Maine Exotic Larch Plantations Exceed Expectations

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ABSTRACT

We compare mean annual increment of exotic and hybrid larch operational plantations to a widely published study of plantation potential in Maine. These ranged in age from 15 to 54 years, with maximums greater than those of previous research trials. Performance of the operational plantations not only exceeds expected yields, but outperformed the expectations by nearly two-fold, particularly in the younger plantations.

OBJECTIVES

Recent re-measurements of long-term hybrid larch plantation experiments in Maine has drawn renewed interest in the species due to exceptional growth and projected economic returns. Greenwood et al. (2015) reported mean height after 22 years for multiple full-sib hybrid crosses averaging 63 feet (or nearly 3' per year) and 10 inches in diameter (or nearly ½ inches per year). We also reported on a trial in which hybrid larch was growing at 2.25 cords per acre per year after 27 years (Irland et al, 2015). Our objective was to collect and summarize information from multiple larch species (exotic, hybrid, and tamarack) operational plantations from across Maine to understand whether operational plantations approached research trial results.

MATERIALS and METHODS

We compare data from 26 operational plantations to that of projected plantation yields from the 1998 Timber Supply Outlook for Maine (TSO) (Gadzik et al, 1998). Yields were taken from Table 1 on page 37 of the report. The 26 operational plantations were located on 16 locations in 12 Maine towns.

Fourteen of the locations included archived data from mid-1980's inventories by Scott Paper Company as part of its research work on intensive forest management. Others were the CFRU plantation study (McConville, 2003) in Chase Stream, Viles Arboretum Larch Plantation (Maass et al. 2015) and the species demonstration plots on Route 201 in Skowhegan. The latest study measured was from a plantation in Williamsburg (LVES note #4, in preparation) managed by MFS forester Gordon Moore for the Piscataquis County Soil and Water District.

All the plantations are planted on deep, well to moderately-well drained soils, and all, except those in Chase Stream, are planted on former agricultural fields. Little is known about the seed sources or provenances of the seed for most of these operational plantations. Seed source is known for the plantations at the Viles Arboretum, Chase Stream and the Route 201 locations. The three hybrid larch plantations are from seed known as "Von Lochow," which is an open-pollinated F1 hybrid of European and Japanese larches from Germany, planted across the US in various locations.

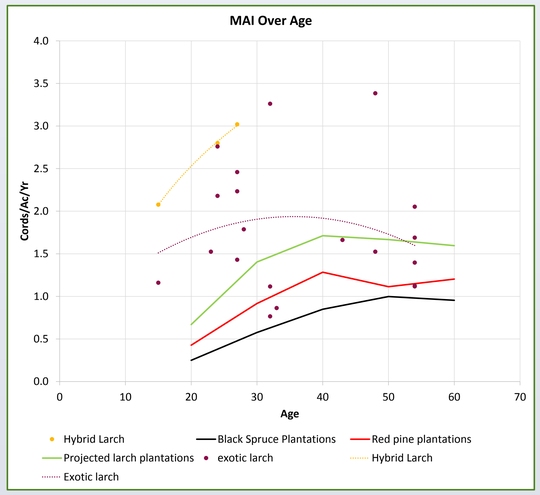
Town	Species	Plantation Age	Larch MAI (cords/ac/yr)	Larch QMD	Larch Average measured ht (ft.)
Chase Stream	T	15	0.7	5.2	30
Augusta	T	24	0.42	6.8	45
Skowhegan	T	27	1.10	7.2	46
Chase Stream	HL	15	2.1	7.1	44
Augusta	HL	24	2.80	10.5	65
Skowhegan	HL	27	3.02	9.5	58
Woodstock	JL	23	1.5	7.1	66
Readfield	JL	48	1.5	9.6	84
Readfield	JL	48	3.4	11.2	73
Chase Stream	JL	15	1.2	5.3	36
Augusta	JL	24	2.18	14.3	67
Williamsburg	JL	54	1.69	17.0	104
Skowhegan	JL	27	1.43	6.7	46
Skowhegan	EL	27	2.46	8.3	62
Solon	EL	54	1.4	13.7	93
Solon	EL	54	2.1	18.0	100
Sebec	EL	27	2.2	7.8	67
Old Town	EL	43	1.7	9.7	67
Old Town	EL	32	1.1	7.2	48
Old Town	EL	32	0.8	14.0	63
Old Town	EL	33	0.9	8.5	56
Milo	EL	28	1.8	7.1	56
Bingham	EL	54	1.1	10.8	76
Bingham	EL	54	1.1	13.2	89
Augusta	EL	24	2.76	11.0	59
Atkinson	EL	32	3.3	9.1	85

Lloyd Irland at Piscataquis County Soil and Water Conservation District Demonstation Forest in Willamsburg, ME. Photo by Brian Roth

RESULTS and ECONOMIC ANALYSIS

The graph below plots MAI over age for nineteen plantations Japanese or European larch (tamarack plantations excluded). Twelve are shown outperforming the projected larch plantations from the TSO report. All exotic larch plantations are performing better than the black spruce and red pine species comparison plantings.

Younger exotic larch plantations are performing well (MAI between 1.5 and 2.5 cords per acre per year). Two of the exotic larch plantations are growing well over 3 cords per acre per year between ages 30 and 50. Three hybrid larch plantations are growing more than two to three cords per acre per year.



Lloyd Irland measuring Japanese larch at PCSWCD. Photo by Brian Roth

CONCLUSIONS

We compare published plantation yields to data from operational larch plantations across the state. The operational plantations in terms of mean annual increment are growing at rates that exceed expectations. Many are growing at double the expected rate, particularly in the early years. Hybrid larches are also growing exceptionally well. Given that these plantations have had very little management activity other than the establishment phase, we believe there is unprecedented and additional potential with these species if managed well on the proper soil types. We seek contributions from resource managers across the northeastern region in assembling archived larch plantation data and wherever possible, in re-measuring stands to obtain current performance estimates. We have assembled a comprehensive collection of larch information on a new website: www.larchresearch.com.

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