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

Project MS-207

by

G. D. Campbell

FOREST RESEARCH LABORATORY

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INTRODUCTION[1]

As some jack pine (Pinus banksiana Lamb.) cones on the Sandilands Forest Reserve open while on the trees, a study was begun in 1959 to measure the amount of seedfall and to determine the quantity of regeneration resulting from this seed dispersal. The study will provide information as to the feasibility of utilizing seedfall from standing trees in the management of jack pine stands.

Three stands of varying ages and densities, located on dry sand flats, were chosen for the site of the study.

WORK COMPLETED - 1968

Seed Collection

Seed collections from the stands were made during 1968 on the following dates:

May 3
June 12
July 9
August 14
September 26
October 23.

Cutting tests were made on all seeds 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

One-twentieth milacre scalped spots located adjacent to each seed trap were examined in August for regeneration. 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, 1968).

RESULTS

Seedfall by Stand Condition

Monthly seedfall by stand condition is shown in Table 1. No sound seed fell throughout the collection period.

Seasonal Distribution

Seasonal distribution of seedfall by stand, age and density is shown in Table 2.

Seedfall 1959-1968

Results of seedfall collections from 1959-1968 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 1968 was the lowest since the project's initiation in 1959.

Litter Fall.

Litter collection data for 1968 is shown in Table 4. The 40-year-old stands produced the most litter while the 20-year-old stands produced the least.

Regeneration

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

WORK PROPOSED FOR 1969

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 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 5, 1967 - OCTOBER 23, 1968

Stand	Collection Period (months)	No. Seeds Per Acre	No. Sound Seeds Per Acre	Pounds of Sound Seed Per Acre	Per Cent Seeds Sound
20-yr. open	12	0	0	0	0
20-yr. dense	12	660	0	0	0
40-yr. open	12	3000	0	0	0
40-yr. dense	12	0	0	0	0
60-yr. open	12	660	0	0	0
60-yr. dense	12	720	0	0	0

TABLE 2

SEASONAL DISTRIBUTION OF SEEDFALL OCTOBER 5, 1967 - OCTOBER 23, 1968

TOTAL SEEDFALL PER ACRE PER DAY

	Period of Seedfall					
Stand	Oct 5/67[1] May 3/68	May 3/68 June 12/68	June 12/68 July 9/68	July 9/68 Aug. 14/68	Aug. 14/68 Sept 26/68	Sept 26/68 Oct 23/68
20-yr. open	0	0	0	0	0	0
20-yr. dense	3	0	0	0	0	0
40-yr. open	14	0	0	0	0	0
40-yr. dense	0	0	0	0	0	0
60-yr. open	3	0	0	0	0	0
60-yr. dense	0	0	0	0	17	0

[1] Seed collections gathered on this date do not necessarily represent the total seedfall for that period. As the traps were covered with snow for several months, seeds falling at that time could have been dispersed by the wind or eaten by birds or rodents.

TABLE 3

SUMMARY OF ANNUAL SEEDFALL

Stand	Collection period	Months	Total per acre	Average per month
20 yr. 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	4200	350
	Nov. 1966 - Oct. 1967	11	1320	120
	Oct. 1967 - Oct. 1968	12	0	0
20 yr. dense	Sept. - Oct. 1960	2	32,430	16,215
	Nov. 1960 - Oct. 1961	12	50,140	4178
	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
	Oct. 1967 - Oct. 1968	12	660	55
40 yr. open	July - Oct. 1959	4	2,660	665
	Nov. 1959 - Oct. 1960	12	6,790	566
	Nov. 1960 - Oct. 1961	12	4560	380
	Nov. 1961 - Oct. 1962	12	9320	777
	Nov. 1962 - Nov. 1963	12	8,640	720
	Nov. 1963 - Nov. 1964	12	7780	648
	Nov. 1964 - Oct. 1965	11	2,020	184
	Oct. 1965 - Oct. 1966	12	4,060	338
	Nov. 1966 - Oct. 1967	11	0	0
	Oct. 1967 - Oct. 1968	12	3000	250
40 yr. 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	600	60
	Oct. 1967 - Oct. 1968	12	0	0
60 yr. open	July - Oct. 1959	4	0	0
	Nov. 1959 - Oct. 1960	12	17730	1,478
	Nov. 1960 - Oct. 1961	12	16,710	1,392
	Nov. 1961 - Oct. 1962	12	11,300	942
	Nov. 1962 - Nov. 1963	12	14080	1,173
	Nov. 1963 - Nov. 1964	12	4760	397
	Nov. 1964 - Oct. 1965	11	2,000	182
	Oct. 1965 - Oct. 1966	12	15,220	1,268
	Nov. 1966 - Oct. 1967	11	4060	369
	Oct. 1967 - Oct. 1968	12	660	55
60 yr. dense	July - Oct. 1959	4	0	0
	Nov. 1959 - Oct. 1960	12	19370	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
	Oct. 1967 - Oct. 1968	12	720	60

TABLE 4

LITTER PRODUCTION 1968

Date	20-year open		20-year dense		40-year open		40-year dense		60-year open		60-year dense	
	Pounds Per Acre (OD Weight)	Depth (in)	Pounds Per Acre (OD Weight)	Depth (in)	Pounds Per Acre (OD Weight)	Depth (in)	Pounds Per Acre (OD Weight)	Depth (in)	Pounds Per Acre (OD Weight)	Depth (in)	Pounds Per Acre (OD Weight)	Depth (in)
May 3/68	98	.010	463	.048	256	.026	372	.038	409	.042	303	.031
June 12/68	54	.006	132	.014	173	.018	209	.021	127	.013	156	.016
July 9/68	90	.009	98	.010	186	.019	204	.021	84	.009	231	.024
Aug. 14/68	71	.007	88	.009	204	.021	188	.019	231	.024	292	.030
Sept. 26/68	143	.015	252	.026	476	.049	453	.046	362	.037	272	.028
Oct. 23/68	172	.018	244	.025	383	.039	345	.035	307	.032	228	.023
Total	636	.066	1235	.127	1691	.174	1785	.182	1356	.140	1482	.152

TABLE 5

REGENERATION EXAMINATION ON SCALPED SPOTS - 1968

Stand	Number of Scalped Spots	Per Cent Spots Stocked	Number of Seedlings	Number of Seedlings/acre
20-year open	30	0	0	0
20-year dense	30	0	0	0
40-year open	30	6.7	2	1340
40-year dense	30	0	0	0
60-year open	30	0	0	0
60-year dense	30	0	0	0