

Growth and Yield of a Japanese larch (*Larix kaempferi* (Lamb) Carr.) plantation: 75-year results from University of Vermont's Jericho Research Forest



Figure 1. Initial 1941 planting



Lindsay Cotnoir¹, Justin Waskiewicz¹, and Ralph Tursini¹
¹University of Vermont, Rubenstein School of Environment and Natural Resources

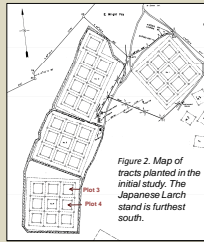


Methods:

- The 12-acre stand has nine one-acre interior blocks, each containing a monitored 1/4-acre plot.
- We re-located corner monuments for all 1/4-acre plots. We focused on plots 3 & 4 which had the most complete records for 1954 through 1996, and were used in earlier publications.
- DBH and ID number of all remaining larch within plots 3 & 4 were recorded. Diameter stump height (DSH) of recent stumps (2014 harvest) was also measured.
- We also measured height and DSH of twenty-three randomly selected trees.
- Paired DSH and DBH measurements were used to predict DBH of cut trees from their recorded DSH.
- Inside bark total cubic foot volume was calculated using Gilmore et al. (1993) IBTVOL equation.
- Board foot volume was estimated using Honer's (1967) Adjusted Squared Diameter Ratio Board Foot Volume Conversion equation.

Summary:

- Current mean tree size: 17.4" dbh x 107' height (SD = 2.3', 6')
- Current density: 65 TPA x 110 ft²/ac (93 x -156 before 2014 harvest)
- Girard form class of six felled trees ranged from 80 to 87 (average 83)
- Total current net volume of plots 3 & 4 is 8,851 ft³ (4,594 bf) standing.
- Total current net board foot volume of plots 3 & 4 is 32,058 bf (20,246 bf standing).
- A 2014 harvest yielded 18,140 bf in total from the stand (~8,320 bf from plots 3 & 4).
- The total mean annual increment (MAI) in total cubic foot volume peaked ~1970 at ~151 ft³/ac/yr (~1.6 cds/ac/yr).
- The MAI of board foot volume is ~433 bf/ac/yr and increasing, indicating the lifetime average growth rate has not yet peaked for bf volume.



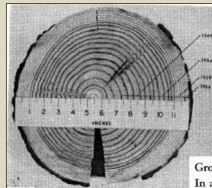
The stand was planted in 1941 (Figures 1-2) with Japanese larch and Douglas-fir (*Pseudotsuga menziesii*) in alternating rows. High initial mortality for Douglas-fir due to severe drought created a near-pure stand of Japanese larch.



Concrete post for plot 3 in February, 2016.



Thinning in summer 1970 and spring 1971, reduced the stand from 141 ft²/acre to 96 ft²/acre.



Growth of Japanese Larch In a Vermont Plantation
 TERRY L. TURNER and CHARLES C. MYERS
 Department of Forestry



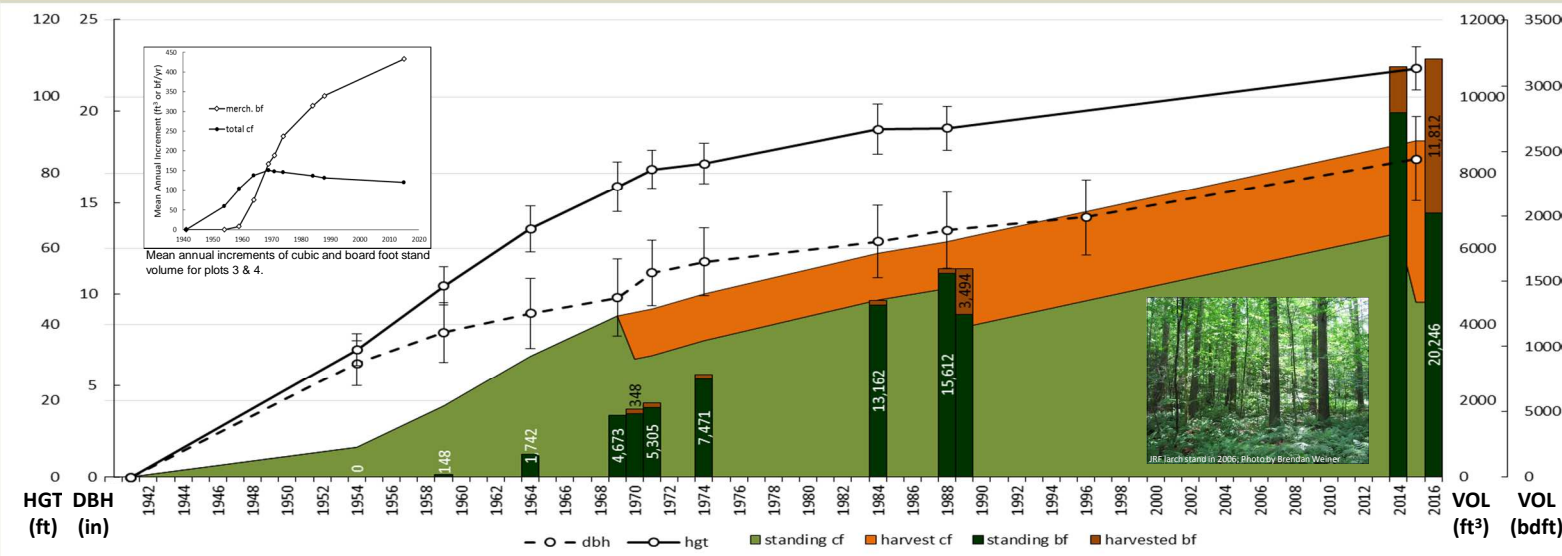
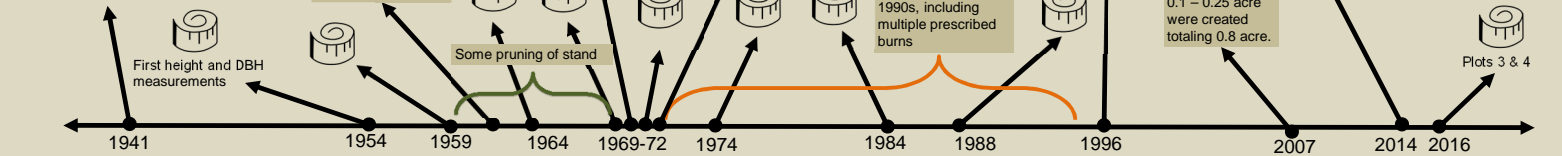
Harvesting larch in 2014.



Tree 192. ID numbers fragmented with tree growth. February, 2016



Over 18,000 board feet were harvested from stand (28 trees from plots 3 & 4).



Mean tree size and total volume growth (per acre) of plots 3 and 4 in JRF Japanese larch plantation, 1941 - 2015. Error bars represent standard deviations. Exact date of second harvest, between 1988 and 1996 not known.

Citations: Adams, W.R. and G.O. Hutchinson, Jr. 1961. Total and merchantable volume growth of Japanese larch. University of Vermont and State Agricultural College Agricultural Experiment Station, Bulletin 620. Burlington, VT. 11p.
 Carter, K.K. and Selin, L.O. 1987. Larch Plantation Management in the Northeast. *Northern Journal of Applied Forestry* 4: 18-20.
 Gilmore, D.W., Briggs, R.D., & Seymour, R.S. (1993). Stem volume and site index equations for European larch in Maine. *Northern Journal of Applied Forestry*, 10(2), 70-74.
 Honer, T.G. (1967). Standard volume tables and merchantable conversion factors for the commercial tree species of central and eastern Canada. Information Report FRMX-5. Forest Research and Services Institute, Ottawa, Ont.
 Irland, L.C.; Maas, D.I.; Roth, B.E.; Waskittel, A.R.; Greenwood, M.S.; Haag, C. 2015. High yield forestry - a new look at exotic and hybrid larch. Poster presented at 2014 New England Society of American Foresters meeting, Fairlee, VT, March 25.
 Turner, T.L. and Myers, C.C. 1972. Growth of Japanese larch in a Vermont plantation. University of Vermont Agricultural Experiment Station Bulletin 672. Burlington, VT. 9p.