

Certification of Forest Reproductive Materials¹

Barry Schrumpf, Seed Certification Specialist
Oregon Seed Certification Service
Oregon State University, Corvallis, Oregon

Background

Certification of forest tree seed in the Northwest was initiated in 1966 following the formation of the Northwest Forest Tree Seed Certifiers Association (NWFTSCA) to address concerns that were recognized by members of the Western Forest Tree Seed Council. Official seed certifying agencies in Oregon and Washington were approached to provide certification services. A set of Standards and Procedures were adopted that established a coordinated program for Oregon and Washington. An initial focus on collections of “wild” seed has expanded to include certification services for tree improvement programs, international marketing, nursery stock production, and forestation. NWFTSCA membership has also grown to represent these expanding interests, and the Standards have undergone numerous revisions to meet the changing needs of the entire program. The current edition is entitled:

Forest Reproductive Material Certification Standards Oregon - Washington Interagency

Copies of the Standards may be obtained from either certifying agency:

Oregon Seed Certification Service
031 Crop Science Building
Corvallis, OR 97331 - 3003

ph: (541)737-4513
FAX (541)737-2624

Washington State Crop
Improvement Association
414 South 46th Ave.
Yakima, WA 98908 - 3232

ph: (509)966-2234
FAX (509)966-2494

The certifying agencies operate under the authority of their respective state seed laws and administrative codes; both agencies are members of the Association of Official Seed Certifying Agencies (AOSCA).

Certified Material and Certification Classes

The Standards provide certification for a variety of forest reproductive materials (FRM): seed, pollen, scions, cuttings, and seedlings; and for the

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certification of seed orchards, evaluation plantations, seed production areas, and plantations as sources for FRM collections. Certification classes are based on the specificity of information known about traits, source, and origin of the FRM; the classes are defined in the Standards. Abridged definitions are:

Tested class - FRM from tree(s) that have been tested for specific character(s) as determined by progeny or other applicable tests and under specified conditions.

Selected class - FRM from trees that were selected for specific character(s); two subclasses are recognized.

Source Identified class - FRM came from within a seed zone or portion thereof as defined by legal description and from within a 500-foot elevation increment or breeding zone.

Audit class - applicant's records of procurement, processing, storage and distribution state that the reproductive material was collected from within stated seed zone or described portions thereof and from within a 500-foot elevation increment.

Levels of information regarding source and origin of FRM increase progressively through the Audit, Source Identified, and Selected classes. Additionally, Tested class pertains to traits since test(s) have been performed for specific characters. "Character" is defined in the Standards as:

"a distinctive trait, but not necessarily invariable feature, exhibited by all individuals of a group and capable of being described or measured; e.g., growth, form, color, resistance to disease, insects, weather, animals, etc."

Within AOSCA, this FRM certification scheme, based on source and origin, would be recognized as pertaining to "pre-variety germplasm", material that could precede the release of a named variety. There are literally thousands of named varieties of agronomic crops, but comparatively few named varieties of forest species. The seed source of a named variety is Breeder Seed, the product of a breeding program conducted to produce distinct and improved cultivars. Breeder seed may be increased through successive generations, known as "Foundation", "Registered", and "Certified", to produce the quantities needed to fill commercial demands for the variety. What is interesting to note is that the breeding programs, involved in producing the named varieties, require searching for germplasm, and selecting and testing activities that bare many similarities to those that qualify FRM for the Selected and Tested

classes. The product of the Tested class may be quite similar to breeder seed; indeed germplasm that is selected and tested under a source and origin scheme, could be utilized in a breeding program for the development of a named variety that would then be increased under a generation scheme.

Both the “source and origin” and the “generational” certification schemes are genetic schemes. The former utilizes origin, the latter, a variety name, as surrogates for a direct description of a cultivar's genetic makeup. The “origin” concept recognizes the genetic adaptation that has occurred for a specified environment, e.g., seed zone or breeding zone; the variety name represents the genetic manipulation, combination, etc. imposed by the breeding program.

International Movement of FRM

The foregoing pertains to domestic schemes for certification. There also exists an OECD² Scheme for the “Control of Forest Reproductive Material Moving in the International Trade.” Certification categories were established in 1974. They are:

Source-Identified Reproductive Material,
Selected Reproductive Material,
Reproductive Material from Untested Seed Orchards, and
Tested Reproductive Material.

Requirements for approval of reproductive material in these categories include (a) the existence of maps delineating “areas subject to sufficiently uniform ecological conditions on which are found stands showing similar phenotypic or genetic character;” (b) a List of Approved Basic Material that publishes for a country the species, origin, location, and elevation of available reproductive materials; and (c) registration of seed orchards that qualify to serve as sources for reproductive material to be certified under the OECD scheme.

Data regarding reproductive material to be added to the List of Approved Basic Material is submitted to the Certifying Agency in the state where the material is located. Also, application for registration of seed orchards for OECD is submitted to the Certifying Agency in the state where the seed

² Organization for Economic Co-operation and Development (OECD), an international organization in which countries are members. The Designated Authority representing the United States for forest reproductive materials is the USDA, Forest Service.

orchard is located. Instructions in the List of Approved Basic Material include the statement: “To meet registration requirements, a form must be submitted from each orchard. A revised form will be completed prior to collection season if any items listed under composition are changed from the previous approved form.” Use of the List of Approved Basic Material is available through the state Certifying Agencies.

Certification of FRM from Seed Orchards

Basically, the steps required for certification of FRM from seed orchards involve:

- (a) establish the eligibility of the orchard for at least Selected Class certification,
- (b) establish the eligibility of the orchard, or portion thereof, for Tested class certification,
- (c) verify and certify actual collections from the orchard, and
- (d) update (a) and (b).

The Certifying Agency determines (a), (b), and (d) by conducting a thorough inspection of primary documents - the records prepared by the orchard owner throughout the years of establishment and management of the orchard. The purpose of this inspection is to confirm that the records do completely document the establishment history and composition of the orchard. The inspection of records is accompanied by a site inspection to confirm that records and maps accurately document the actual orchard. Records and site inspections of testing programs are also conducted on all aspects of testing, i.e., design, implementation, collection and analysis of results.

A records and site inspection is also necessary for an Evaluation Plantation, when it is to be the source for an FRM collection.

The responsibilities on the parts of both the orchard owner (the applicant) and the Certifying Agency are specified in the Standards, and are copied verbatim:

Forest Reproductive Material Certification Standards Oregon - Washington Interagency

5. Field Standards

- a. *Tested and Selected classes* - *Applicant* shall maintain continuous record(s) satisfactory to *certifying agency* which maintain the identity of the *reproductive material* through all stages of production, collection, processing, storage, and disbursement from stores, and, in addition, such records as needed to trace the pedigree and document the performance of

the *reproductive material*. The records shall include but are not limited to those involving:

- (1) Selection, *location*, and *origin* of the parent trees.
- (2) Pollen, seed, scions, etc., collection, processing, inventory, storage, and use in tree improvement and breeding programs.
- (3) Design, establishment and management of *test(s)* and the collection, analysis, and interpretation of *test* data.
- (4) Nursery stock production.

Certifying agency may inspect all phases of the field operation including periodic checks of parent trees, pollen, and scion collections; pollinations; cone harvest, storage, processing and inventory/and tests, together with appropriate records.

6. *Processing Standards*

f.(2) For *Tested Reproductive Material Only*

- (a) A progeny, clonal, or other applicable *test* plan shall normally be submitted to the *certifying agency* for review and acceptance before installation. Acceptance of the *test* plan may be made after installation providing requirements in 5 (a) and 6 f (2) (b) are met. *Applicant* may request assistance from the *certifying agency* in the development of a plan.
- (b) The plan shall include in the *test* both randomization and replication for the material to be tested and the identity and background of the check material to be used.
- (c) Complete randomization and balanced, randomized blocks are recommended. The actual design of the established *test* must be recorded in detail.
- (d) Trees to be planted for *tests* must be grown together in soil as uniform as possible, or, if they are grown in different soils, must be so distributed that like proportions of all clones or progenies are produced in each distinct class of soil.
- (e) *Test* measurements are to be presented in numerical form. Each *character* to be evaluated is to be measured separately. The *genetic superiority* as compared with the check must be clearly demonstrated for at least one of the characters being tested. *Characters* of economic importance in forestry identified in the *test* must be clearly reported if they are significantly inferior at the 95% level to those of the check material.

- (f) The results of the *test* measurements and data shall be readily available to the *certifying agency* and the prospective user or purchaser.

(Italicized words and terms are defined in the Standards)

Application and Fees

If a collection of FRM is planned from a seed orchard that has not been subject to the records and site inspection, then an application for this inspection should be submitted to the Certifying Agency in the state in which the orchard is located. Use the standard application form "Application for FRM Certification". On that form, use the "Other" class of service line and enter: "seed orchard records and site inspection". Recommended timing of the application is six to eight months prior to the collection, since there is not time available during the collection season to conduct the records and site inspections. This amount of lead time would allow for gathering all the needed records, scheduling inspections, discussion of findings, notifying owner of eligibilities, and informing the certification field inspectors of those eligibilities, in preparation for the forthcoming collection. An application for the records and site inspection combined with an application for a collection would delay the final certification of the collection until after the inspection for eligibility was completed.

Fees for certification services pertaining to the Tested and Selected Classes are at the hourly job time rate listed in the current fee schedule. The rate is applied to all time for office, travel, inspections, meetings, etc., associated with completing the evaluation for eligibility and notification of findings.

Notice of Seed Orchard Eligibility

Completion of the records and site inspections and determination of the eligibility of the seed orchard for certification is indicated by the Certifying Agency through a notice to the orchard owner. The notice includes a statement of the findings: that the orchard, or components thereof, is/are eligible for certification at specified class and subclass levels; and that the eligibilities are dated - the date of the most recent records included in the inspection. Future additions and/or deletions to the orchard and future testing will be subject to a records and site inspection in order to update the orchard's eligibilities.