

JACK PINE SEED ORCHARDS FOR MANITOBA  
1983-1985

J.I. Klein

*Northern Forest Research Centre  
Canadian Forestry Service  
5320 - 122 Street  
Edmonton, Alberta  
T6H 3S5*

The genetic improvement program for jack pine (*Pinus banksiana* Lamb.) for Manitoba and Saskatchewan, initiated in 1976, seeks to provide genetically superior planting stock to cooperators. Superior genotypes are identified by assessment of open-pollinated tests, while a clone bank is under development to provide propagation materials of selected families (Klein 1982).

Major activities during the past two years included selection of superior progeny trees within selected eastern breeding district families (Klein 1983), establishing a computer-based records management system for the clone bank, 10-year measurement and preliminary analysis of the western breeding district family test, staffing actions, clone bank development, and planning of a program to develop jack pine seed orchards for Manitoba under the Canada-Manitoba Forest Renewal Agreement. A few highlights of the seed orchard development program will be reported here. New resources for this program include two person-years of additional staffing for each year of the agreement, a new tree improvement greenhouse complex, and funding for operations.

#### STAFFING

Implementation of the seed orchard program will be the responsibility of Mr. Albert Nanka, who has 15 years experience in the jack pine genetics program of the Northern Forest Research Centre. Mr. Paul Chapman, formerly of Sault Ste. Marie, Ontario has replaced Mr. Nanka as forest genetics research technician in Edmonton. Mr. Chapman's extensive experience related to forest nurseries and forest planting will be valuable in the research program. Another person-year or more allocated to the seed orchards program is being used to hire seasonal workers.

#### GREENHOUSE COMPLEX

Construction is expected to begin shortly on a tree improvement greenhouse complex at Pineland Forest Nursery near Hadashville, Manitoba. The complex will consist of one 300 m<sup>2</sup> greenhouse for Canadian Forestry

Service (C.F.S.) use, another for the Manitoba Forestry Branch (M.F.B.), shared headerhouse with propagation, laboratory, and office facilities, attached to the greenhouses, and a shade house. The C.F.S. greenhouse will be used primarily to rear jack pine trees for seed orchards, and secondarily for research on vegetative propagation of jack pine. The design team for the complex consisted of Public Works Canada engineers, Mr. Nanka, and Ms. Donna Gillis of M.F.B.

#### EASTERN BREEDING DISTRICT SEED ORCHARD

Based on measurement of height and diameter, and scoring of stem quality at 10 years from planting, the five best progeny trees were selected in each of 40 selected families (out of 209 tested) to serve as parents of seed orchard trees. Mating was done in a single-pair design. Pollen was bulked and seeds will be bulked among trees within families to produce double first-cousin families for the seed orchard. Mating was attempted in 1984 but flowering was poor that year. In 1985, with good flowering and one practice run, results appear to be entirely satisfactory. Site development will be done in 1986 at the C.F.S. property near Winnipeg. Planting is scheduled for 1987 and 1988. With accelerated greenhouse rearing, the first cone harvest is expected no later than 1995.

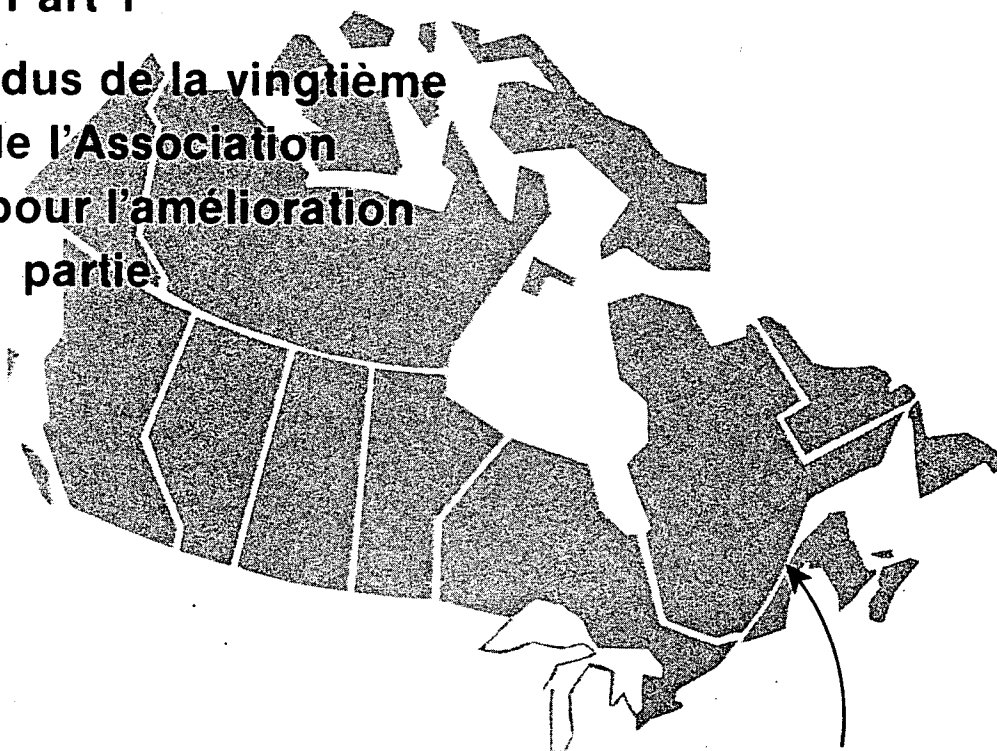
#### PUBLICATIONS AND REFERENCES

- Klein, J.I. 1982. Establishment and first results of a jack pine breeding program for Manitoba and Saskatchewan. Environ. Can., Can. For. Serv., North. For. Res. Cent. Edmonton, Alberta. Inf. Rep. NOR-X-247.
- Klein, J.I. 1983. Selection for eastern Manitoba jack pine seed orchards based on 10-year family test results. Environ. Can., Can. For. Serv., North. For. Res. Cent. Edmonton, Alberta. For. Manage. Note 24.
- Klein, J.I. 1984. Genetic improvement of jack pine for the prairie provinces, 1981-1983. Pages 150-153 in Proc. 19th Meet. Can. Tree Improv. Assn., Part 1.

**Proceedings of the twentieth  
meeting of the Canadian  
Tree Improvement  
Association: Part 1**

**FILE COPY**  
**Do Not Remove**

**Comptes rendus de la vingtième  
conférence de l'Association  
canadienne pour l'amélioration  
des arbres: 1<sup>re</sup> partie.**



Québec City, Québec  
August 19-22, 1985  
du 19 au 22 août 1985



**Minutes and members' reports**  
**Procès-verbaux et rapports  
des membres**

Part 1. Minutes and Members' Reports

Distributed to Association members and to others on request to the Editor, C.T.I.A./A.C.A.A., Chalk River, Ontario, Canada, KOJ 1J0

Part 2. New Ways in Forest Genetics

Distributed worldwide to persons and organizations actively engaged or interested in forest genetics and tree improvement.

Additional copies of this publication are available from:

Editor C.T.I.A./A.C.A.A.  
Canadian Forestry Service  
Petawawa National Forestry Institute  
Chalk River, Ontario KOJ 1J0

Produced by  
Canadian Forestry Service,  
for the  
Canadian Tree Improvement Association,  
Ottawa, 1986

PROCEEDINGS  
OF THE  
TWENTIETH MEETING  
OF THE  
CANADIAN TREE IMPROVEMENT  
ASSOCIATION

PART 1:  
MINUTES AND MEMBERS' REPORTS

HELD IN  
QUEBEC CITY, QUEBEC  
AUGUST 19-22, 1985

EDITORS:  
C.W. YEATMAN & T.J.B. BOYLE