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A STUDY OF JACK PINE SEEDFALL ON THE SANDILANDS FOREST RESERVE, MANITOBA

Project MS-207

by

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INTRODUCTION[1]

An experiment was begun in 1959 to determine annual jack pine (Pinus banksiana Lamb.) seedfall per acre in stands of varying ages and densities on the Sandilands Forest Reserve in southeastern Manitoba. Seed collections and regeneration examinations will indicate whether seedfall from standing trees is sufficient to obtain ample regeneration for efficient management in this locality.

WORK COMPLETED--1967

Seed Collection

Seed collections from the stands were made during 1967 on the following dates:

May 9
May 31
July 11
August 4
September 8
October 5

On May 9 seed collections were not obtained from the 60-year open stand as the traps were partially filled with snow.

Cutting tests were made on all seed collected to determine soundness.

Litter Collection

At the time of each seed collection litter traps on the areas were emptied and oven-dry weight of litter was obtained in the laboratory.

Scalped Spot Examination

The one-twentieth milacre scalped spots located adjacent to each seed trap were examined for regeneration in August. Following examination all seedlings were removed and scalps were raked to obtain a smooth mineral soil seedbed.

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[1] For further information the reader is referred to the establishment and progress reports prepared on this project. (Cayford 1960, 1961, Cayford and Sims 1962, Walker 1963, 1964, 1965, 1966, Campbell 1967).

RESULTS

Seedfall by Stand Condition

Monthly seedfall by stand condition is shown in Table 1. Total seedfall was greatest in the 60-year stands, while sound seedfall was greatest in the 20-year stands.

Seasonal Distribution

Seasonal distribution of seedfall by stand age and density is shown in Table 2. Most seedfall occurred during the summer months, whereas in a typical year seed dispersal is concentrated in the late autumn.

Seedfall 1959-1967

Results of seedfall collections from 1959-1967 are shown in Table 3. The 20-year-old stands have dispersed the most seeds and the 40-year-old stands the least. The amount of seed dispersed in 1967 was the lowest since the project's initiation in 1959.

Litter Fall

Litter collection data for 1967 is shown in Table 4. All figures are oven-dry weights. The 40-year-old stands produced the greatest amount of litter. The 20-year-old stands produced the least.

Regeneration

Seedlings per acre from scalped spot data are shown in Table 5.

WORK PROPOSED FOR 1968

Seed collections will be made at monthly intervals throughout the snow-free months. Seeds collected will be submitted to a cutting test to determine their soundness.

The scalped spots will be examined for regeneration in August. Seedlings will be recorded and removed. The scalps will be raked to again provide a smooth mineral soil seedbed.

Litter collections will be made each time seeds are collected. Litter will be oven dried and the weight recorded according to stand age and density.

TABLE 1

SUMMARY OF JACK PINE SEEDFALL

OCTOBER 25, 1966 - OCTOBER 5, 1967

Stand	collection period (months)	No. seeds per acre	No. sound seeds per acre	Pounds of sound seed per acre	Per cent seeds sound
20 year open	11	1320	660	.005	50
20 year dense	11	2660	2660	.020	100
40 year open	11	0	0	0	-
40 year dense	11	660	0	0	0
60 year open	11	4060	0	0	0
60 year dense	11	660	0	0	0

TABLE 2

SEASONAL DISTRIBUTION OF SEEDFALL OCTOBER 25/66 - OCTOBER 5/67

TOTAL SEEDFALL PER ACRE PER DAY

Stand	Period of seedfall					
	Oct. 25/66 May 9/67 [1]	May 9/67 May 31/67 [1]	May 31/67 July 11/67	July 11/67 Aug. 4/67	Aug. 4/67 Sept. 8/67	Sept. 8/67 Oct. 5/67
20-year open	0	0	0	0	0	0
20-year dense	0	0	0	28	0	0
40-year open	–	6[2]	16	83	0	0
40-year dense	0	0	0	0	19	0
60-year open	0	30	0	0	19	0
60-year dense	0	30	16	0	38	0

[1] Seed collections gathered on these dates do not necessarily represent the total seedfall for that period. As the traps are covered with snow for several months seeds falling at this time may be dispersed by the wind or eaten by birds or rodents.

[2] This collection is for the period October 25, 1966 to May 31, 1967.

TABLE 3

SUMMARY OF ANNUAL SEEDFALL

Stand	Period of Collection	Number of months	Total seed per acre	Average seed fall per month
20-year open	Sept. – Oct. 1960	2	39,320	19,660
	Nov. 1960 – Oct. 1961	12	33,760	2,813
	Nov. 1961 – Oct. 1962	12	78,160	6,513
	Nov. 1962 – Nov. 1963	12	26,300	2,192
	Nov. 1963 – Nov. 1964	12	10,940	912
	Nov. 1964 – Oct. 1965	11	7,180	653
	Oct. 1965 – Oct. 1966	12	4,200	350
	Nov. 1966 – Oct. 1967	11	1,320	120
20-year dense	Sept. – Oct. 1960	2	32,430	16,215
	Nov. 1960 – Oct. 1961	12	50,140	4,178
	Aug. – Oct. 1962	3	25,320	8,440
	Nov. 1962 – Nov. 1963	12	34,900	2,908
	Nov. 1963 – Nov. 1964	12	35,460	2,955
	Nov. 1964 – Oct. 1965	11	16,420	1,493
	Oct. 1965 – Oct. 1966	12	18,080	1,507
	Nov. 1966 – Oct. 1967	11	2,660	242
40-year open	July – Oct. 1959	4	2,660	665
	Nov. 1959 – Oct. 1960	12	6,790	566
	Nov. 1960 – Oct. 1961	12	4,560	380
	Nov. 1961 – Oct. 1962	12	9,320	777
	Nov. 1962 – Nov. 1963	12	8,640	720
	Nov. 1963 – Nov. 1964	12	7,780	648
	Nov. 1964 – Oct. 1965	11	2,020	184
	Oct. 1965 – Oct. 1966	12	4,060	338
	Nov. 1966 – Oct. 1967	11	0	0
40-year dense	July – Oct. 1959	4	660	165
	Nov. 1959 – Oct. 1960	12	5,420	452
	Nov. 1960 – Oct. 1961	12	9,140	762
	Nov. 1961 – Oct. 1962	12	5,920	493
	Nov. 1962 – Nov. 1963	12	2,800	233
	Nov. 1963 – Nov. 1964	12	2,660	222
	Nov. 1964 – Oct. 1965	11	660	60
	Oct. 1965 – Oct. 1966	12	2,000	167
	Nov. 1966 – Oct. 1967	11	660	60
60-year open	July – Oct. 1959	4	0	0
	Nov. 1959 – Oct. 1960	12	17,730	1,478
	Nov. 1960 – Oct. 1961	12	16,710	1,392
	Nov. 1961 – Oct. 1962	12	11,300	942
	Nov. 1962 – Nov. 1963	12	14,080	1,173
	Nov. 1963 – Nov. 1964	12	4,760	397
	Nov. 1964 – Oct. 1965	11	2,000	182
	Oct. 1965 – Oct. 1966	12	16,220	1,268
	Nov. 1966 – Oct. 1967	11	4,060	369
60-year dense	July – Oct. 1959	4	0	0
	Nov. 1959 – Oct. 1960	12	19,370	1,614
	Nov. 1960 – Oct. 1961	12	16,040	1,337
	Nov. 1961 – Oct. 1962	12	14,700	1,225
	Nov. 1962 – Nov. 1963	12	5,520	460
	Nov. 1963 – Nov. 1964	12	4,840	403
	Nov. 1964 – Oct. 1965	11	2,240	204
	Oct. 1965 – Oct. 1966	12	5,180	432
	Nov. 1966 – Oct. 1967	11	660	60

TABLE 4

LITTER PRODUCTION 1967

Date	20-year open		20-year dense		40-year open		40-year dense		60-year open		60-year dense	
	pounds per acre	depth (in)	pounds per acre	depth (in)	pounds per acre	depth (in)	pounds per acre	depth (in)	pounds per acre	depth (in)	pounds per acre	depth (in)
May 9/67	150	.015	538	.055	602	.062	518	.053	—	—	638	.066
May 31/67	22	.002	43	.004	97	.010	87	.009	5	.005	58	.006
July 11/67	128	.013	463	.048	275	.028	209	.021	570	.059	155	.016
Aug. 4/67	47	.006	129	.013	141	.014	109	.011	203	.021	83	.008
Sept. 8/67	64	.006	90	.009	524	.054	123	.013	126	.013	156	.016
Oct. 5/67	167	.017	544	.056	472	.048	536	.055	399	.041	405	.042
Total	578	.058	1807	.185	2111	.216	1582	.162	1303	.139	1495	.154

TABLE 5

REGENERATION EXAMINATION ON SCALPED SPOTS - 1967

Stand	No. scalps	Per cent scalps stocked	Number of seedlings	Number of seedlings/acre
20 year open	30	0	0	0
20 year dense	30	3.3	1	660
40 year open	30	0	0	0
40 year dense	30	0	0	0
60 year open	30	6.7	2	1340
60 year dense	30	0	0	0