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NATIONAL RESEARCH COUNCIL OF CANADA

PROCEEDINGS

OF THE

TWENTY-FIRST MEETING

OF THE

SUBCOMMITTEE ON FOREST TREE BREEDING

OF THE

ASSOCIATE COMMITTEE ON FORESTRY

OTTAWA

10 MARCH, 1949

NATIONAL RESEARCH COUNCIL

PROCEEDINGS OF THE TWENTY-FIRST MEETING OF THE

SUBCOMMITTEE ON FOREST TREE BREEDING

ASSOCIATE COMMITTEE ON FORESTRY

Held in Room 416 at 193 Sparks Street, Ottawa,
on 10th March, 1949.

Members present

Mr. H. D. Heaney, Chairman
Mr. G. A. Mulloy
Dr. C. C. Heimburger
Mr. A. W. McCallum
Dr. J. Bier
Mr. J. J. de Gryse
Dr. N. H. Grace
Mr. S. J. Cook, (Associate Committee)
Mr. J. L. Farrar, Secretary

223. The minutes of the twentieth meeting were approved with the following change:

In Minute 209 replace "six" with "nine".

224. APPROVAL OF MEMBERSHIP AND TERMS OF REFERENCE

THE CHAIRMAN drew the attention of the meeting to a communication from the Associate Committee (Appendix "A") approving action with regard to changes in membership, change in the chairmanship, and terms of reference. (See Minutes 212, 219 and 220).

225. GENETIC DETERIORATION OF FORESTS

The Associate Committee has asked the Subcommittee for advice and recommendations with regard to the deterioration of forest stock, due to leaving only inferior specimens to propagate the new stands. (See Appendix "A"). The Secretary read a letter drawn up by the Chairman and himself dealing with the question. (See Appendix "B"). After some discussion this letter was approved by the Subcommittee as their official opinion.

226. REPORT BY DR. RILEY

MR. McCALLUM presented Dr. Riley's report which is attached to these Minutes, (see Appendix "C"). The field notes on which this report is based have been copied and given to the Dominion Forest Service, in accordance with Minute 215.

Dr. Heimburger suggested that the amount of infection of of rust in poplar should be compared with the infection on clones of known susceptibility, thus eliminating variations due to weather and season. Dr. Bier suggested that controlled inoculations be tried.

227. REPORT BY DR. HEIMBURGER

DR. HEIMBURGER presented his report which is attached to these Minutes (see Appendix "D"). It was moved by Dr. Grace, seconded by Mr. Mulloy, that the Subcommittee compliment Dr. Heimburger on the progress he has made, and urge the publication of the results as soon as possible. CARRIED unanimously.

DR. HEIMBURGER mentioned that some of the work had already been published in the"Tree Breeders' Newsletter" issued from Placerville, California; and also that he was giving a paper before the Pulp and Paper Research Institute meeting on March 22nd.

228. REPORT BY MR. FARRAR

MR. FARRAR presented his report which is attached to these Minutes (see Appendix "E") Dr. Heimburger ~~suggested~~ stated that plant materials growing in arboreta at Petawawa were subject to damage by grazing animals and rodents. Mr. Farrar stated it was planned to fence out the deer, and to poison porcupines with rock salt.

229. REPORT OF COMMITTEE ON MEMBERSHIP

THE CHAIRMAN of the Committee, Mr. Heaney, reported that no additional members were proposed, except that it would be desirable to have representatives from the Forestry Committees of the Research Councils in Ontario and British Columbia.

It was Moved by Mr. Mulloy, Seconded by Mr. McCallum that the Subcommittee recommend to the Associate Committee that they communicate with the Research Councils of Ontario and British Columbia suggesting that their Forestry Committee appoint a representative to sit on the Subcommittee on Forest Tree Breeding. CARRIED.

230. REPORT OF THE COMMITTEE ON STUDENTS

In the absence of Dr. Senn, Mr. Farrar reported that he had written to Dean Sisam at Toronto but no students had shown any enthusiasm. Dr. Heimburger felt that if facilities were provided for work in tree breeding there would be little difficulty in attracting suitable men.

The Committee was asked to continue its work and, in particular, to get in touch with Mr. Rosser of the personnel section of the National Research Council to see if any Canadians studying in the United States would be interested.

231. DUTCH ELM DISEASE

MR. McCALLUM reported that the National Committee on the Dutch Elm Disease was active, and that breeding work was being carried on at the Experimental Farm at Assomption, P.Q., by the Division of Horticulture. Dr. Heimburger pointed out that elm is an important genus in prairie shelterbelts, and some hybrids between Chinese elm and native elm existed in the middle western states.

232. RESEARCH COUNCIL OF ONTARIO

MR. FARRAR reported that the Research Council of Ontario is interested in tree breeding. (See also Minute 229). He had been asked to speak before that body on tree breeding and had corresponded with their chairman on that subject.

233. SUBCOMMITTEE POLICY

THE CHAIRMAN pointed out that our terms of reference restrict subcommittee activities to advice and liaison. This is logical in view of the fact that the Subcommittee has no authority. However, the procedures adopted at the ninth meeting do not fit in with this concept. In Minute 98, sub-projects were assigned to specific individuals. It is now apparent that the Subcommittee should confine itself to advising the organizations concerned as to what problems in tree breeding they should be concerned with.

DR. HEIMBURGER pointed out that the policy of breaking down projects into sub-projects had not worked out very well. He, himself, is now dealing with all phases of the white pine project.

It was the consensus of opinion that the Subcommittee should not attempt to direct the work of individuals.

234. PRESERVATION OF ELITE TREES

MR. FARRAR urged that an active programme be instituted to seek out and preserve elite specimens of our native trees to provide material for breeding and to arrest the trend of deterioration of our forest stock. Preservation can be accomplished by propagating the trees vegetatively and growing the ramets in arboreta. Dr. Heimburger advised that such trees should only be selected from superior populations, and that progeny tests are necessary to establish whether the elite characters really are inherent.

It was Moved by Mr. Mulloy, Seconded by Mr.McCallum that Dr. Heimburger and Mr. Farrar be asked to prepare paper(s) on tree breeding in general and elite trees in particular, asking for the co-operation of the companies in saving elite trees. CARRIED.

An amendment proposed by Mr. Farrar was defeated. It was that the paper(s) be deferred until such time as some research organization had the personnel and equipment to make full use of such elite trees as were brought to the attention of the Subcommittee.

235. ACQUISITION OF FOREIGN BREEDING MATERIALS

It was Moved by Dr. Heimburger, Seconded by Mr. Farrar, that the Associate Committee be asked to approach the proper authorities with a view to establishing official channels for the acquisition of seed and other breeding material from foreign regions. CARRIED.

DR. HEIMBURGER is particularly eager to get five-needled pine from the Hymalayas, ~~and hard pines from Northeastern Asia.~~

236. It was agreed to meet again in March 1950, or earlier, if circumstances warrant. The meeting adjourned at 5:00 o'clock.

APPENDIX "A"

4 November, 1948.

Mr. J.L. Farrar,
Department of Mines and Resources,
Motor Building, 238 Sparks St.,
Ottawa, Ontario.

Dear Mr. Farrar:

At the 14th Meeting of the Executive, Associate Committee on Forestry, the following resolutions were passed:

" It was MOVED by Mr. Koroleff and SECONDED by Mr. Macdonald:

" Whereas under present practice there is widespread deterioration of our forest stock, since often only inferior specimens of trees are left after cutting to propagate their life, and

Whereas this process of "anti-selection" needs to be arrested and then reversed,

Be it resolved:

That a needed study be instituted by the Associate Committee on Forestry.

THE CHAIRMAN recommended and it was AGREED that this resolution be forwarded to the Subcommittee on Forest Tree Breeding for advice and recommendations to be presented at the next meeting of the Executive.

It was MOVED by Col. Jenkins and SECONDED by Mr. Delahey:

That - (a) the membership of the Subcommittee on Forest Tree Breeding, (b) the chairmanship and (c) the terms of reference as given in Appendix "B" of the proceedings of the 13th Meeting be APPROVED. CARRIED".

Yours faithfully,

S. J. Cook, Joint Secretary,
Associate Committee on Forestry.

SJC:LM

APPENDIX "B"

File No. : 49347 For.

November 12, 1948.

Dear Mr. Cook,

I have your letter dated November 4th in regard to a motion referred to the Subcommittee on Forest Tree Breeding, by the Executive, Associate Committee on Forestry. After consulting with the Subcommittee Chairman, the following is submitted for consideration of the Committee.

It is agreed that the preamble to the motion accurately describes the present situation with regard to present cutting methods and the bad effect on succeeding generations due to removal of the best trees and leaving only the worst. But we do not feel any useful purpose could be served by the Associate Committee studying the matter. It is our understanding that the Committee was set up to deal with research problems. In this case the necessary research has been done and it remains for the appropriate body to act on the basis of existing knowledge. The problem is now one of propaganda, law and administration, which are outside the terms of reference of the Associate Committee.

Admittedly no research has been done in Canada to show that superior trees produce superior progeny. However, work along this line in Scandinavia has convinced the foresters there that the parentage of the new forest is extremely important. This view is supported by facts with regard to inherited characters of all other organisms, vegetable and animal. We are not justified in carrying out similar studies in Canada, extending over a period of several decades, when we are certain of the outcome.

What needs to be done on the basis of the known facts? First; trees with inferior qualities must be removed before they can reproduce themselves. Secondly; trees with superior qualities must be left growing until they have reproduced themselves.

Obviously the organizations who must see that such a procedure is carried out are the land owners and the operators; the provincial governments and the private companies. Little action has been taken because it is only recently that the importance of the oncoming forests has been recognized, and because the necessary change from present logging practice would increase the cost of wood.

A change in logging practice to ensure that seed for the new forest comes only from the superior trees is impractical until transportation facilities in the woods are improved to permit cutting the same area once every 10 or 20 years instead of once every 80 to 100 years, as at present. This again is a problem outside the jurisdiction of the Committee. However, the Committee might consider it advisable to draw the attention of the provincial governments to the fact that in drawing up regulations for cutting practices provision should be made for the seed supply to come from select trees.

Beside the large private companies operating in timber limits there are individual farmers who own woodlots. Here transportation facilities are often well developed, so that if the farmer can be persuaded of the advantages of select seed trees, proper cutting practices can be put into effect at once. This is a job for the extension forester, employed by the provincial governments, in co-operation with the local agricultural representatives.

I shall lay the motion before the Subcommittee at its next meeting which will occur early next year.

Yours faithfully,

"J. L. Farrar"

J. L. Farrar,
Secretary,
Subcommittee on
Forest Tree Breeding.

S. J. Cook, Esq.,
Joint Secretary,
Associate Committee on Forestry,
National Research Council,
Ottawa, Ont.

APPENDIX "C"

Subcommittee on Forest Tree Breeding

of the

Associate Committee on Forestry

National Research Council

Project V - A - 1, Resistance to disease in poplar breeding materials

Reference: Reports and minutes contained in the Proceedings of the twenty meetings that have been held by this Subcommittee.

The principal activity in connection with this project has been the inspection of poplar breeding materials at the Petawawa Forest Experiment Station. The most important disease that has been observed, and the only one to which much attention has been paid, is rust caused by Melampsora medusae, which has caused serious premature defoliation in certain instances. The various lots of breeding materials have been examined tree by tree, and the intensity of rust infection noted according to the Schreiner classification, which is as follows (see letter dated 21 Sept. 1939 from Dr. E.J.Schreiner, North-Eastern Forest Experiment Station, to Mr. D.R. Cameron, Dominion Forester):

Schreiners Classification: for rust

0. No rust found.

1. Slight rust: a few pustules found on up to 25% of the leaves.

2. Medium rust: a few pustules found on up to 50% of the leaves, or 25% of the leaves heavily infected.

3. Badly rusted: practically all the leaves with at least medium heavy infection.

4. Very badly rusted: practically all of the leaves heavily infected; leaves often dead or dying.

In all, 608 lots of trees have been examined, for up to 7 years. The results have been entered on loose pages that are arranged alphabetically. These are being typed in several copies for the use of any person requiring the information. Additional observations can be added to these notes.

The methods employed can be criticized as follows:

(1) There has been considerable, unavoidable variation in the dates of the examinations. The intensity of the rust increases throughout the season and therefore, in order to obtain comparable results from year to year, the examinations should be made at constant dates, annually.

(2) The infections have been entirely accidental, there having been no attempt to subject all plants to the same chances of infection. It has been observed that rust may appear first in one corner of a nursery, e,g., the north-east corner of the Upper Nursery, and spread over the remainder of the nursery or section or clone from that point. In such instances the index of infection recorded has been based on the most severely infected trees of the clone.

It is pointed out that these routine inspections need not necessarily be made by a forest pathologist. A technician or other assistants can quickly be trained for this work.

The following table summarizes the results of all the annual examinations of poplar breeding materials that have been in the nurseries of the Petawawa Forest Experiment Station, for one or more years between 1939 and 1946 inclusive. For further details see the loose leaf summaries of field notes referred to in my report dated May, 1948.

May, 1948
Ottawa, Ontario.

C. G. Riley,
Forest Pathologist.

SUMMARY OF POPLAR RUST NOTES

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection	Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
A-3	4	0	ACE-8	3	2.3
A-4	4	0	ACE-10	2	0
A-10	4	0	ACE-11	7	3.0
A-12	1	0	ACG-1	2	1.5
A-13	2	0	ACG-12	2	0.5
A-17	5	0	ACG-27	2	0.5
A-18	5	0	ACG-28	1	0
A-20	5	0	Acuminata - 1	6	3.3
A-21	4	0	Acuminata - 2	3	4.0
A-22	4	0	Acuminata X Eugenie	1	4.0
A-23	2	0	AGC-17	1	0
A-24	2	0	AG-2	3	0.7
A-25	2	0	AG-7	3	0.7
A-26	5	0	AG-8	1	0
A-29	5	0	AG-10	5	0.2
A-34	4	0	AG-12	5	0.4
A-35	5	0	AG-15	4	0.8
A-36	4	0	AG-20	1	0
A-36	1	2.0	AG-21	4	0.5
A-36	2	0.5	AG-22	4	1.0
A-37	4	0	AG-24	3	0.3
A-38	4	1	AG-27	1	0
A-39	5	0	AG-28	1	0
A-40	5	0	AG-29	1	0
A-41	1	0	AG-30	1	0
A-42	4	0	AG-32	3	0.7
A-43	4	0	AG-33-5	6	0
A-45	2	0	AG-33-13	2	0.5
A-46	2	0	AG-33-14	3	1.0
A-47	2	0	AG-33-16	1	1.0
ACE-1	4	1.8	AG-33-17	5	1.2
ACE-4	4	3.0	AG-33-19	7	0.6

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
AG-47	2	1.0
AG-48	1	0
AG-56	1	0
AG-59	3	0
AG-60	2	1.5
AG-61	1	0
AG-63	1	0
AG-73	5	0
AG-81	3	0.3
AG-92	5	0
AG-93	1	0
AG-98	1	1.0
AG-99	1	0
AG-107	2	1.5
AG-112	5	0
AG-114	2	0
AG-115	2	0
AG-116	1	0
AG-117	1	0
AG X AT - 1	1	0
AG X AT - 2	1	0
AG X AT - 3	1	0
AG X AT - (379)	3	0.7
AG - Aylmer	1	0
AG - Aylmer - R.D.	1	0
AG - Masson	2	0
AGE-1	2	3
AGE-2	4	3.5
AGE-3	5	3.0
AGW-1	5	3.4
AGW-2	1	3.0
AGW-3	4	3.5
AGW-4-	4	3.5
AGW-5	4	3.5
AGW-7	4	3.5
AGW-8	4	3.3
AGW-9	4	3.5
AGW-10	4	3.5
AGW-12	1	3.0
AGW-13	4	3.3
AGW-14	3	3.3
AGW-15	1	3.0
AGW-16	4	3.8
AGW-17	4	3.8
AGW-18	4	3.3
AGW-19	1	3.0
AGW-20	3	3.7
AGW-21	1	3.0
AGW-22	3	3.7
AGW-23	3	3.7
AGW-24	4	3.5
AGW-25-	3	2.3
AGW-26	4	3.5
AGW-28	1	3.0
AGW-29	4	3.7
AGW-31	4	3.3
AGW-32	4	3.5
AGW-33-	1	3.0
AGW-34	3	3.7
AGW-35	4	3.5
AGW-36	1	3.0
AGW-37	4	3.5
AGW-38	4	3.5
AGW-40	1	3.0

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
AGW-41	4	3.7
AGW-43	3	3.3
AGW-44	4	3.3
AGW-46	4	3.5
AGW-47	4	3.7
AGW-51	3	3.3
AGW-52	4	3.5
AGW-53	4	3.5
AGW-55	4	3.7
AGW-56	3	3.3
Alba-44	1	0
Alba-45	1	0
Andover	3	2.3
Andrewsii - 1	5	3.2
Androscoggin	2	0.5
Angulata Erecta	7	2.4
Angulata X Simonii - 1	3	3.3
" " - 2	1	3.0
" " - 3	1	3.0
" " - 4	1	3.0
" " -5	1	3.0
" " - 6	1	3.0
" " - 7	1	2.0
" " - 8	1	3.0
" " - 9	1	3.0
Angulata X Simonii-F-1	1	4.0
AS - 1	1	1.0
AS - 2	1	1.0
AS - 3	1	1.0
AS - 4	1	1.0
AS - 5	1	1.0
AS - 6	1	2.0
AS-7	1	1.0
AS-8	1	1.0
AS-9	1	1.0
AT-2	4	0.8
AT-13	1	0
AT-15	1	0
Bassano	4	3.0
Berolinensis-1	4	0.3
Berolinensis X Lombardy - F -1	4	1.0
Berolinensis X Lombardy-2	2	1.0
" " 3	2	0.5
" " 4	2	0.5
" " 5	2	1.0
" " 6	2	0.5
" " 7	2	0.5
Berolinensis X Simonii-1	4	1.0
" " -2	2	0.5
" " -3	2	1.0
" " -4	2	0.5
" " -5	2	0.5
" " -6	2	1.0
" " -7	2	0.5
Big Brooks	3	2.3
BNW - 1	5	3.8
" 2	6	2.3
" 4	5	3.0
" 6	5	3.2
" 8	5	2.6
" 9	5	2.6
" 11	5	2.2
" 15	7	2.6
" 16	5	2.8

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
BNW - 17	5	2.6
" 18	7	2.0
" 19	7	2.0
" 22	5	3.2
" 23	5	2.0
" 25	5	3.0
Brooks - 4	8	2.4
" 7	3	1.7
" 10	7	2.6
C - 1	7	0
C - 2	3	0
C - 3	3	0.7
C - 5	3	0
C-8 x AG - 37	3	0
C - 12	1	0
C - 13	1	0
C - 15	2	0
C - 16	1	0
C - 17	1	0
C - 717	1	0
CA - 1	4	0
CAG - 1	1	0
" - 2	1	0
" - 3	1	0
" - 4	1	0
" - 5	1	0
" - 6	1	0
" - 7	1	0
" - 8	1	0
C X AG - (422)	1	2.0
C X AG - (424)	1	1.0
Calgary - 1	2	2.0

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
Calgary - 4	2	1.5
" 6	2	2.0
" 16	2	1.5
" 17	2	1.0
" 23	8	1.3
" 91	4	2.5
" 92	4	2.5
" 94	4	3.3
" 95	4	2.5
" 96	4	3.3
" 98	2	3.5
" 106	2	3.5
" 107	2	2.5
" 108	4	2.0
" 109	4	2.5
" 120	4	2.5
" 121	4	2.0
Candicans	3	1.0
Canescens	1	0
Carolina - 1	6	1.5
" - 2	3	2.7
" -3	3	2.3
Cathayana - 1	7	1.1
" - 13	4	1.8
" - 14	1	2.0
" - 15	7	1.1
" - 16	4	1.3
" - 17	7	1.1
" - 18	4	1.5
" - 19	1	2.0
" -20	4	1.0
CG - 1	6	0.3

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection	Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
CG - 6	6	0.2	CW - 334	6	3.7
CG - 8	6	0.3	CW - 354	6	3.7
CG - 12	7	0.4	CW - 359	5	3.4
CG - 16	7	0.7	CW - 372	6	3.2
CG - 17	8	0.4	CW - 385	6	3.7
CG - 18	3	1.3	CW - 407	6	3.7
CG - 27	7	0.7	CW - 435	6	3.7
CG - 28	8	0.1	CW - 440	6	4.0
CG - 30	6	0.2	CW - 460	6	3.7
CS - 1	2	1.0	CW - 475	4	2.5
CS - 2	2	0.5	CW - 526	6	3.7
CS - 3	2	0.5	CW - 538	6	3.7
CS - 4	2	1.5	CW - 591	5	3.4
CS - 5	2	0.5	CW - 641	6	3.7
CS - 6	2	0.5	CW - 647	6	3.7
CT - 6	4	1.5	CW - 689	6	3.7
C X W Branchy	1	0	CW - 691	5	3.4
C X W Ruff	1	3.0	CW - 727	6	3.5
CW - 39	6	3.7	CW - 733	6	3.7
CW - 101	6	3.7	CW - 748	5	3.4
CW - 102	6	3.1	CW - 756	6	3.7
CW - 122	6	3.3	CW - 791	6	3.7
CW - 150	1	4.0	CW - 920	6	3.7
CW - 161	5	3.6	CW - 926	5	3.6
CW - 175	6	3.7	CW - 1083	6	3.7
CW - 208	6	3.0	CW - 1093	5	3.8
CW - 218	5	3.6	CW - 1246	6	4.0
CW - 247	6	3.7	CW - 1261	6	3.7
CW - 260	6	3.7	CW - 1320	6	3.7
CW - 293	4	3.0	CW - 1325	6	3.8
CW - 310	5	2.8	CW - 1330	6	4.0
CW - 316	6	3.7	CW - 1339	5	4.0

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
CW - 13	6	3.8
CW - 1389	6	3.8
CW - 1446	4	3.8
CW - 1447	5	3.0
CW - 1476	6	4.0
CW - 1509	6	3.2
C X W - Long cuttings	1	3.0
C-8 X AG - 37 - F1	1	0
D -11	8	4.2
D - 2	8	2.8
D - 3	2	1.5
D - 4	4	2.0
D - 5	7	2.4
D - 7	6	2.7
D - 8	3	2.0
D - 9	3	2.0
D - 17	1	0
D - 481	5	1.4
D - 482	5	2.2
D - 483	5	2.0
D - 484	5	2.0
DT - 1	2	4.0
DT - 3	3	4.0
DT - Skinner	1	4.0
Epirotica	1	0
Eugenii	1	0
Eugenii - 2	3	2.0
Frye	2	1.0
G - 1	1	2.0
G X A (424)	2	0
GCH - 4	1	0
Gelrica	8	1.1
Generosa	7	2.4
Geneva	3	0
GC - 1	1	0
GC - 2	1	0
TC - 4	1	0
GC - 11	3	0.3
GC - 18	1	0
GCH - 2	1	0
Jackii - 1	4	3.3
" 2	7	3.0
" 3	5	3.8
" 4	2	4.0
" 5	2	4.0
" 6	2	4.0
" 7	3	4.0
" 9	3	4.0
" 10	3	2.7
" 11	3	3.7
" 12	3	3.7
" 13	3	3.0
" 14	3	3.0
" 15	3	3.3
" 16	3	3.3
" 17	3	3.3
" 18	3	3.0
JT - 1	1	2.0
JT - 3	1	3.0
JT - 4	1	3.0
Jackii X Tristis -(423)	2	2.5
Kanjitaliana- 1	1	2.0
Kanjitaliana - 3435 -37	1	2.0
Koreana - 1	2	1.5

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
Koreana - 5	4	0.5
" 6	7	2.0
" 8	1	3.0
" 9	6	0.3
Laurifolia - 1	1	0
" 4	3	1.0
" 5	1	2.0
Maine	3	0.3
Masson	6	3.3
Maximowiczii - 1	5	0.8
" 2	4	0.3
" 3	4	0.8
" 4	4	0.3
" 5	4	0.3
" 6	3	0
Moscowiensis	1	4.0
N - 1	2	1.0
N - 2	4	1.0
N - 3	2	1.0
N - 4	1	0
N - 5	1	1.0
N - 7	2	1.0
N - 8	3	1.3
N - 9	1	1.0
N - 10	2	1.5
N - 11	2	1.0
N - 12	1	4.0
N - 13	3	3.7
Nigra - 1	2	0.5
N.West	6	3.5
OP-5	3	1.0
OP - 6	3	1.0

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
OP - 7	3	1.0
OP - 10	3	0.3
OP - 14	3	0.7
OP - 16	3	0.7
OP - 23	3	1.3
OP - 26	3	1.3
OP - 27	3	1.3
OP - 30	3	0.7
OP - 38	7	2.4
OP - 41	3	0
OP - 42	3	0.7
OP - 44	3	0
OP - 45	8	0.3
OP - 46	3	0
OP - 47	3	0.3
OP - 48	4	0
OP - 49	4	0.8
OP - 50	3	0
OP - 51	3	1.3
OP - 52	3	1.0
OP - 53	3	1.0
OP - 54	4	0.8
OP - 55	3	0.3
Oxford	2	0.5
1 P 42 - CS	1	2.0
4 P 42 - CS	2	2.5
5 P 42 - CS	2	2.0
11 P 42 - CS	1	3.0
15 P 39 - 2CS	1	3.0
18 P 39 - 7CS	4	3.0
38 P 38 - CS	4	2.3
39 P 38	1	1.0

Tree Lot Designation	No. of Annual Examinations	Average Index of Infection
69 P 38 - 5CS	1	1.0
P. Alba - 671	2	0
P. Alba - 5568	1	0
P. Alba X G - F1	1	0
P X N.W.	1	4.0
P. Grandidentata X P. Alba - (424)	1	0
P. Jackii X P.Tristis-(423)	1	1.0
P. Rasoumowskyana X P. Tacamahaca - (425)	1	2.0
P.T. - 3	1	0
Pyramidalis	2	0.5
R X T-f1	1	0
Rasoumowskyana	2	2.0
Rasoumowskyana X Tacamahaca - (313)	1	0
Raverdeau	6	2.3
Rochester	5	0.4
Roxbury	7	1.3
Rotundifolia - 1	2	0
R.T. - 1	3	1.3
R.T. - 2	4	1.3
R.T. - 3	3	2.7
R.T. - 4	2	4.0
R.T. - 5	4	2.3
R.T. - 6	3	2.3
R.T. - 7	1	3.0
R.T. - 8	2	3.5
R.T. - 9	1	0
R.T. - 10	2	1.5
R.T. - 11	3	2.3
R.T. - 12	1	2.0
R.T. - 13	1	1.0
R.T. - 15	3	2.0
R.T. - 16	1	2.0
R.T. - 17	1	2.0
R.T. - 18	1	0
R.T. - 19	2	4.0
R.T. - 20	2	2.5
R.T. - 21	2	3.0
R.T. - 22	2	3.5
R.T. - 23	3	3.0
R.T. - 24	2	2.0
R.T. - 25	2	1.5
R.T. - 26	3	2.0
R.T. - 27	3	2.7
R.T. - 28	3	2.0
R.T. - 29	3	2.7
R.T. - 30	3	3.0
R.T. - 31	2	3.5
R.T. - 32	3	2.0
R.T. - 33	4	3.0
R.T. - 34	3	2.7
R.T. - 35	3	3.0
R.T. - 36	1	3.0
R.T. - 37	2	1.0
R.T. - 38	2	1.0
R.T. - 39	2	2.5
R.T. - 40	2	2.0
R.T. - 41	2	1.0
R.T. - 42	1	0
R.T. - 43	3	2.7
R.T. - 44	3	2.7
R.T. - 45	3	3.0
R.T. - 46	4	0.8

Tree Lot Designation	No. of Annual Exam-inations	Average Index of Infection
R.T. - 47	4	1.8
R.T. - 48	3	1.3
R.T. - 49	2	0
R.T. - 50	3	3.0
R.T. - 51	2	1.0
R.T. - 52	4	1.3
R.T. - 313	1	0
R.T. - 425	2	2.5
R.T. - F1	2	1.5
Rumford	2	1.0
Saskatchewan	3	3.0
Simonii - 1	2	0
Simonii - 2	2	2.5
Sutherland - 4	3	1.7
Strathglass	3	0.7
Suaveolens - 1	3	0.3
Szeckvanica - 1	5	1.6
T1 - PW	1	0
T2 - PW	3	1.3
T3 - PW	1	0
T4 - PW	1	0
T5 - PW	1	0
T6 - PW	1	4.0
T7 - PW	3	1.3
T - 8	5	1.0
T8 - PW	1	0
T9 - PW	3	1.0
T - 10	1	1.0
T10 - PW	3	1.0
T11 - PW	1	2.0
T12- PW	1	0
T13 - PW	1	2.0
T 14	1	4.0
Ta - 2	5	2.2
Ta - 4	1	1.0
Tacamahaca - 2	1	0
Tacamahaca - 3	1	0
Tacamahaca - 4	2	1.0
TG - 2	2	0.5
TG - 3	4	2.0
TG - 4	2	0.5
TG - 5	1	1.0
TG -7	1	0
tRt - 1	2	1.5
" 2	2	0.5
" 3	2	1.5
" 4	2	0.5
" 5	2	0
" 6	2	1.5
" 7	2	0
TXS	1	1.0
TS - 4	1	0
TS - 5	2	1.0
Tremula	2	1.0
Tremula - 2	2	1.5
" 4	2	1.0
" 5	2	1.0
" 104	1	0
" 105	1	0
Tremula (Wettstein)	1	0
Trichocarpa	1	1.0
Trichocarpa - 2	2	2.5
" 5	4	0.5
" 6	4	1.0