This eliminates the cost of cone collecting and processing, nursery establishment, outplanting and potential loss of newly planted seedlings.

There are three silvicultural methods we use to accomplish our goal of naturally regenerating larch: clearcut, seedtree and shelterwood.

Clear Cut. In recent years clearcutting has had a negative connotation, however, used correctly this method of harvesting can be very effective in reestablishing larch stands. There are many variables to consider before choosing to clearcut an area. The original stand should be looked at for its composition and condition of overstory and understory. The unit may be clearcut if the existing stand is in decadent condition or perhaps heavily diseased, or infected with insects. The location of the block should be on a cool, moist, northerly exposure not directly adjacent to a major stream. The habitat type is checked and if it lends to the regeneration of western larch as the primary seral species, the process continues. If soils are highly prone to compaction or erosion, we may do one of two things, use a skyline logging method to reduce mechanical impact on the site or defer logging until late summer or winter when the ground is dry and frozen. If soils are thin and fragile, consideration is given toward skyline skidding as opposed to crawler tractors which are used on deeper, well drained soils. If we are limited to tractor skidding on the steep ground, the clearcut method eliminates the possibility of damage or pushed over leave trees. This happens much of the time, especially if the original stand has a heavy volume or large number of cut stems per acre.

Brush disposal is another consideration given to an area. On flatter ground or noncompactable soils, the most acceptable means of brush disposal is to pile and burn, however, on ground with slopes over 35 to 40%, piling becomes increasingly hazardous or impossible. Since brush disposal is a major part of our seedbed preparation, it is crucial to do a good job. On steep ground our best alternative, at the present, is broadcast burning. It has been noted by Schmidt, Roe and Shearer in *Ecology and Silviculture of Western Larch Forests* (1976) that burning generally creates the most desirable seedbed for larch. In a clearcut block, there is little worry about losing seedtrees during prescribed burning activities. Fire breaks are put in where necessary, then the block is burned in the fall. After site preparation is completed, we allow two potential seed crops to fall before determining the success of the prescription.

Seedtree. The seedtree system is our most widely used method of larch regeneration. It enables us to work with larger cutting units and still obtain a good seedbed preparation. Seedtrees left provide some site protection and uniform seed dispersal for the larger cutting units.

Logging operations on Champion land.

Generally, the same thought process is developed in selecting a seedtree area as in selecting a clearcut. The major difference being the condition of the original stand and size of the area. If the old growth stand has an average of seven to ten larch per acre which are in good to excellent condition, and wind firm, and the unit lies on moderately steep to flat ground the seedtree method will be used as opposed to a clearcut. Larch seedtrees work best on northerly exposures in habitats similar to those in clearcut areas. Soils again are critical, but less emphasis is given to soil erosion because we try to locate seedtree blocks on more moderate ground where erodibility is not quite as severe a hazard. The same equipment is used to harvest our seedtrees as with clearcutting. If the unit layout is such that we can line skid the area, we do so. It provides less site impact than using crawler tractors.

Slash disposal and site preparation can be more of a problem in the seedtree system. If the slope is 35% or less and the soils are reasonably noncompactable, we will pile and burn the slash. The steeper ground has to be broadcast burned. Fire damage to leave trees is a problem;
recently we have hired crews to cut up and pull slash concentrations away from seedtrees. After site preparation has been completed, we again wait for two potential seed crops before determining the success of the seedtree harvest.

Shelterwood. Our third way to obtain natural larch regeneration is the shelterwood. There is a fine distinction between our western larch seedtree cuts and what may be called a second or third state shelterwood. We like to leave more seedtrees on the area than the standard three to five trees per acre; however, the seven to ten trees per acre we leave would not always constitute a shelterwood.

Although not desirable for western larch regeneration, we do occasionally use a shelterwood to help reforest larch along with associated species. At the present, we are logging in a winter unit which has a past history of frost pockets which may retard regeneration. The overstory was in good condition and because the understory was poor to nonexistent we decided a regeneration cut was the best way to manage the stand. The aspect was good, habitats ranged from Douglas-fir to true fir climax, the site was flat and soil was no problem due to frozen conditions. The one major drawback was frost pockets in the area. We didn't want to open the site as drastically as a seedtree cut would, so the decision was made to shelterwood the area. After logging the stand will consist of western larch mixed with some Douglas-fir in good to excellent condition.

Following piling and burning, we hope to get a mixture of western larch and Douglas-fir regeneration.

Artificial Regeneration. At the present, artificial methods of larch regeneration are used in two situations. The first is planting. If after two years the natural seeding fails, we will plant the area, or if a site is exceedingly productive, i.e., 100 cubic foot growth/acre/year or more for a site index of 68 or more (50 year base) for all species, we will plant immediately after harvest. This gives us full advantage of the high productivity of the site.

Currently, planting in our area is much more costly, and runs a greater risk of failure than natural regeneration. In addition, larch is a difficult species to grow in the greenhouse because of light cycles, temperature and growth timetables. Despite these problems, we presently grow some 565,000 seedlings per year and plant them in areas that for reasons such as seed crop failures, excessive plant competition, etc., have not regenerated. In the future, we hope to expand our capability with increasing use of superior seedlings and gradual elimination of the technical growing problems.

Direct seeding is the second alternative to natural regeneration failures. In most cases this method is least desirable. It is costly, wasteful of seed and, at best, only marginally successful.

Despite the disadvantages, direct seeding can still be a useful tool in regeneration of company land. On our district in 1977, we direct seeded approximately 250 acres, and twice that in 1978. Aerial seeding by helicopter can be useful in areas where site scarification would be otherwise lost to vegetative competition before it can be planted, where seed crops are marginal, direct seeding can be used to supplement the natural seed. Finally, as our seed banks grow old and the viability of the seed starts to deteriorate, we will replace it with newly collected seed. If there are areas suited for direct seeding and the old seed is climatized to the site, we will use it rather than disposing of it entirely.

It is stated in our silvicultural guidelines: "The responsibility of each forester with respect to silviculture is to analyze the biologic and economic factors bearing on each stand under his care and then to devise and conduct the treatments most appropriate to the objectives of management. It is imperative that he define these management objectives prior to prescription of the stand treatment."

Through these silvicultural practices, we are attempting to produce more productive forests, and to do so in less time.

---

**HESTER Fire Line Plows**

**PROVED IN SERVICE**

Now! If you have a tractor, you can plow...plow an effective fire line of 7'. No special rigging is needed. Hester's new Light Duty #2000 is easily operated with tractors of 30-40 drawbar h.p. Both plows feature one-point, universal swivel hitches, the simplest ever designed. Both have two 26" discs, heat-treated, cross-rolled carbon steel. The #3000 Plow is also available with 28" blades. Hester also makes the Model #4000, 4-disc, heavy duty plow for large h.p. class tractors. Right from the heavy duty tires up to the husky hydraulic cylinders, these Hester Plows are built to take it—and dish it out—at high speed! Distributors and Dealers wanted.

For free folder write HESTER PLOW CO P.O. Box 646, Lake City, Florida 32055