NORTH DAKOTA'S TREE AND SHRUB SEED CERTIFICATION PROGRAM

Richard A. Cunningham 1/

Abstract.--North Dakota's program is summarized giving details on the certification categories, field standards, seed testing procedures and inspection procedures. A history of how the program came about and the types of seed certified to date is included. A proposal for a uniform certification program for all the Great Plains and Central States is offered.

HISTORY

Past Seed Collection Practices

Nearly all of the tree and shrub planting stock sold in North Dakota for other than ornamental purposes is grown in two nurseries. Conifers are grown by the North Dakota State Forest Service at their Towner Nursery. The Association of Soil Conservation Districts grows deciduous planting stock at their Lincoln Nursery in Bismarck. Both of these nurseries are essentially non-profit, public service oriented operations. Both nurseries obtain seed in a variety of ways: (1) collection by their own crews; (2) purchases from local seed collectors; (3) purchases from large seed dealers. Procurement of adequate seed supplies is often difficult for many species and as a result the genetic quality of the seed is often ignored.

Problems Arise

Since the consequences of potentially dysgenic seed collection practices are usually indirect and are deferred over a long period of time, their importance has not been fully appreciated by nurserymen or consumers of planting stock in North Dakota. Most of the planting stock is used for non-commercial plantings such as farmstead shelterbelts, field windbreaks, and wildlife plantings. Lowered survival, reduced vigor or susceptibility to pests does not result in a direct economic loss. The prevailing attitude has often been, "If the seed will produce an adequate number of trees that will meet minimum grade standards, and it is not expensive, then it is good enough."

Action Initiated

Recently, however, the consequences of ignoring the genetic quality of seed have become apparent to a variety of people concerned with tree planting in North Dakota. The North Dakota Farm Forestry Committee, an informal association of federal agencies, state agencies, nurserymen and

---

1/ Geneticist, Rocky Mountain Region, USDA Forest Service, Denver, Colorado.

other groups interested in promoting tree planting, became concerned with the genetic quality of the trees being planted in the state. A Tree Improvement Subcommittee was formed to promote and coordinate the development of genetically improved planting stock. The development of a seed certification program for tree and shrub species was chosen by this subcommittee as the most efficient means of achieving their objectives.

Certification Program Developed

The research geneticist for the USDA Forest Service, stationed at the Shelterbelt Lab in Bottineau, North Dakota, was assigned the task of reviewing the present status of tree seed certification in the United States and developing a proposed program for North Dakota. This task was accomplished and the proposed program was reviewed and revised by the entire Tree Improvement Subcommittee.

The North Dakota State Seed Department, the state agency responsible for certification of agricultural seeds, was invited to review and comment on the proposed certification program. In addition to suggesting several minor changes in the program the State Seed Lab volunteered to administer the program as a normal function of their department. Seed Department officials emphasized, however, that they would have to rely upon forestry professionals within the state for assistance in areas such as field inspections. The revised and approved North Dakota Tree and Shrub Certification Standards were published by the State Seed Department as a supplement to Bulletin 51, "North Dakota Seed Certification Standards."

PROGRAM DESCRIPTION

Certification Categories

The certification standards adopted by North Dakota are modeled after those proposed by the Society of American Foresters, the Association of Official Seed Certifying Agencies, and the Organization for Economic Cooperation and Development.

Three classes of seed may be certified in North Dakota. The classes differ in the amount of effort necessary to produce them and in the degree of genetic improvement they represent.

I. Source-identified seed (yellow tag)

Source-identified seed is certified as being harvested from trees growing in a specified geographic location. The tree may be growing in natural stands or in plantations or shelterbelts of known parentage. This class represents the first step in the genetic improvement of tree and shrub seed by insuring the accurate designation of the area from which it was harvested.

II. Selected seed (green tag)

Seed certified as selected is harvested from rigidly selected trees or shrubs that have promise of genetic superiority, but that have not yet been tested. The trees or shrubs may have been selected as superior for one or more of a variety of traits such as rapid growth, resistance to insects or diseases, fruit quality, or foliage color.

III. Certified seed (blue tag)

Certified seed is harvested from trees or shrubs proven to be genetically superior by field testing their progeny. The potential for genetic improvement of seed is highest for this category of certification. Normally seed in the Certified category would be produced in special plantations called seed orchards. All of the trees in the seed orchard would be of proven genetic quality. Precautions are taken to prevent contamination by foreign pollen. Techniques such as fertilization and irrigation are utilized to stimulate frequent and abundant seed crops.

Field Inspection

For Certified and Selected seed, an initial field inspection is made prior to pollination (at least 21 months before cone collection for pine). At this inspection compliance with regard to roguing and isolation as covered by State Seed Department standards is checked. The inspector will require additional roguing if any trees or shrubs fail to meet the standards. Such trees or shrubs must be marked at the time of inspection and be felled while the inspector is on the area. If this is not possible and the trees or shrubs are felled at a later time, a complete reinspection will be required.

For Certified and Selected seed, a second inspection is made within 90 days prior to seed collection. At this inspection particular attention is paid to the size of the crop and for evidence of disease and insects.

Initial-type field inspections must be repeated at five-year intervals if the tract is to be used to provide Certified or Selected seed for more than five years. Second inspections are required only in years in which certified seed production is planned.

No field inspection is required for Source-identified seed.

Field inspections are the responsibility of the State Seed Department, but in view of their lack of necessary technical expertise in forestry related matters, they have asked the Tree Improvement Subcommittee to assume the responsibility for field inspections.

Seed Testing

The State Seed Lab is responsible for testing samples of each seed lot that is submitted for certification. Common tests are purity percent, percent full seed, and germination percent. Since they have had little experience with tree seed, they have enlisted the assistance of the USDA Forest Service Eastern Tree Seed Laboratory in developing reliable testing procedures.

PRESENT STATUS OF PROGRAM

Promotional Activities

Although North Dakota's tree and shrub certification program is less than a year old, progress is already being made. As a means of promoting the certification of seed by seed collectors and nurserymen, a training session and inspection tour was held in August. A variety of trees and shrubs in federal, state, and private ownership were inspected and recommendations were made regarding their suitability for certification. Considerable material was identified as appropriate for certification as Source-identified. Owners were encouraged to submit seed from these sources as soon as possible. In several instances, trees or shrubs exhibiting superior characteristics were identified as candidates for the Select class of certification. Suggestions regarding roguing procedures were made and the owners were urged to submit the material for certification.

Many of the individuals involved in the training session expressed their surprise at the amount of material already in existence that would qualify for certification.

A PROPOSAL FOR THE FUTURE

Uniformity in Standards

The increasing awareness of the importance of the genetic quality of tree and shrub planting stock by tree planters and nurserymen is going to increase the need and the demand for tree and shrub seed certification programs in most of the states within the Great Plains and Central States Regions. To help meet this demand in a responsible manner, I think it is imperative that we geneticists and tree improvement specialists take the lead in developing and promoting these programs. Since at present very few states in these regions have formal certification programs for tree and shrub seed, we have the opportunity to see that a uniform approach is taken in all of these states. Uniformity in certification categories, field standards and inspection procedures would foster the exchange of certified seed between states. The present interstate traffic in seed often results in the use of seed ill-adapted to the planting site because its origin is unknown. Reciprocal certification agreements among the states would facilitate the exchange of higher quality seed and planting stock than is now being used.

I would like to propose that the Central States Tree Improvement Committee address itself to this area of concern by appointing a Seed Certification Subcommittee. Such a subcommittee would be responsible for promoting and coordinating the development of seed certification programs within the Great Plains and Central States Regions.