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Expansion of Canadian Tree Seed Certification

by

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Abstract

Following the initiation in 1970 of tree seed certification for source-identified seeds, guidelines have been established to certify untested seed orchard seeds under the OECD scheme. The guidelines are presented and are discussed in light of pending national tree seed regulations.

Résumé

Par suite du début de l'homologation en 1970 des semences d'arbre pour obtenir des graines dont l'origine est connue, des recommandations ont été élaborées afin d'homologuer les semences de vergers à graines non-testés, selon le processus de l'OCDE. Les recommandations sont présentées et discutées en référant aux règlements nationaux à venir d'arbres semenciers.

Introduction

Forest managers generally acknowledge that great care must be taken in selecting seed sources, especially since artificial regeneration has become a preferred method of forest renewal in many countries. Once suitable provenances have been found, supplies of seeds must originate from the desired sources. Furthermore, several North American tree species readily adapt to the climates and growing conditions of other countries, especially in Europe, and they outgrow the indigenous species. Since the mid-1960s, the international movement of tree seeds has required that species and provenances be identified, and that their trueness to name be certified.

Certification of seeds, which means verification of origin and quality, was likened by Baldwin (1942) to a guarantee for manufactured goods. To fulfill the international requirement for seed certification the Organization for Economic Cooperation and Development (OECD) established in 1967 a Scheme for the Control of Forest Reproductive Material Moving in International Trade. Its objective is "to encourage the production and use of seeds, parts of plants and plants that have been collected, transported, processed, raised and distributed in a manner that ensures their trueness to name" (OECD 1974). In this Scheme, four categories of forest reproductive material are distinguished: (i) source-identified reproductive materials, (ii) selected reproductive materials, (iii) reproductive materials from untested seed orchards, and (iv) tested reproductive materials.

As a member of OECD, Canada assisted in formulating the Scheme but did not begin certifying seeds until 1970. The Canadian Government appointed the Canadian Forestry

Service (CFS) as the Designated Authority to implement the Scheme, with directors general of CFS forestry centres assuming responsibility for its administration within their respective regions. Thus, the Director General of the Pacific Forestry Centre in Victoria is responsible for seed certification in British Columbia and the Yukon Territory, while the Director General of the Northern Forestry Centre in Edmonton is responsible for seed certification in Alberta and the Northwest Territories.

During the first 14 years of operation of the Scheme in Canada, the demand has been solely for source-identified seeds, the rules and regulations for which were compiled by Piesch and Stevenson (1976). By 1980, approximately 16 000 kg of source identified seeds had been certified for export from this country (Piesch 1977; Pollard 1982a), to which has been added a further 6 000 kg up to the end of the 1984 cone crop year (Edwards, unpublished). The bulk of the seeds have been obtained from sources in British Columbia and the Yukon Territory, but a small amount of seeds from Alberta and the Northwest Territories was also included.

Expansion of Certification

Seed production in some tree seed orchards began to increase rapidly around 1980 and it was perceived that seed surpluses were likely. Some orchard operators requested that the CFS make provisions for these surplus seeds to be certified under the OECD Scheme so that they could be offered for sale on the international market. Provisions were drafted for approval and registration of untested seed orchards, because none of the orchards had developed to the stage of producing tested reproductive materials. Once the orchard has been registered seeds can be sold under an OECD label.

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In 1984, the CFS adopted "Guidelines for approval and registration under the OECD Scheme of untested seed orchards in Canada," the text of which follows. Unless the orchard satisfies these provisions, seeds will not be certifiable for marketing under an OECD label. Once the orchard has been officially registered, seeds will be certified according to the procedures for source-identified materials set forth in Piesch and Stevenson (1976).

Guidelines for Approval and Registration Under the OECD Scheme of Untested Seed Orchards in Canada

The Canadian Forestry Service, as the national Designated Authority for the operation of the OECD seed certification scheme in Canada, shall approve and register untested seed orchards according to the following guidelines. These guidelines, which are based on the minimum requirements for the approval of basic forest reproductive material (OECD 1974), include considerations particularly important in Canada.

I. Guidelines for Approval and Registration. The following are to be used as minimum criteria when considering a seed orchard for approval and registration:

Objective. The objective of a seed orchard must be to produce seeds of improved genetic quality and which should be well adapted for use in a specified geographic or ecological region.

Design. The layout of the trees within the seed orchard should be a schematic or random design such that family or clonal members are separated to minimize inbreeding and maximize outcrossing. Each individual tree must be identifiable by location within the orchard, by provenance, by origin, by parents (where appropriate) and by year of establishment.

Components. The seed orchard must be composed of selected individuals either sexually or asexually reproduced from indigenous or well-adapted nonindigenous populations. The number of clones or families, and their selection standards, should be specified and should be consistent with the objectives of the seed orchard.

Isolation. The seed orchard shall be situated at a sufficient distance from contaminating pollen, or managed to minimize pollination from outside sources.

Description. The seed orchard shall be identified by ownership, location, size and production goals. Factors that interfere with attainment of objectives should be identified; e.g. adverse site and climatic conditions, and limitations on management practices.

Thinnings. The thinnings carried out in seed orchards shall be described, together with the selection criteria for such thinnings.

Management. The seed orchard shall be managed, and seeds shall be harvested, in such a way that the objectives of the orchard are attained. Management procedures employed to obtain the objectives shall be described.

Changes. Any significant changes to the seed orchard occurring after the initial approval and registration must also be approved and registered.

II. Procedure for Registration. It will be the responsibility of the seed orchard owner to make an application to the Certifying Authority in the region for registration of a seed orchard. The seed orchard owner will make available all information pertaining to selection criteria for the components, design and management of the seed orchard. This information shall be presented in a format as indicated by OECD Form AGR/TS(80)6 (Fig. 1). The regional Certifying Authority will review each application and will make an inspection of the seed orchard. When appropriate, suggestions for improvement of the orchard, such as the provision of additional information, particularly that pertaining to phenologies within the orchard, or second (or subsequent) roguing/thinning, shall be made. The Certifying Authority will endeavour to ensure that deficiencies are corrected. Upon request, records concerning information such as stock production and culture in establishing the seed orchard and on treatments used to promote cone and seed production, will be made available to the Certifying Authority.

III. Certification of Seeds from Untested Seed Orchards. The collection and certification of seeds from registered orchards will follow the regulations set forth in "Certification of source-identified Canadian tree seed under the OECD scheme" (Piesch and Stevenson 1976). Seed orchard records concerning seed collection, processing, storage and shipment must be made available to the Certifying Authority and its inspectors upon request.

IV. Definitions.

- (i) Designated Authority: Department or service nominated by government to carry out OECD certification.
- (ii) Certifying Authority: Director or establishment delegated responsibility by the Designated Authority to carry out OECD certification for a particular region.

V. References.

Organization for Economic Cooperation and Development, 1974. OECD scheme for the control of forest reproductive material moving in international trade. Organization for Economic Cooperation and Development, Directorate for Agriculture and Food, Paris, France, 24 p.

Piesch, R.F. and R.E. Stevenson, 1976. Certification of source-identified Canadian tree seed under the OECD scheme. Dept. Fisheries and Environment, Canadian Forestry Service, Forestry Tech. Rep. 19, 18 p.

Directives Concernant l'Approbation et l'Homologation de Vergers à Graines non Testés au Canada dans le Cadre du Système de l'OCDE

Le Service canadien des forêts, en qualité d'autorité nationale désignée pour l'application du système de certification des semences dans le cadre de l'OCDE au Canada, a pour tâche d'approuver et d'enregistrer les vergers à graines non testés selon les directives suivantes. Ces directives, basées sur les normes minimales d'approbation du matériel forestier de reproduction de base (OCDE 1974), comprennent des considérations qui revêtent une importance particulière pour le Canada.

I. Directives Concernant l'Approbation et l'Homologation. Les considérations suivantes doivent servir de critères minimaux dans l'examen d'un verger à graines à des fins d'approbation et d'homologation :

Objet. Le verger à graines doit avoir pour objet de produire des semences de qualité génétique améliorée et bien adaptées à leur utilisation dans une région géographique ou écologique particulière.

Dispositif des Plantes. La disposition des arbres dans le verger à graines doit suivre un protocole schématique ou aléatoire de façon que les membres d'une famille ou d'un clone soient séparés afin de réduire au minimum la consanguinité et maximiser les croisements hétérogènes. Chaque arbre doit être identifiable par son emplacement dans le verger, par sa provenance, par son origine, par son ascendance (s'il y a lieu) et par son année d'établissement.

Composition. Le verger à graines doit être constitué composer d'individus sélectionnés issus, soit sexuellement, soit asexuellement, de populations indigènes ou non indigènes bien adaptées. Le nombre de clones ou de familles, de même que leurs normes de sélection, doivent être spécifiés et être compatibles aux objectifs du verger à graines.

Isolement. Le verger à graines doit être situé à une distance suffisante du pollen contaminateur, ou aménagé de façon à réduire au minimum la pollinisation de source extérieure.

Description. Le verger à graines doit être identifié par le nom de son propriétaire, sa localisation, sa dimension ainsi que les buts de sa production. Les facteurs qui nuisent à la réalisation des objectifs doivent être identifiés (p. ex., emplacement et conditions climatiques défavorables, et les restrictions imposées à son aménagement.)

Eclaircie. Les éclaircies effectuées dans les vergers à graines doivent être décrites ainsi que les critères de sélection applicables lors de ces éclaircies.

Aménagement. Le verger à graines doit être aménagé et les semences doivent être récoltées de telle sorte que les objectifs du verger soient atteints. Les méthodes d'aménagement utilisées pour réaliser les objectifs doivent être décrites.

Modifications. Toute modification importante apportée à un verger à graines survenant après l'approbation et l'homologation initiale doit également être approuvée et homologuée.

II. Procédures d'Homologation. Il incombera au propriétaire du verger à graines de faire une demande auprès de l'autorité de certification régionale afin de faire homologuer le verger à graines. Le propriétaire mettra à la disposition de ce dernier toute l'information nécessaire concernant les critères de sélection des constituants, la conception et l'aménagement du verger à graines. Cette information sera présentée sous le format indiqué dans le formulaire AGR/TS(80)6 (Fig. 2) de l'OCDE. L'autorité de certification régionale examinera chaque demande et fera l'inspection du verger à graines en question. Au besoin, certaines suggestions d'amélioration du verger, comme la nécessité de fournir de plus amples informations, en particulier celles se

rapportant aux phénomènes phénologiques ayant cours dans le verger, ou à l'éclaircie génétique/éclaircie systématique subséquent, seront formulées. L'autorité de certification devra faire tout en son pouvoir pour s'assurer que les lacunes signalées soient corrigées. Sur demande, les dossiers relatifs à la production et la culture des plantes lors de l'établissement du verger à graines ainsi qu'aux traitements utilisés pour promouvoir la production de cônes et de semences seront mis à la disposition de l'autorité de certification.

III. Certification des Semences Provenant de Vergers à Graines non Testés. La récolte et la certification des semences provenant de vergers homologués devront suivre les règlements établis dans la "Certification des semences d'arbres du Canada identifiées à la source conformément au système de l'OCDE" (Piesch et Stevenson 1976). Sur demande, les dossiers de vergers à graines concernant la récolte, le traitement, l'entreposage et l'expédition des semences doivent être mis à la disposition de l'autorité de certification et de ses inspecteurs.

IV. Définitions.

- (i) Autorité désignée: Ministère ou service nommé par le gouvernement pour exécuter la certification de l'OCDE.
- (ii) Autorité de certification: Directeur ou l'établissement auquel l'autorité désignée a délégué la responsabilité d'exécuter la certification de l'OCDE pour une région en particulier.

V. Bibliographie.

Organisation de Coopération et de Développement Economique, 1974. Système de l'OCDE pour le contrôle du matériel de reproduction forestière destiné au commerce international. Organisation de coopération et de développement économique, Direction de l'agriculture et de l'alimentation, Paris, France, 24 p.

Piesch, R.F. et R.E. Stevenson, 1976. Certification de semences d'arbres du Canada identifiées à la source conformément au système de l'OCDE. Ministère des Pêches et de l'Environnement, Service canadien des forêts, rapport technique de forestie 19F, 18 p.

Discussion

Certification of tree seeds for export from Canada is entirely voluntary and the Government of Canada does not require tree seed exporters to certify their products. The demand for certification is made by the importer, or the importing country. For example, in 1979 Sweden enacted legislation prohibiting the importation of lodgepole pine seeds unless certified according to OECD regulations (Pollard 1982a), an event that gave considerable impetus to Canada's participation in the Scheme. European countries other than Sweden are drafting similar legislation, restricting seed imports to those bearing an OECD label.

Participation in the OECD Scheme obliges each member country to compile and publish a national list of approved basic material. The term "approved basic material" means that trees from which the seeds are obtained meet the standards prescribed in the OECD (1974) regulations. Anticipating the expansion of seed certification to include seed orchard materials, a list of Canadian seed orchards was compiled by Pollard (1982b). This list identified 129 forest seed orchards that had been established by the end of 1981,

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1.	Identification									
	Species _____		_____				_____			
			(Common name)				(Botanical name)			
	Ownership _____		_____							
	Supervisor _____		_____							
	Location _____		_____							
	Latitude _____			Longitude _____			Elevation _____			
	Area _____ ha			Map References _____						
2.	Objective _____									
	Selection criteria _____									
	Regions of probable adaptation _____									
	Seed yield, estimated at age _____ kg annually									
3.	Composition									
			Parent trees represented at removed registration 19____		Year of propagation or ripening		Year of establishment		Spacing 19____ 19____	
	Clones _____									
	Full sibs _____									
	Half sibs _____									
	Design and layout _____									
	Isolation _____									
4.	Basic Material									
	(The information can be pooled for parent trees of same origin, growing under similar ecological conditions. For more advanced seed orchards, breeding records should be submitted.)									

	Provenance					Origin				
	Parent trees	Latitude	Longitude	Elevation	Region of Provenance	Geographic Location	Indigen.	Unknown	Introduced from	

5.	Management _____									
6.	Other Information									

(Stamp of Designated Authority)

Figure 1. Registration form.

HOMOLOGATION DE VERGERS À GRAINES CANADIENS SELON L'ORGANISATION DE COOPÉRATION ET DE DÉVELOPPEMENT ÉCONOMIQUES

No. de référence: _____
 Approuvé: _____
 (année)

1. Identification

Espèce _____
 (Nom commun) _____ (Nom systématique) _____
 Propriétaire _____
 Superviseur _____
 Localisation _____
 Latitude _____ Longitude _____ Elévation _____
 Superficie _____ ha Références cartographiques _____

2. Objectif

Critères de sélection _____
 Régions d'adaptation probable _____
 Rendement grainier (estimé en fonction de l'âge) _____ kg annuellement

3. Composition

Arbres-parents représentés à l'homo- retirés logation 19__	Année de multiplication ou de maturation	Année d'établissement	Espacement 19__ 19__
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Clônes
 Fratries
 Demi-fratries

Dispositif des plantes _____
 Isolement _____

4. Matériel de base

(L'information peut être regroupée pour les arbres-parents de même origine, cultivés dans des conditions écologiques analogues. Pour les vergers à graines plus avancés, il faut présenter des dossiers de reproduction.)

Provenance					Origine			
Arbres- parents	Latitude	Longitude	Elévation	Région de provenance	Lieu géo- graphique	Indi- gène	Inconnue	Introduit de

5. Aménagement

6. Autres informations

Nom et adresse de l'autorité de certification:

Signature: _____
 Date: _____

(Estampille de l'autorité désignée)

FORMULAIRE DE L'OCDE AGR/TS(80)6 (Révision Canadienne 1985)

Figure 2. Formulaire de l'homologation.

and indicated ownership, location, size, species and composition, orchard objectives, and year of establishment. It is expected that as orchard seed production continues to swell, and if there is a demand for seeds from these seed sources in other countries, many of the orchards on the Canadian list will become registered under the OECD Scheme. Early in 1985, three Douglas-fir orchards in British Columbia were approved and registered, and surplus seeds from the 1985 crop have been certified.

Seed certification and seed orchard registration are carried out by Seed Inspectors officially appointed pursuant to the Canada Seeds Act by the Minister of Agriculture. At the time of writing, such services are provided free of charge to the seed exporting companies.

Regulations for Forest Tree Seeds pertaining to the Seeds Act of Canada are in preparation (Pollard 1982a, b). These regulations will improve the labelling and the standards of seeds moving in Canada, and will control imports (Pollard 1982a; Edwards 1983). The precise form of the regulations has not yet been settled but a basic objective is to align domestic rules for genetic and physical quality of tree seeds with those of OECD and ISTA (International Seed Testing Association) respectively. This will permit the administration of proven schemes for both national and international movements of tree seeds.

References

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