

MINNESOTA FORESTRY NOTES

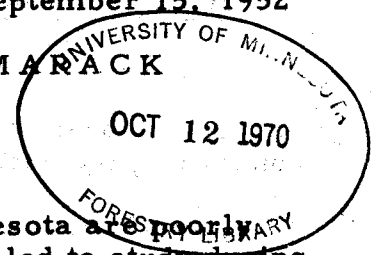
COPY 2

No. 7

September 15, 1952

REPRODUCTION CUTTING IN TAMARACK

Donald P. Duncan¹⁾



Since 560,000 of the one million acres of tamarack in Minnesota are ^{poorly} stocked²⁾, regeneration obviously is a problem. This situation led to study during the summers of 1948, 1949 and 1950, of some of the factors influencing natural reproduction of this species. The following information bearing upon reproduction cutting practices was obtained:

(1) Good tamarack seed crops are produced only at intervals of about four years and are heaviest on dominant trees with well-developed crowns. Seed production does not begin until about age 40 except on open-grown trees, which often produce good cone crops as early as 20 years of age. Maximum per acre production of seed occurs in more or less open stands between 50 and 150 years of age.

(2) Seeds are normally disseminated in September and October. A quantity sufficient for satisfactory restocking may be distributed to a distance of from one to two times tree height. Rodent losses following dissemination may be 50 per cent or more.

(3) More than 97 per cent of tamarack seed germination occurs the spring following dissemination. An insignificant quantity of seed, if any, lies over in the duff to germinate the second year. Exposed warm sites result in earlier and more concentrated germination than shaded cool sites. Tamarack seeds will not germinate under water nor on sites with seedbed moisture contents below about 12 per cent by volume.

(4) Significant seedling mortality is caused by damping-off, flooding and late summer drought. Losses appear to be less severe among seedlings grown in full light than among those grown in shade. No seedlings over six years of age were found in existing well-stocked tamarack stands.

(5) In a study of cutover black spruce types, data pertaining to regeneration in tamarack were obtained by graduate student Robert E. Buckman as follows:

1) Assistant Professor, School of Forestry, University of Minnesota. More complete data are available in an unpublished Ph.D. thesis, University of Minnesota.
2) Cunningham, R. N. and Forest Survey Staff. 1950. Forest Resources of the Lake States Region. U. S. Dept. Agr. Forest Resource Report No. 1.

Influence of cover upon tamarack reproduction			
Degree of shading	Source of Shade		
	Overstory	Brush	Slash
	Number of seedlings per acre		
Open	261	92	213
Light (1% to 30%)	99	275	95
Medium (31% to 70%)	16	93	58
Heavy (71% to 100%)	0	51	10

On the basis of these findings, the following recommendations are made concerning the cutting of tamarack:

(1) Where practicable, cut the stand in progressive strips not exceeding two chains in width. An adjacent strip should be cut as soon as the first has a satisfactory stand of reproduction established on it. If two-chain clearcut strips are placed at 12- to 16-chain intervals through the stand, by the time the final strips are cut, the first cuttings probably will have sufficient seed-bearing trees to regenerate the last cuttings. On small tracts, progressive cutting from the border of the stand may be most satisfactory.

(2) On small tracts or in mature stands where harvest cannot be postponed, winter clearcutting of the entire tract may be undertaken following the establishment of a good crop of one year old seedlings (at least 20,000 per acre) or immediately following a good seed year. These methods, however, are much less certain of obtaining reproduction than the strip cutting method.

(3) In mature stands, the two methods used in combination may be most satisfactory. Half of the stand may be removed by cutting alternate strips initially. After satisfactory establishment of reproduction in the cutover areas, the remaining uncut strips may be removed in a year following the appearance of a good seedling stand or after a good seed year. This has the advantage over (2) of providing greater assurance of a new stand being established on at least half of the area.

(4) Presently available evidence also indicates: (a) that a light brush cover actually may be beneficial with respect to obtaining tamarack reproduction, but that a heavy brush cover is detrimental; (b) that areas free of slash are more easily reproduced than those with a slash cover; and (c) that increasing slash density decreases reproduction.