Guidelines for Grading and Labeling Forest Tree Seeds in Canada

by

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Abstract

Guidelines for grading and labeling forest tree seeds in Canada are presented. The Guidelines will enhance forest management by providing minimum standards for labeling, and by encouraging the application of internationally-recognized grading procedures to domestic seed movements. Their adoption should deter the importation and movement of undesirable seeds, and will permit the gazetting of long-distance movements of tree seeds within Canada. They are proposed for acceptance by provincial and territorial agencies, industry and professional organizations concerned with the sale and movement of forest tree seeds.

The Guidelines are introduced with a review of their development, and an outline of existing procedures for certifying the genetic origin and physical quality of forest tree seeds exported from Canada.

Résumé

Sont présentées des lignes directrices pour la certification et l'étiquetage des semences d'arbres forestiers au Canada. Ces lignes directrices permettront d'améliorer la gestion forestière en établissant des normes minimales pour l'étiquetage, et en encourageant l'application de méthodes reconnues internationalement pour la certification des semences transportées à l'intérieur du Canada. Leur adoption devrait décourager l'importation et le transport de semences indésirables en plus de permettre la publication d'information sur les expéditions de semences d'arbres forestiers sur de grandes distances à l'intérieur du Canada. Ces lignes directrices sont proposées pour approbation aux organismes provinciaux et territoriaux, à l'industrie et aux organisations professionnelles que la question de la vente et du transport des semences d'arbres forestiers intéresse.

Outre les lignes directrices, les auteurs présentent (en anglais), un historique de leur élaboration ainsi qu'un aperçu des méthodes utilisées actuellement pour la certification de l'origine génétique et de la qualité physique des semences d'arbres forestiers exportées vers d'autres pays.

Introduction

The value of seeds, like any useful commodity, is highly dependent on quality. To foresters, quality comprises the genetic potential derived from parent trees, and the ability to produce vigorous seedlings. Both are important. While the forester looks for seeds of high quality, it is probably more important to know in detail what the quality is, high or low. In Canada there is a particular need to be able to ascertain readily the seed origin and the physical quality of seeds purchased from distant suppliers. It is also in the national interest to ensure that long-distance seed transfers are recorded. This will provide a measure of the resource pool developing *ex-situ* and of the disturbance in the genetic integrity of Canada's regionally and locally adapted natural populations of commercially valuable tree species.

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The need for certification of Canadian forest tree seeds was first reviewed by Wang and Sziklai (1969) and later endorsed at the National Workshop on Tree Seed Production and Tree Improvement in Canada (Morgenstern and Carlson 1979). In a plenary session at that meeting, it was recommended that the Canadian Forestry Service (CFS) obtain authority under the Canada Seeds Act to implement national seed certification and regulatory activities for forest tree seeds. The CFS assigned high priority to addressing this recommendation; its ability to regulate forest tree seeds was subsequently enhanced through the appointment of a Minister of State (Forestry) (now Forestry and Mines) within Agriculture Canada where responsibility for the Canada Seeds Act was already vested.

In anticipation of the new authority, the CFS drafted regulations that it viewed to be in the interests of the forest sector in Canada. These regulations were prepared in extensive consultation with provincial forestry departments,

industry and universities over a period of several years. In brief, the proposed regulations were designed to safeguard forest renewal through setting basic rules for labeling, establishing services for certification of seed quality, monitoring long-distance (inter-jurisdictional) movement of seeds, and controlling undesirable importation and long-distance movement of seeds. As defined by the Seeds Act, such federal regulations could be applied only to seeds sold, and moving in or out of the country or across jurisdictional boundaries within Canada. However, since the forest sector had expressed support for their development, it was believed they would be adopted widely as minimum standards upon which provincial governments and industry could develop regulations suited to regional and local needs.

The certification services to be provided through the regulations were modeled on existing schemes that support Canada's seed export industry, namely the Organization for Economic Cooperation and Development (OECD) *Scheme for the Control of Forest Reproductive Material Moving in International Trade,* and the International Seed Testing Association (ISTA) *International Rules for Seed Testing.* These two schemes have long-established international recognition and could provide a basic framework for domestic needs. The aim of the CFS was to ensure that the proposed regulations would be compatible with these international schemes. Seed producers would then be faced with only one set of regulations, and could be assured that seeds produced for domestic purposes would also be acceptable for international trade.

Recent Policy Changes

While the reasons and expectations for the proposed regulations remain, they must be viewed in the light of the federal government's current policy of regulatory reform affecting both private and public enterprises. Support for the introduction of new regulations has been withdrawn by the federal government. One reason is that the export sale of Canadian tree seeds is not of major economic importance (i.e., it is measured in millions rather than tens of millions of dollars). Nevertheless, since the regulations were drafted with strong endorsement from industry and provincial governments, the importance of addressing the need for seed control within the forest sector remains.

Given these considerations, and following another round of consultations with forest tree seed users, the proposed regulations were recast in the form of Guidelines that are presented later in this paper. The only significant change from the proposed regulations is that the Guidelines contain no compulsory elements whatsoever in their provisions: articles relating to statutory powers and regulations have either been revised or eliminated. The adoption and implementation of these Guidelines can be as effective as the regulations originally envisaged. In fact, their widespread, voluntary adoption by agencies may well prove to be more effective than compulsory regulation, an expectation that has encouraged the authors to continue in this new direction.

The certification services envisaged under the Guidelines already exist for seed exports. However, given the already stretched resources of the two CFS laboratories (the Pacific Forestry Centre, Victoria, British Columbia, and the Petawawa National Forestry Institute, Chalk River, Ontario) currently providing these services, and the prospect of continuing financial constraints, it would be imprudent to volunteer the extension of these services for domestic needs at this stage. Rather, we are presenting these Guidelines, emphasizing the sector-wide consultations embodied in them, with the purpose of sounding out demand for their implementation, and with a view to developing options for meeting new costs. These options could include extending present seed service arrangements, introducing fees, recovering costs, or contracting out to other agencies.

The following sections describe how the certification of genetic origin and physical quality of Canadian tree seeds for export has been conducted to date; this is used as a framework to present guidelines on how seeds used for domestic purposes may be graded and labeled.

Certifying the Genetic Origin of Tree Seeds for Export

A scheme for the control of forest reproductive material moving in international trade was established by the OECD in 1967 (Organization for Economic Cooperation and Development 1974). The objective of this scheme is to encourage production and use of forest tree reproductive materials, including seeds, plants and parts of plants, that have been collected, processed, raised and distributed in a manner that ensures their trueness to name.

As a member of OECD, Canada assisted in formulating the scheme which recognizes four categories of materials:

a) source-identified material, which represents a minimum standard;

b) selected reproductive material;

c) reproductive material from untested seed orchards; and

d) tested reproductive material.

Canada became involved in the scheme because a number of European members of OECD insisted that forest reproductive materials would be imported only if they had been certified according to the scheme. The government of Canada nominated the Canadian Forestry Service as the Designated Authority to implement the scheme.

Certification operations began in 1970 for tree seeds collected in British Columbia. In 1971 the scheme was extended to seeds from Alberta, and in 1972 to seeds from the Yukon Territory and adjacent parts of the Northwest Territories. Procedures for describing regions of provenance and origin, and rules embracing the minimum requirements of OECD, were published in 1976 (Piesch and Stevenson 1976).

Since 1970, some 22 000 kg of seeds, mostly from British Columbia and the Yukon Territory, have been certified in the source-identified category. This was the only type of material in demand under the scheme until 1985 when 128 kg of seeds produced in three untested seed orchards were included (Edwards and Portlock 1986). Detailed summaries of the operations of the scheme have been published (Piesch 1977; Pollard 1982; Edwards 1988). Provisions and arrangements for certifying selected and tested materials will be prescribed when the demand for certification is extended to these categories.

The OECD scheme has operated in Canada for almost 18 years. Although the bulk of the work has occurred in British

Columbia and the Yukon Territory, provisions have been made through CFS establishments for seeds from other regions to be certified. While minor procedural revisions may be necessary to satisfy requirements in all parts of the country, the scheme is reliable and can be regarded as a sound basis for national guidelines concerning tree seed certification.

Testing the Quality of Forest Seeds for Export

The purpose of seed testing is to evaluate the purity and germinability of seeds for calculating their planting value and identifying treatment requirements. Seeds should be tested immediately after their initial processing, and immediately before sowing if they have been stored (Bonner 1974).

For seeds moving in international trade, there is a particular need for the uniform assessment of seed quality, for this determines their sale price. This is the rationale behind the international seed testing rules of the International Seed Testing Association (1985). The history of the formation of ISTA and development of international seed testing rules were thoroughly described by Justice (1972), Bonner (1974) and Edwards (1983).

The CFS has been participating in research activities in the ISTA Forest Tree and Shrub Seed Committee since 1969. CFS seed laboratories at the Petawawa National Forestry Institute and the Pacific Forestry Centre have been internationally accredited tree seed testing stations since 1974 and 1978, respectively, and are authorized to issue official certificates of seed quality according to the ISTA rules. ISTA seed lot certificates are recognized by 59 countries in Africa, Asia, Australasia, Europe, Latin America and North America. Since 1979, 651 certificates have been issued by the seed laboratory of the Pacific Forestry Centre and about 80 certificates by the Petawawa National Forestry Institute.

Based on new research findings and problems arising from practices, ISTA seed testing rules are updated periodically. ISTA also sponsors courses and workshops for training seed analysts, resolving problems and promoting uniform application of its rules for seed testing. Accredited laboratories are obligated to participate in regularly held international referee testing exercises the aim of which is to ensure consistency of execution and interpretation of the testing rules. There can be little doubt that the international rules provide a sound basis for national guidelines for testing tree seed quality.

Domestic Requirements for Grading Forest Tree Seeds

Packages of seeds moving among Canadian forest agencies should include a basic description of the seed lot and its source. While most of this information can be provided by the seed collector, the genetic origin of the seeds is usually of paramount importance and the purchaser may require its verification. Furthermore, physical quality of seeds must be assessed under standard, reproducible conditions that can be met only in specially equipped facilities; again, purchasers may require verification of stated quality. Thus, it is recommended that seeds be graded for genetic category and physical quality by agencies accredited for seed certification, and that the package label should refer to certificates issued by these agencies.

As a background to the proposed Guidelines, an outline of the purposes and methods of certification of Canadian tree seeds is presented in the following sections.

1. Inspecting and verifying seed origins

The purpose of identifying seed origin is to provide the seed purchaser with a guarantee that the seed lot is true to its description. This is accomplished by a series of inspections beginning when the cones or fruits are collected. Seed collectors must provide advance notice to the inspector(s) of their intention to collect. This is essential if the inspection work is to be coordinated over a large geographical area. As well as making estimates of the volume of cones or fruits that can be obtained from any given collection area, the inspector ensures that all containers used are labeled before they leave the collection site. The number of containers must be recorded, and the inspector must be informed when they are to be shipped to the seed processing plant so that the integrity of the collection can be maintained. Further inspections are conducted during seed extraction and seed storage to ensure that labels have accompanied the seeds through each stage to prevent mixing and to ensure that no tampering with the seed lot has occurred. Once the final volume of seeds is known, it is compared with known cone volume/seed yield standards for the species to further verify the collection process.

Seed packages must be labeled to show species, weight of seeds and identification of the source. Provided each step in the collection-processing-storing-packaging process has been properly labeled, the seed purchaser will be assured of the origin of the seeds purchased. For seeds collected from natural stands, the procedures to be followed in certifying seed source are those described by Piesch and Stevenson (1976). For seed orchard seeds, the procedures to be applied have been described by Edwards and Portlock (1986).

2. Testing seed quality

All seed quality tests are performed on small samples removed from the seed lot. Most tree seeds used in reforestation are derived from natural stands and any one collection of seeds may show considerable heterogeneity. Unless the seed lot is thoroughly mixed, this heterogeneity leads to problems in sampling. It is essential that the sample represents the seed lot as a whole in terms of empty seeds, effects of insects or disease, physical damage, and impurities.

Once proper sampling has been completed, an array of tests can be performed, the first usually being a *purity test.* Here, impurities such as leaves, twigs, buds, stones and other non-seed materials are separated from the seeds of the test species and measured as a percentage (by weight) of the entire sample. The test also determines whether the pure seed portion of the sample is entirely of the crop species or whether seeds of another species are mixed in.

The *germination test* is performed on subsamples of the pure seeds separated in the purity test, and determines how many of the seeds will germinate and produce seedlings. In many instances, seed dormancy is a problem and the seeds must be treated by chilling or some other means before being tested. Since dormancy can be very variable, often two germination tests, one with and one without pretreatment, are conducted simultaneously.

Treating seeds to overcome dormancy prolongs the test period and sometimes a *rapid estimate of seed quality* is required. Several techniques have been developed for this. One of the main procedures is tetrazolium testing in which a measured seed sample is soaked in a solution of tetrazolium

chloride, a pale, straw-yellow (almost colorless) liquid. If certain essential enzymes are present, the terazolium solution is reduced to a formazan compound which precipitates and stains the seed tissues a deep red color. Red-stained seeds are judged to be alive. Unstained seeds lack the essential enzymes and are judged to be dead. Some of the stained seeds have lacked the capability of growth, however, so this test only indicates to the purchaser the potential of the seed lot for germination. Another rapid method of estimating viability is the excised embryo test. This is used on seeds that have a deep dormancy and which would require a prolonged germination test. The method involves dissecting embryos from the seeds and incubating them under controlled conditions. Embryos showing spreading and greening of the cotyledons are judged to be viable.

A *weight test* is usually performed as a means of distinguishing the seed lot as small-seeded or large-seeded. This test is usually performed on the subsamples prepared for the germination test, before the germination test begins. The weight test, in combination with the purity and germination tests, allows the seed user to calculate how many seeds are needed to produce a given number of seedlings.

Moisture content tests are normally performed on separate samples from those used in other tests. Samples of seeds are weighed, dried, then reweighed. The loss in weight is expressed as the moisture content percentage, a very important measure when seeds are to be placed in cold storage. This test also indicates how much seed material and how much water exists in a unit weight.

Seed packages must be labeled to show species, weight of seeds and the result of all quality tests that have been performed. This will provide the seed purchaser with a reliable estimate of the number of plants that can be expected from a unit quantity of seeds. The procedures for conducting tests of physical quality have been described in detail (Edwards 1987).

3. Labeling

All containers or packages of seeds should be identified using an official label bearing the information specified in the Guidelines. The format of the label is shown in Figure 1. Information should be typed, or hand-written using indelible ink. When several labels contain similar information, a rubber stamp can be used to reduce typing. All labels should be proof-read by the issuing officer before they are released. For control purposes, labels should be embossed with an official mark or stamp, and affixed to the seed container using an official seal. Each label issued should be recorded. Test data on which certification of seed quality is based should be maintained on file so that additional information can be provided to the seed user if required.

The following Guidelines are voluntary; we believe that their universal adoption for all forest tree seeds used in Canada will have far-reaching benefits for this country's forest sector. The expanding production of improved or genetically superior seeds results from the awareness of the importance of seed origin and seed quality. A Canadian national scheme of tree seed certification is essential if the achievements of tree improvement and seed technology are to be fully realized.

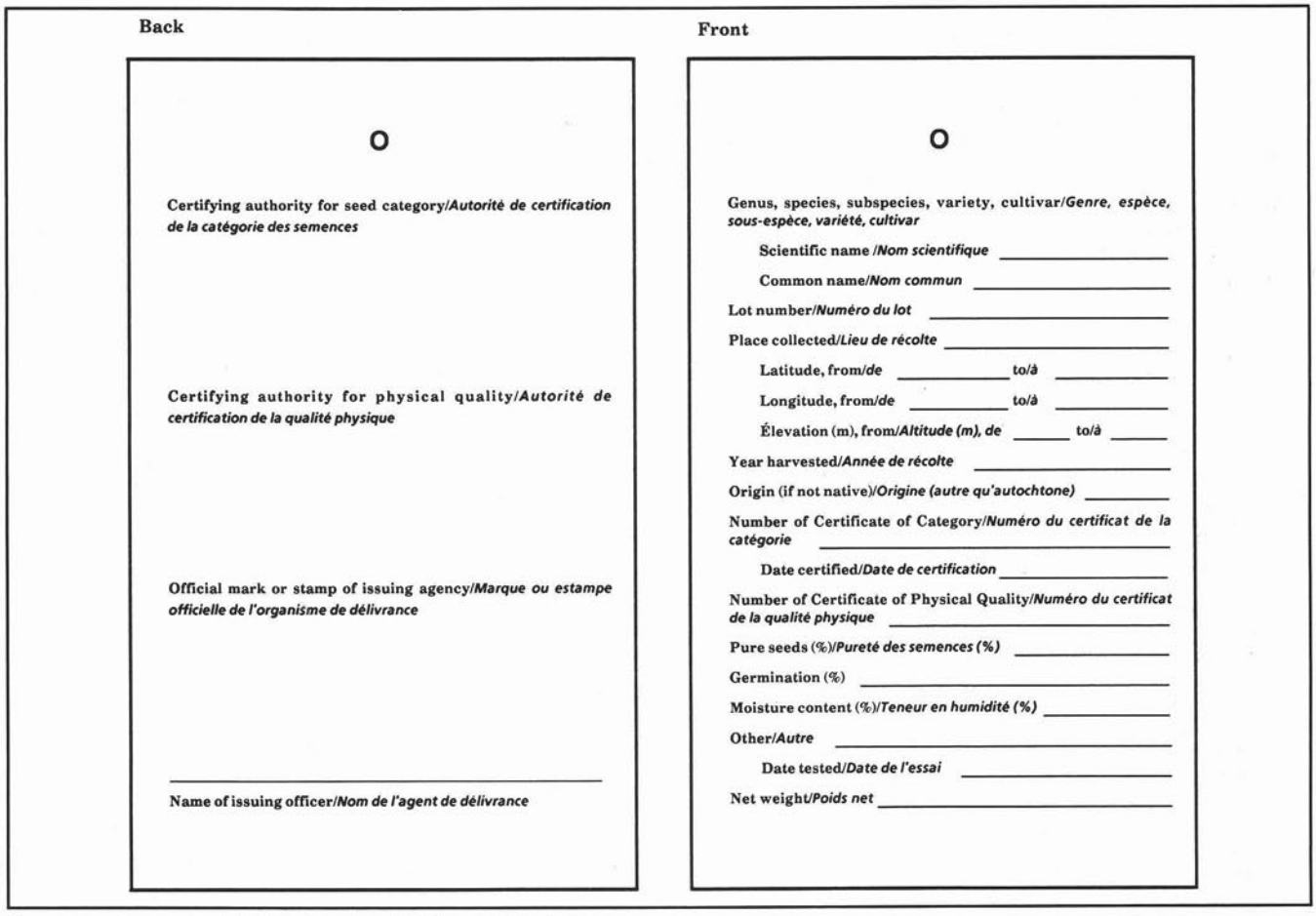

Figure 1. Suggested design for an official seed label.

GUIDELINES FOR GRADING AND LABELING FOREST TREE SEEDS IN CANADA

1. In these Guidelines,

"basic material" means trees from which seeds are obtained; (*matériel de base)*

"category" means a category pursuant to subsections 8(1) and 8(2); (*catégorie*)

"Certificate of Category" means a certificate that is issued pursuant to subsection 8(1); (*certificat de catégorie*)

"Certificate of Physical Quality" means a certificate that is issued pursuant to subsection 8(1); (*certificat de qualité physique*)

"Department" means Department of Agriculture; (*ministère*)

"Director" means the Director of a national institute or a regional forestry centre of the Canadian Forestry Service of the Department; (*directeur*)

"harvested" means removed as seeds, cones or fruits from living or dead trees, branches, slash, squirrel caches and other places where seeds occur on or close to the tree that produced them; (*récolté*)

"inspector" means an individual trained to inspect seeds for the purpose of certifying seed origin, and appointed by the Minister; (*inspecteur*)

"lot of seed" means a quantity of seeds of a single species and provenance, each portion of which is uniform within reasonable limits with respect to physical quality; (*lot de semences*)

"Minister" means the Minister of State (Forestry and Mines); (*ministre*)

"number of a certificate" in respect of a lot of forest tree seeds means a serial number on a certificate; (*numéro de certificat*)

"official label" means a label issued by the Canadian Forestry Service of the Department in respect of seeds of Canadian provenance; (*étiquette officielle*)

"official testing laboratory" means a testing laboratory for forest tree seeds officially designated by the Minister; (*laboratoire officiel*)

"origin" means the place in which indigenous trees are or were growing or the place from which seeds or plants of non-indigenous trees were originally introduced; (*origine*)

"physical quality" means seed purity, germination, and/or other means of determining physical quality pursuant to subsections 8(1) and 8(2); (*qualité physique*)

"provenance" means location of any tree or trees from which seeds are harvested and defined by limits of latitude, longitude, elevation and place name; (*provenance*)

"region of provenance" means for a species, subspecies or variety, the area or group of areas subject to similar ecological conditions in which are found trees of sufficiently uniform phenotypic or genetic characteristics and as are published under the title *Forest Regions of Canada* by J.S. Rowe (Canadian Forestry Service Publication No. 1300, 1972); (*région de provenance*)

"Registrar" means an officer of the Canadian Forestry Service appointed by the Minister to register basic material in and to maintain the National Register of Seed Sources; (*responsable du registre*)

"seeds" means seeds, cones, fruits, strobili, flowers, pollen, plants, stem cuttings, leaf cuttings, root cuttings, scions, layers, and any parts of plants intended for the production of plants (*semences*).

Application

2. These Guidelines are intended to apply to forest tree seeds that are sold in Canada and moved across provincial or territorial boundaries in Canada or are imported into or exported from Canada. Seeds certified according to these Guidelines meet the standards and requirements established (i) by the Organization for Economic Cooperation and Development (OECD) Scheme for the Control of Forest Reproductive Material Moving in International Trade, and (ii), by the International Seed Testing Association (ISTA) Rules, and which are administered in Canada by the Canadian Forestry Service. The adoption of these Guidelines by a provincial, territorial or any other agency in Canada is entirely voluntary.

Exemptions

3. (1) These Guidelines need not apply to the following seeds:

a) seeds imported into Canada for export from Canada;

b) parts of trees or young plants taken, raised or sold for purposes other than the production of wood, biomass, fodder, extractives, or urban forestry or shelter-belt planting;

c) seeds to be used for scientific research or educational purposes;

d) seeds or plants moved to or from any seed extractory, seed processor, seed store or nursery, provided that the seeds are, or will be, returned to the province or territory of source.

General

4. (1) When forest tree seeds are sold and either moved or caused to be moved across a provincial or territorial boundary or exported out of Canada, the Director will be provided with:

a) a copy of the official label completed in accordance with subsections 5(1) and 5(4); and

b) the destination address and name of consignee.

(2) No person should move or cause to have moved seeds as set out in Schedule A (Undesirable Movements).

(3) In consultation with the Provinces and Territories of Canada, the Minister may add to or reduce the recommended restrictions imposed by Schedule A.

(4) The Minister will have prepared and make available a written annual report on the movement of seeds within Canada as reported pursuant to paragraph *a*), and subsections 5(1) and 5(4).

Official Labels

5. (1) Every package of forest tree seeds that is sold and moved across a provincial or territorial boundary or exported from Canada will be labeled with an official label supplied by the Minister.

(2) The information required on the label will be shown conspicuously, legibly and indelibly in either or both official languages of Canada.

(3) No label or package should show

a) any variation in the character, size, color or placing of the printing that emphasizes or obscures any part of the information required by these Guidelines;

b) any incorrect or misleading information or mark.

(4) The official label will contain

a) the name of the genus and species;

b) the name of the variety and cultivar;

c) the region of provenance or origin of the basic material;

d) the latitude, longitude and elevation of the source of the seeds;

e) the year the seeds were harvested;

f) the weight of seeds in the package;

g) where category of seeds has been certified in accordance with subsection 8(1), the number of the Certificate of Category;

h) where quality of seeds has been certified in accordance with subsection 8(1), the number of the Certificate of Physical Quality;

i) the identity of the certifying authority and the issuing officer.

(5) The official label will be completed and affixed to the package of seeds by the person selling the seeds or by a representative of that person.

Units of Measurement on Labels

6. (1) All units of measurement shown on a label will be expressed in accordance with the *Weights and Measures Act*.

(2) The declaration of net quantity in the international system of units will be shown in the decimal system to three significant figures, as illustrated by the following examples: 3.71 kg, 37.1 kg, or 371 kg.

(3) A net quantity in metric units that is less than a whole number will be shown

a) in the decimal system with a zero preceding the decimal point; or

b) in words.

(4) The international units are to be shown

a) in grams, where the net mass is less than 1 000 g;

b) in kilograms, where the net mass is 1 000 g or more; and

c) where a) and b) do not apply, in units described in the *Weights and Measures Act*.

Maps of Regions of Provenance

7. (1) In consultation with the Provinces and Territories of Canada, the Minister will have prepared a map of the regions of provenance for different species intended for the production of seeds in Canada delineating their boundaries as published under the title "Forest Regions of Canada."

(2) A copy of the map will be kept at the official seed testing stations and by each Director.

(3) The Director will provide reasonable facilities for inspecting the map and the copies thereof.

(4) In consultation with the Provinces and Territories of Canada, the Minister, from time to time, may alter the map so as to show any change which has occurred to any of the boundaries of the regions of provenance, and the copies thereof will be changed accordingly.

Certification of Seeds

8. (1) The Minister will establish standards and procedures for the certification of genetic catetgory of seeds and for the certification of physical quality of seeds where such standards and procedures for certification are required for the movement of seeds within Canada or for the export of seeds from Canada to another country.

(2) The standards and procedures established by the Minister for certification of seeds are prescribed as the standards and procedures for certifying seeds under these Guidelines, and are published by the Canadian Forestry Service under the following titles:

a) Certification of source-identified Canadian tree seed under the OECD scheme by R.F. Piesch and R.E. Stevenson. 1976. Canadian Forestry Service, Ottawa, Forestry Technical Report 19.

b) Guidelines for approval and registration under the OECD scheme of untested seed orchards in

Canada; *in* D.G.W. Edwards and F.T. Portlock. 1986. Expansion of tree seed certification. Forestry Chronicle 62: 461-466.

c) Methods and procedures for testing tree seeds in Canada, by D.G.W. Edwards. 1987. Canadian Forestry Service, Ottawa, Forestry Technical Report 36.

(3) The Canadian Forestry Service will be the official certifying authority for the certification of seeds pursuant to subsection 8(1). This authority may be contracted out to other agencies at the discretion of the Minister.

(4) Copies of the standards and procedures will be available from each official seed testing laboratory and forestry centre of the Canadian Forestry Service.

(5) Certification of seeds will be performed only at the request of the vendor.

Application for Certification of Genetic Category of Seeds

9. (1) The inspection of seeds for the purpose of certification of genetic category provided by these Guidelines will be carried out by official seed inspectors appointed by the Minister and in accordance with these guidelines.

(2) An application for seed inspection and certificate of category of seeds will be made in accordance with the procedures prescribed by the Minister and will be delivered to the office of the Director specified by the Minister.

Application for Certification of Physical Quality of Seeds

10. (1) The testing of physical quality of seeds for the purpose of certification provided by these Guidelines will be carried out by an official seed testing laboratory recognized by the Minister in accordance with these Guidelines.

(2) An application for a seed test and certificate of physical quality will be made in accordance with the procedures prescribed by the Minister and will be accompanied by a sample representative of the bulk of the seeds to which the application for testing refers and will be delivered to the office of the Director specified by the Minister.

National Register of Seed Sources

11. (1) In consultation with the Provinces and Territories of Canada ,the Minister will establish the standards and procedures for the registration of basic material in a National Register of Seed Sources as being part of the standards and procedures for certification of category pursuant to subsection 8(1).

(2) The Minister will appoint a Registrar of the National Register.

(3) The Registrar will maintain the National Register in which will be registered the particulars of any basic material as may be certified by the Director in accordance with the standards and procedures pursuant to subsection 8(1).

(4) A copy of the National Register will be held at each of the official seed testing laboratories and by each Director.

(5) The Minister will provide reasonable facilities for inspecting the National Register and each of the copies thereof mentioned in subsection (4).

Importation of Seeds

12. (1) Seeds of any tree species may be imported into Canada only if

a) the seeds have been duly certified, packaged and labeled in accordance with the OECD Scheme for the Control of Forest Reproductive Material Moving in International Trade; or

b) where the country from which the seeds are sent is not a member of the Organization for Economic Cooperation and Development, that country is recognized by the Minister as having regulatory requirements substantially similar to the rules of the OECD and the seeds have been duly certified, packaged and labeled, in accordance with the rules of that country.

(2) Seeds of woody plant species listed in Schedule B must not be imported into Canada unless authorized in writing by the Minister.

(3) Two copies of the certificate supplied pursuant to subsection 12(1) will be sent by the importing agency to the Director for the region into which the seeds are to be imported.

Fees

(under consideration)

SCHEDULE A
UNDESIRABLE MOVEMENTS OF SEEDS WITHIN CANADA

Undesirable movements of seeds are those movements regarded as undesirable because of disease or pest problems associated with such movements or because requirements for hardiness or other criteria of suitability cannot be met.

The following are undesirable:

1. the movement of seeds of *Pinus contorta* east of the province of Saskatchewan.
2. the movement of seeds of *Abies* species into the province of British Columbia.
3. the movement of seeds of *Pinus sylvestris* of German origin.
4. the movement of seeds of *Ribes* species.

Explanations of specific undesirable movements may be obtained upon request in writing from the Minister.

SCHEDULE B
UNDESIRABLE SEED IMPORTATIONS INTO CANADA

The basis for this Schedule is the same as for Schedule A. Seeds of *Pinus sylvestris* of German origin and seeds of the genus *Castanea* are undesirable for importation into Canada.

LIGNES DIRECTRICES POUR LA CERTIFICATION ET L'ÉTIQUETAGE DES SEMENCES D'ARBRES FORESTIERS AU CANADA

1. Dans les présentes lignes directrices,

«**catégorie**» signifie toute catégorie reconnue aux paragraphes 8(1) et 8(2); (*category*)

«**certificat de catégorie**» signifie tout certificat délivré conformément au paragraphe 8(1); (*Certificate of Category*)

«**certificat de qualité physique**» signifie tout certificat délivré conformément au paragraphe 8(1); (*Certificate of Physical Quality*)

«**directeur**» signifie le directeur d'un institut national ou d'un centre régional de foresterie faisant partie du Service canadien des forêts, qui relève du ministère; (*Director*)

«**étiquette officielle**» signifie une étiquette délivrée par le Service canadien des forêts du ministère pour les semences de provenance canadienne; (*official label*)

«**inspecteur**» signifie une personne ayant reçu la formation voulue pour faire l'inspection des semences afin d'en certifier l'origine et ayant été nommée par le ministre; (*inspector*)

«**laboratoire officiel**» signifie un laboratoire de contrôle des semences d'arbres forestiers officiellement désigné par le ministre; (*official testing laboratory*)

«**lot de semences**» signifie une quantité de semences d'une seule espèce et d'une seule provenance dont chaque partie est uniforme, dans des limites raisonnables, sur le plan de la qualité physique; (*lot of seed*)

«**matériel de base**» signifie les arbres desquels sont obtenues les semences; (*basic material*)

«**ministère**» signifie le ministère de l'Agriculture; (*Department*)

«**ministre**» signifie le ministre d'État (Forêts et Mines); (*Minister*)

«**numéro de certificat**» signifie le numéro d'immatriculation figurant sur le certificat d'un lot de semences d'arbres forestiers; (*number of a certificate*)

«**origine**» signifie un endroit où pousse, ou poussait, un arbre indigène ou un endroit d'où provenaient les premières semences ou premiers plants introduits d'un arbre non indigène; (*origin*)

«**provenance**» signifie un lieu, défini par sa latitude, sa longitude, son altitude et son nom, où se trouvent un ou plusieurs arbres dont des graines ont été récoltées; (*provenance*)

«**qualité physique**» signifie la pureté des semences, leur germination et/ou d'autres paramètres de leur qualité physique établis conformément aux paragraphes 8(1) et 8(2); (*physical quality*)

«**récolté**» qualifie une graine, un cône ou un fruit qui a été prélevé sur un arbre mort ou vivant, sur une branche, sur des débris de coupe, dans une cache d'écureuil ou à un autre endroit où des graines sont présentes sur l'arbre ou à proximité de l'arbre qui a produit la graine, le cône ou le fruit en question; (*harvested*)

«**région de provenance**» signifie, pour une espèce, une sous-espèce ou une variété, un secteur ou un ensemble de secteurs où, d'après la publication *Les régions forestières du Canada* de J.S. Rowe (publication n° 1300F du Service canadien des forêts, 1972), les conditions écologiques sont assez uniformes et les arbres ont des caractéristiques génétiques et phénotypiques assez semblables; (*region of provenance*)

«**responsable du registre**» signifie un fonctionnaire du Service canadien des forêts nommé par le ministre pour consigner les données sur le matériel de base dans le registre national des sources de semences et tenir à jour ce registre; (*registrar*)

«**semence**» signifie toute graine, cône, fruit, strobile, fleur, pollen, plant, bouture de tige, de feuille ou de racine, greffon, marcotte ou toute autre partie de plante destinée à la reproduction; (*seeds*).

Application

2. Les présentes lignes directrices s'appliquent aux semences d'arbres forestiers qui sont vendues au Canada et transportées entre les provinces ou territoires, à celles qui sont importées au Canada et à celles qui en sont exportées. Les semences certifiées conformément à ces lignes directrices répondent aux normes et exigences qui ont été établies (i) par l'Organisation de coopération et de développement économiques (OCDE) pour le contrôle du matériel reproductif forestier faisant l'objet d'un commerce international et (ii) par l'Association internationale d'essais de semences, normes dont le Service canadien des forêts voit à l'application au Canada. Les organismes provinciaux et territoriaux ainsi que les autres organismes canadiens sont entièrement libres d'adopter ou non ces lignes directrices.

Exemptions

3. (1) Ne sont pas visés par les présentes lignes directrices:

a) les semences importées au Canada pour en être exportées;

b) les parties d'arbres ou jeunes plants prélevés, cultivés ou vendus à des fins autres que la production de bois, de biomasse, de fourrage, d'extraits, de plantations urbaines ou de rideaux-abris;

c) les semences destinées à la recherche scientifique ou devant être utilisées à des fins éducatives;

d) les semences ou les plants transportés à partir ou à destination d'une installation d'extraction ou de traitement des semences, d'un entrepôt de semences ou d'une pépinière, se les semences sont, ou seront, retournées dans la province ou le territoire de la source.

Généralités

4. (1) Nul ne vend et ne transporte ou ne fait transporter dans une autre province, un autre territoire ou un autre pays des semences d'arbres forestiers sans fournir au directeur:

a) une copie de l'étiquette officielle remplie conformément aux paragraphes 5(1) et 5(4); et

b) l'adresse et le nom du destinataire.

(2) Nul ne devrait transporter ou faire transporter des semences contrairement aux dispositions de l'annexe A (*Transports de semences à éviter à l'intérieur du Canada*).

(3) En consultation avec les provinces et les territoires du Canada, le ministre peut élargir ou réduire la portée de l'annexe A.

(4) Le ministre fait rédiger et rend accessible un rapport annuel sur les transports de semences au Canada préparé à partir des renseignements obtenus conformément à l'alinéa a) et aux paragraphes 5(1) et 5(4).

Étiquettes officielles

5. (1) Tout contenant de semences d'arbres forestiers qui est vendu et transporté hors des limites d'une province ou d'un territoire ou qui est exporté porte une étiquette officielle fournie par le ministre.

(2) L'information devant paraître sur l'étiquette doit être en évidence, lisible, indélébile et écrite dans l'une des deux langues officielles du Canada ou les deux.

(3) Aucune étiquette et aucun contenant ne devraient présenter:

a) de variations de l'impression, en ce qui a trait aux caractères, à la dimension, à la couleur ou à la disposition, qui auraient pour effet de faire ressortir ou de rendre moins visible une partie de l'information devant y figurer conformément aux présentes lignes directrices;

b) des marques ou des renseignements inexacts ou trompeurs.

(4) L'étiquette officielle indique:

a) le nom du genre et de l'espèce;

b) le nom de la variété et du cultivar;

c) la région de provenance ou l'origine du matériel de base;

d) la latitude, la longitude et l'altitude de la source des semences;

e) l'année où les semences ont été récoltées;

f) le poids des semences dans le contenant;

g) dans le cas où la catégorie de semences a été certifée conformément au paragraphe 8(1), le numéro du certificat de catégorie;

h) dans le cas où la qualité des semences a été certifiée conformément au paragraphe 8(1), le numéro du certificat de qualité physique;

i) le nom de l'autorité et de l'agent ayant délivré le certificat.

(5) L'étiquette officielle est remplie et apposée sur l'emballage des semences par la personne qui vend celles-ci ou un représentant de cette personne.

Unités de mesure

6. (1) Toutes les unités de mesure figurant sur une étiquette sont exprimées conformément à la *Loi sur les poids et mesures*.

(2) La quantité nette déclarée est exprimée dans le système international d'unités et comporte jusqu'à trois chiffres significatifs, comme dans les exemples suivants: 3,71 kg, 37,1 kg et 371 kg.

(3) Une quantité nette inférieure à l'unité dans le système métrique s'écrit:

a) en décimales, précédées d'un zéro dans la partie entière; ou

b) en toutes lettres.

(4) Les unités du système international à utiliser sont:

a) le gramme, lorsque la masse nette est inférieure à 1 000 g;

b) le kilogramme, lorsque la masse nette est de 1 000 g ou plus; et

c) toute autre unité reconnue par la *Loi sur les poids et mesures*, lorsque les alinéas a) et b) ne s'appliquent pas.

Cartes des régions de provenance

7. (1) En consultation avec les provinces et les territoires du Canada, le ministre fait préparer une carte indiquant les régions de provenance des diverses espèces visées par des efforts de production de

semences et présentant les limites de ces régions conformément à la publication *Les régions forestières du Canada*.

(2) Une copie de la carte est conservée dans les stations officielles de contrôle des semences et par chaque directeur.

(3) Le directeur fournit des installations convenables pour la consultation de la carte et de ses copies.

(4) En consultation avec les provinces et les territoires du Canada, le ministre peut corriger la carte afin d'y reproduire les modifications apportées aux limites des régions de provenance; par la suite, toutes les copies sont changées en conséquence.

Certification des semences

8. (1) Le ministre établit les normes et les modalités pour la certification de la catégorie génétique et de la qualité physique des semences lorsqu'une telle certification est requise pour le transport de semences à l'intérieur du Canada ou pour l'exportation de semences vers un autre pays.

(2) Les normes et modalités établies par le ministre pour la certification des semences constituent les normes et modalités reconnues par les présentes lignes directrices et elles sont publiées par le Service canadien des forêts sous les titres suivants:

a) Certification des semences d'arbres du Canada identifiées à la source conformément au système de l'O.C.D.E., de R.F. Piesch et R.E. Stevenson. 1976. Service canadien des forêts, Ottawa. Rapport technique de foresterie 19.

b) Directives concernant l'approbation et l'homologation des vergers à graines non testés au Canada dans le cadre du système de l'O.C.D.E., *dans* D.G.W. Edwards et F.T. Portlock. 1986. Expansion of Canadian tree seed certification. Forestry Chronicle 62: 461-466.

c) Méthodes de contrôle des semences forestières au Canada, de D.G.W. Edwards. 1987. Service canadien des forêts, Ottawa. Rapport technique de foresterie 36.

(3) Le Service canadien des forêts constitue l'autorité officielle pour la certification des semences prévue au paragraphe 8(1). Il peut déléguer ses pouvoirs en matière de certification des semences à d'autres organismes, à la discrétion du ministre.

(4) Des exemplaires des normes et modalités sont disponibles à chacun des laboratoires officiels de contrôle des semences et à chaque centre de foresterie du Service canadien des forêts.

(5) Une certification de semences n'est réalisée qu'à la demande du vendeur.

Demande de certification de catégorie génétique

9. (1) L'inspection de semences en vue de la certification de leur catégorie génétique qui est prévue par les présentes lignes directrices est effectuée par un inspecteur attiré, nommé par le ministre, conformément à ces lignes directrices.

(2) La demande d'inspection des semences et de certification de leur catégorie est établie conformément aux modalités prescrites par le ministre et présentée au bureau du directeur indiqué par le ministre.

Demande de certification de qualité physique

10. (1) La vérification de la qualité physique de semences en vue de leur certification qui est prévue par les présentes lignes directrices est effectuée par un laboratoire officiel de contrôle des semences reconnu par le ministre, conformément à ces lignes directrices.

(2) La demande de contrôle de semences et de certification de leur qualité physique est établie conformément aux modalités prescrites par le ministre et présentée, accompagnée d'un échantillon représentatif de l'ensemble des semences visées par la demande, au bureau du directeur indiqué par le ministre.

Registre national des sources de semences

11. (1) En consultation avec les provinces et les territoires du Canada, le ministre établit les normes et modalités pour l'inscription du matériel de base dans un registre national des sources de semences; ces normes et modalités font partie des normes et modalités établies conformément au paragraphe 8(1) pour la certification de la catégorie.

(2) Le ministre nomme un responsable du registre national.

(3) Le responsable nommé au paragraphe (2) tient à jour le registre national dans lequel sont inscrites les caractéristiques de tout matériel de base certifiées par le directeur conformément au normes et modalités prévues au paragraphe 8(1).

(4) Une copie du registre national est conservé dans chacun des laboratoires officiels de contrôle des semences et par chaque directeur.

(5) Le ministre fournit des installations convenables pour la consultation du registre et des copies mentionnées au paragraphe (4).

Importation de semences

12. (1) Des semences d'arbres ne peuvent être importées au Canada que si:

a) elles ont été dûment certifiées, emballées et étiquetées conformément au système de l'OCDE pour le contrôle du matériel forestier de reproduction destiné au commerce international; ou

b) elles ont été dûment certifiées, emballées et étiquetées conformément aux exigences du pays exportateur lorsque ce pays n'est pas

membre de l'OCDE et que le ministre a reconnu que celui-ci applique des règles semblables à celles de l'OCDE.

(2) Les semences d'espèces ligneuses qui sont énumérées à l'annexe B ne doivent pas être importées au Canada à moins d'une autorisation écrite du ministre.

(3) Deux copies du certificat requis au paragraphe 12(1) sont envoyées par l'organisme importateur au directeur de la région où les semences doivent être importées.

Droits

(à l'étude)

ANNEXE A
TRANSPORTS DE SEMENCES À ÉVITER À L'INTÉRIEUR DU CANADA

Certains transports de semences sont à éviter parce qu'ils peuvent entraîner la transmission de maladies ou la propagation d'insectes nuisibles ou parce que les exigences concernant la rusticité ou d'autres caractéristiques ne peuvent être respectées.

Les transports suivants sont à éviter:

1. le transport de semences de *Pinus contorta* à l'est de la province de la Saskatchewan.

2. l'entrée de semences du genre *Abies* dans la province de la Colombie-Britannique.

3. le transport de semences de *Pinus sylvestris* d'origine allemande.

4. le transport de semences du genre *Ribes*.

On peut obtenir des explications au sujet de ces restrictions en faisant la demande par écrit au ministre.

ANNEXE B
SEMENCES DONT L'IMPORTATION AU CANADA EST À ÉVITER

Le but de cette annexe est la même que celui de l'annexe A. L'importation au Canada de semences de *Pinus sylvestris* d'origine allemande et de semences du genre *Castanea* est à éviter.

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