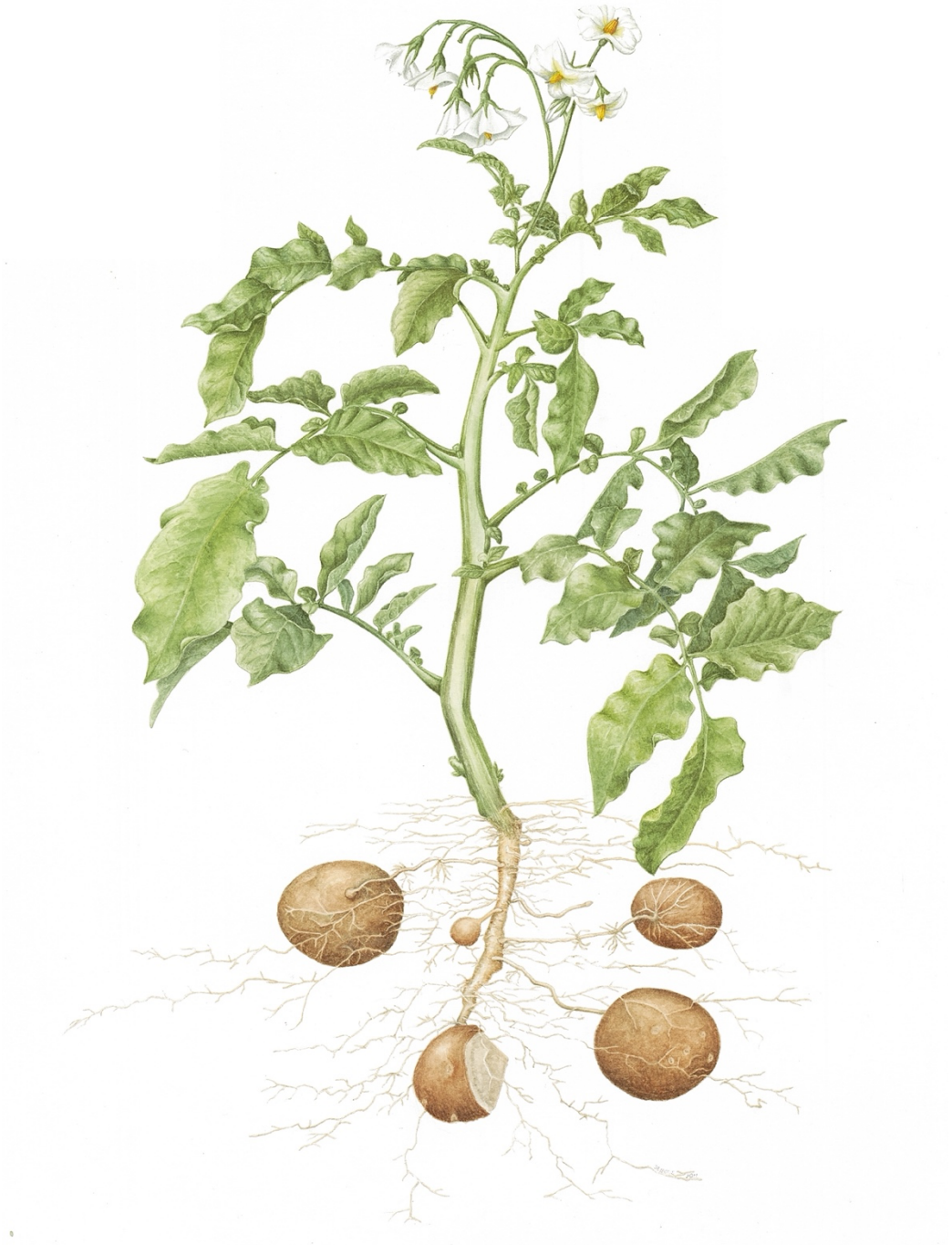
2023 OREGON POTATO SEED CERTIFICATION STANDARDS



Oregon Seed Certification Service
Oregon State University, Corvallis, Oregon

Certification in Oregon

Certification in Oregon is authorized by Revised Statutes 633.620 and 630. It is administered by the dean of the College of Agricultural Science of Oregon State University and his appointed representatives. A certification board, appointed by the dean of the College of Agricultural Science, develops and determines policy; accepts, rejects and deletes varieties from the certification program; evolves, modifies and alters standards for certification subject to the approval of the dean. The Certification Program is a service of the School of Agriculture administered through the Oregon State University Extension Service. It is divided into two projects. The Foundation Seed and Plant Materials Project is responsible for making available sufficient improved planting stock to ensure a continuous supply of early generation material for later increase by Oregon growers engaged in the certification program. The Certification Project is responsible for maintaining the pedigree of superior varieties under a generation system by appropriate inspection and records to ensure that genetically pure varieties are produced under the Oregon Certification Program. County Agricultural Extension Agents are the certification representatives within counties. Applications, lists of eligible varieties, and the Oregon Potato Standards for seed certification can be obtained from the Seed Certification office in Corvallis or online at: https://seedcert.oregonstate.edu/crop-information/potatoes.

A memorandum of agreement was established August 1, 1945, between the Oregon State University Extension Service and the Commodity Inspection Division, Oregon State Department of Agriculture. It states that the Oregon State Department of Agriculture will make all inspections of seed potatoes offered for inspection according to the certified seed potato grades established in the Oregon Certification Standards, and may reject for certification any lot or lots not grading in accordance with the grade claimed on the certification tags and/or shipping certificate. The memorandum of agreement and working procedures were reconfirmed in 1972.

Purpose of Certification

The purpose shall be to provide a service to the public for the maintenance and increase of quality seed and propagating material of varieties grown and distributed in such a manner as to maintain varietal purity, and meeting tolerances for certain diseases, through the appropriate application of these rules.

Disclaimer of Warranty

Certification does not constitute a warranty of either the Oregon Seed Certification Service or the grower of certified seed potatoes regarding the quality or freedom from disease of the seed potatoes beyond the express representation that the potatoes were produced, inspected, graded, and shipped under the standards of the Oregon Seed Certification Service, and did qualify, prior to shipping, as to freedom from disease and all other requirements of the rules and regulations of the Oregon Seed Certification Service. The reliability of the tests performed on these potatoes is subject to the normal limits of laboratory accuracy. By acceptance of these seed potatoes, buyer expressly agrees that the exclusive remedy for breach of any warranty shall be limited in all events to a return of the purchase price of the seed.

These Seed Potato Certification Standards are a part of the Oregon Seed Certification Handbook. Request a copy of the Certification Handbook by contacting the county Extension Office or the Seed Certification office. The Certification Handbook can be accessed on line at: https://seedcert.oregonstate.edu/crop-information. The 2023 Oregon Seed Potato Standards are effective May 1, 2023.

Cover Photo: Premier Russet Potato, painted by Jeanne Debons, botanical artist.

Oregon Potato Seed Certification Program Changes for 2023

1. **Edits**: Edits to the Potato Standards that do not change any rules can be made by the Program Coordinator.

2. **Experimental Line Section Program:** The committee agreed to remove the program from the Oregon Potato Seed Certification Standards, retaining online in the Oregon Seed Certification Service (OSCS) office.

WEBSITES: Information at your fingertips

Oregon Potato Seed Certification **Standards**	http://seedcert.oregonstate.edu/potatoes
Oregon Seed Certification **eCertification** page (requires a PIN)	https://w3.oscs.orst.edu/online/
Oregon Potato Commission	http://www.oregonspuds.com/
Oregon Department of Agriculture	http://www.oregon.gov/ODA/
Potato Association of America	http://potatoassociation.org/
National Potato Council	http://www.nationalpotatocouncil.org/
PNW Plant Disease Management Handbook	https://pnwhandbooks.org/plantdisease
PNW Insects Management Handbook -Potato	http://insect.pnwhandbooks.org/vegetable/irish-potato
PNW Weed Management Handbook	https://pnwhandbooks.org/weed

US & Canadian Seed Acreage https://seedcert.oregonstate.edu/potato-certification-national-level

Seed Potato Grades & Export Standards
https://www.ams.usda.gov/grades-standards/seed-potatoes-grades-and-standards

UN/ECE Potato Seed Standards https://www.unece.org/trade/agr/standard/potatoes/pot_e.html

Requirements for Canadian-bound seed potato shipments: https://www.inspection.gc.ca/plant-health/plant-pests-invasive-species/directives/potatoes/d-98-01/eng/1312247584545/1312247683833

Oregon Potato Seed Certification Standards

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Seed Certification
Oregon State University
31 Crop Science Bldg.
Corvallis, OR 97331-3003
Phone: (541) 737-4513
FAX: (541) 737-2624

Potato Inspection Staff

Full Time
Tami Brown
Terry Burr
Craig Agidius

Part time
Dale Brown
Cheri Bowen
Oscar Gutbrod
Karen Courtney
Jeff McMorran
Bailey Peters

OSCS Manager: Andrew Altishin

Contact for Certification Staff:
Potato Coordinator: tami.brown@oregonstate.edu
Post-Harvest Test Coordinator: terry.burr@oregonstate.edu

Web Site: http://seedcert.oregonstate.edu/potatoes

POTATO CERTIFICATION AND FOUNDATION SEED
AND PLANT MATERIAL ADVISORY COMMITTEE (PC&FS&PMAC)

The Advisory Committee voting members: one representative from each farm of certified seed potatoes; two commercial potato growers selected by the Oregon Potato Commission; one OSU researcher; one Extension specialist; and one county agent. The Certification Program and Commodity Inspection Division, Oregon Department of Agriculture shall be represented by one ex-officio member each. Other ex-officio members may be appointed as the Dean or the Committee deem necessary. A listing of the current committee can be found at: https://seedcert.oregonstate.edu/crop-information/potatoes

The purpose of this Advisory Committee is to promote and improve the potato seed industry of Oregon and to assist and cooperate with the Certification and Foundation Seed and Plant Materials Board.

CHAIRMAN	Mark Campbell, Cal-Ore	(541) 281-2947
VICE-CHAIRMAN	Mark Trotman, Cascade	(541) 723-3200
SECRETARY	Tami Brown, Corvallis	(541) 737-4513

SEED GROWERS

In 2022 the Bylaws were changed so that each seed potato farm attending the meeting has one voting member. Voting members are identified at the time of the meeting. A listing of the current certified seed potato farms in Oregon can be found at: https://seedcert.oregonstate.edu/crop-information/potatoes

COMMERCIAL GROWERS Voting Members

Cody Fazio, Sauvie Island
Tyler Wagstaff, Nyssa 208-573-2553

OREGON STATE UNIVERSITY

Voting Members:

Kenneth Frost, OSU Plant Pathologist (Hermiston)	(541) 567-6337
Vidyasagar R. Sathuvalli, OSU Potato Program	(541) 737-3539
Brian Charlton, Int. Director-KBREC	(541) 475-7107

Ex-officio:

Tom Chastain, Dept. Head, Crop & Soil Science	(541) 737-6187
Daniel Curry, Director of Seed Services	(541) 737-5094
Andrew Altishin, Manager, Oregon Seed Certification	(541) 737-4513
Elizabeth A. Savory, Plant Health Program Mang., ODA	(503) 986-4570

SIGN-UP SCHEDULE AND DEADLINES

Sign-up Schedule	Deadline
Lab (Micropropagation) or Greenhouse	
Facility Inspection	- While plants present
Lot Inspection Application (*or within 15 days of planting for those fields planted after May 25,* ***no applications accepted after June 30***)	June 1
Survey of uncertified potato fields	July 15
Latent Virus Testing Application (field)	July 30
Winter Grow-Out Tuber Delivery	November 20

No sample will be accepted after December 1

FEES

A. Micropropagation Laboratory/Greenhouse Inspection

1. Mother Plant Testing - lab fees (*in vitro* plants)

   Cost for pathology testing *in vitro* "*mother plant*" material is paid directly by the micropropagation lab to the testing lab and is dependent on the current rates charged by the testing lab. A listing of laboratories conducting these assays and their current charges is available on request. There is no additional fee for OSCS audits of pathology testing records.

2. Greenhouse Production – inspection & lab fees

   a. $355 for the first lot (=$275 facility fee + $80 lot fee),

   $80 for each additional lot for first two inspections or pathology sample collection trips to greenhouse. Minimum fee for each additional inspection/sampling trips: $90.

   b. Laboratory testing charges to be paid directly by applicant.

B. Certified Seed Lot Inspection: Fees are $35.00 per acre, with a $70.00 minimum charge per application. Acreage over the minimum may be figured in tenth of an acre. There will be no tagging charge. FFA and 4-H projects, of less than one acre, may be certified without fees.

Applications received at the OSCS office or postmarked after midnight June 1 deadline (or 15 days after planting for lots planted after May 25) will be charged an additional fee of $50.00 per application over the regular acreage fee. Applications will not be considered complete unless accompanied by a map of the field and proper seed source documentation. **No application will be accepted after June 30**.

1. If acreage is withdrawn before the first inspection the entire fee will be refunded minus a "*Special Request Fee*" per application as per page VI of the OSCS Handbook.
2. Ten dollars ($10.00) per acre will be refunded if acreage is rejected at the first inspection or withdrawn before the second inspection. No refunds of less than $20.00 will be made for each lot.
3. Six dollars ($6.00) per acre will be refunded if the acreage is rejected at the second inspection. No refunds of less than $20.00 will be made for each lot.
4. No other refunds will be made.

C. Reinspection Fee: $40.00 per lot. Fee waived if reinspection occurs while inspectors are still present in the area. For early generation lots it is recommended grower be present to remove any 'scored' plants during the inspection.

D. Uncertified field inspection: Survey of uncertified fields on a seed farm to establish Seed Farm eligibility.

1. Fees are $6.00 per acre, with minimum of $40.00 per application. After July 15, an additional fee of $50.00 will be charged per application over the regular acreage fee.
2. The entire fee will be refunded if acreage is physically removed before inspection.

E. Leaf sampling and latent virus determination.

$32 per 400-leaf sample. If mailing required (i.e. overnight delivery to lab) grower will be billed for mailing charges. Minimum fee of $32.

F. Winter Grow-Out / Post-Harvest Test

For sample received prior to November 21:	
1. Lots less then 1 acre:	$ 70
2. Lots 1-20.9 acres:	$150
3. Lots 21-40.9 acres:	$295
4. Lots greater or equal to 41 acres:	$440

Late Fee: Samples received after **November 20** will be assessed a late fee of $60/lot.

No samples will be accepted after December 1. Growers will be billed for the Winter Grow-Out according to the table above. Winter test results are not reported until fees are received.

G. Special Request: Special out-of-the-routine request will be subject to a fee.

Table 1 – Latent Virus Sampling Rates (in-field)

A. Field Sampling

Class	Rate	Samples/acre
FY1	25% of plants *a	*b
FY2	400 L/A *c	80
FY3	50 L/A	10
FY4-6	20 L/A	4

B. **Winter Grow-Out** = $32 sampling fee per 400-leaf sample. Minimum fee of $32 per lot. Any additional mailing costs will be billed to the grower (i.e., sample delivery to a non-OSU lab).

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*a – 25 percent of the plants/hills will be sampled.

*b – Dependent on number of hills present, maximum of 800 leaves.

*c – Leaves/acre (other classes), MAXIMUM = 400 leaves per lot (field sampling only).

NOTE: Grower is billed for testing costs directly from the OSU Seed Lab. See https://seedlab.oregonstate.edu/testing-services/testing-fees for current fees.

GENERAL REQUIREMENTS

I. REQUIREMENT

To be eligible for certified seed potato production, all acreage on a Seed Farm (see definition Section II below) must have been planted with certified seed.

All acreage planted to potatoes, but not entered for re-certification, must be inspected at least once during the growing season for bacterial ring rot, except 1) when a grower plants his own certified seed or 2) when all the certified seed potatoes produced is for the producers' own use only and will not be eligible for sale as certified seed in the current year (i.e. Own-Use-Only subclass).

No bacterial ring rot (BRR) is permitted in fields not entered for certification. Finding bacterial ring rot in the uncertified fields will cause Certified seed fields to be subject to the bacterial ring rot requirement noted on Page 15 ("*C. Bacterial Ring Rot*"). A special application for the inspection of uncertified fields must be completed along with a map showing the location of each field.

II. ADMINISTRATIVE DEFINITIONS

A. Seed Potato: A seed potato refers to the tuber used for reproduction of the potato.

B. Seed Farm: A seed farm is a clearly independent operation, managed separately, and includes all land, facilities (storage, etc.) equipment, operational personnel and where the lowest class planted must have been Certified. All equipment not used exclusively on a seed farmmust be thoroughly sanitized prior to use on any seed field.

C. Certification: The act of endorsing a seed lot as meeting the standards or requirements specified in the order or regulations governing the production of seed potatoes. Except as might otherwise be specified, the measurement method or basis for determining compliance with the standards is visual inspection of the growing grounds and crops thereon or harvested there from as described in the order or regulations. "*Certification*" does not constitute a guarantee or warranty, nor is it a representation that the seed potatoes to which the indicia of certification (certification tags, seals, Certificate of Final Certification, etc.) are attached, or which are otherwise represented as certified, are merchantable or fit for a particular purpose.

D. Tolerance: The permissible allowance for a disease, varietal mixture, or grade defect as specified in the order or regulation governing certification of seed potatoes. Except as might otherwise be specified, the measurement method or basis for determining compliance with the stated tolerance is visual inspection of a sample of the plants or tubers in the lot, respectively. Further, except as specified, sample sizes are at the discretion of the certification agency.

Diseases, varietal mixtures, or grade defects may be present at a level in excess of specified tolerances, because diseases and diseased plants, varietal mixtures, and grade defects which cannot readily be observed visually at the time of official inspection may not be detected at such time. Furthermore, even the inspection of larger samples might not reveal deviations in excess of specified tolerances. Finally, with respect to the "*zero*" tolerances for such defects as varietal mixture, BRR, root-knot nematode, the tolerance is chosen for reasons of convenience and practicality and is not construed to mean that the lot inspected is free of them. It does mean that no varietal mixture, BRR, or root-knot nematode was found during the inspection process.
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E. Lot: A lot is an area planted with the same variety and generation. The boundaries of the lot will be determined by the grower. Seed lots must be staked at both ends and at least every 300 feet along diving rows with a skip row between varieties.

A lot may be subdivided with permission of the inspector, however once a lot is assigned a certification class by the inspector, the entire lot will be of that class only. If a lot is rejected for any reason, the entire lot will be considered rejected.

Lots of the same variety and certification class may be combined in storage. Lots from a field placed in storage in such a manner that their identity is lost in relation to other lots will be rejected if BRR, root knot nematode or other problems occur.

F. Completion of Certification: A lot will not be considered certified until:

1. The farm has met Seed Farm Requirements (see page 8)
2. Has passed at least two inspections.
3. A harvest or bin inspection of tubers has been completed, unless this inspection is considered not possible by the harvest inspector due to circumstances out of the grower's control. Any lot not so inspected will have the sentence "*No harvest/bin inspection conducted on this lot*" included on the Final Report. Lots not inspected due to lack of cooperation by the grower, such as failure in communicating harvest dates to the harvest inspector, will not be eligible for certification.
4. A map of the storage area must be on file with the OSCS office clearly identifying each seed lot by variety and class.
5. A WGO sample has been submitted (Exceptions: small lots with less than 750 pounds harvested.) NOTE: Early out-of-state shipments are <u>not</u> exempt from an inspection for internal necrotic arcs as specified under the Necrotic Virus Management Plan (see page 20 for details), they also require a Post-Harvest Test to be eligible for re-certification.
6. Proper tags or Certificate of Final Certification has been issued, see page 19.
7. Required out-of-state grade inspections and inspections for 'necrotic arcs' have been fulfilled, see page 20.

III. BASIS FOR REFUSAL TO APPROVE OR INSPECT

A. Refusal to Inspect: The certification inspector may refuse to inspect a lot if:

1. Location: The location of the lot is such that inspection would be unduly expensive.
2. Non-compliance: The grower fails to follow the rules governing certification, including failure to pay for services previously rendered.
3. Mitigating factors: Heavy weed infestation, lodging of potatoes, damage from weather, or other conditions beyond the control of the grower preclude satisfactory inspection.

B. Refusal to Approve: The certification inspector may refuse to approve a lot for certification due to unsatisfactory appearance caused by weeds, poor growth, poor stand, disease, insect damage, and/or any conditions that may prevent thorough inspection or may reflect unfavorably upon the certification program. Rogueing BRR plants is not permitted in a Certified seed field. During inspections no BRR is allowed in or out of count.

C. Appeal Procedures: If a grower disagrees with a decision on his crop rendered by a certification staff member, he may appeal this decision. The grower must file a letter of appeal. Involvement with the local county Extension agent, including a letter of support, is encouraged and may strengthen a grower's case. The letter of appeal and any supporting documentation should be forwarded to the Seed Certification office, Crop Science Building, Room 031, Oregon State University, Corvallis, OR 97331-3003. Email letters of appeal are acceptable as long as the sender is clearly identifiable.

The Seed Certification office will contact the grower and/or his agent, and make appeal inspections where warranted insofar as time, weather, and crop conditions permit. If a mutually satisfactory agreement cannot be reached, the Certification office will forward, as promptly as possible, all information to the Director of Seed Services who will develop an Appeals Board to hear the case and make a ruling. The Board reserves the right to charge the grower or the grower's agent seeking the appeal for expenses incurred related to the appeal when those expenses are deemed to be excessive.

[*1] - Appeals of the **second field inspection** or the **Winter Grow-Out** should be made <u>immediately</u> before the field enters advanced die down or the WGO plants are destroyed and samples discarded (as lots are read). An eMail notification of intent to appeal is sufficient.

IV. PUBLISHING DIRECTORY OF CERTIFIED SEED POTATO GROWERS

Seed Potato Growers Lists will be published annually after final field inspection. The report will show the results of all field inspections, including BRR. The directory will include all lots that have <u>completed</u> the field inspection portion of the OSCS program (including the "*Do Not Publish*" varieties with variety names blacked out). Lots withdrawn prior to completion of lot inspection portion of the OSCS program are not included unless BRR found during the required inspection. Lots where final approval cannot be made at last inspection, will have '*pending*' under classification which means the seed lot is held for WGO, or other tests were not completed at the time of publication.

V. VARIETAL ELIGIBILITY REQUIREMENTS FOR CERTIFICATION

Seed stock and propagating material must be approved by the Oregon State University Seed Certification Board to be eligible for certification. Eligibility requirements for certification of publicly and privately developed varieties are the same. In Oregon certification does not imply recommendation. Variety recommendations for the state of Oregon are the responsibility of staff members within the School of Agriculture working in the areas of the crops involved. Recommendations are based on research data and knowledge of the variety under consideration.

A list of potato varieties approved for certification in Oregon is prepared each year (see page 22). Varieties to be considered for certification may be submitted from the following sources:

A. From the Oregon Agriculture Experiment Station, after being approved by the New Crops Variety Committee of the Oregon Agricultural Experiment Station.

B. From the Oregon Agricultural Experiment Station in cooperation with other public agencies.

C. From developments of other state or governmental experiment stations.

D. From private and commercial plant-breeding programs.

To have a variety considered for entry in the certification program, a grower, breeder, or originator shall submit the appropriate form to the Seed Certification office, Crop Science Bldg., Room 031, Oregon State University, Corvallis, OR 97331-3003. Appropriate forms can be obtained from the Seed Certification office. For newly developed varieties, this request should be submitted one year prior to the time certification is desired. For varieties previously accepted by other certification or regulatory agencies, this request should be submitted prior to time of planting.

Acceptance of a variety for certification by the OSCS shall be based on the following information. (This information shall be considered confidential).

1. A statement by the person or firm requesting certification that the variety has been **adequately tested** to determine its value and probable area of adaptation, that it merits certification and that it is distinguishable from other varieties, as set forth in Article V of the International Code of Nomenclature of Cultivated Plants, which reads as follows:

   "The term cultivar (variety) denotes an assemblage of cultivated individuals which are distinguished by any characteristics (morphological, physiological, cytological, chemical or others) significant for purposes of agriculture, forestry, or horticulture, and when reproduced (sexually or asexually) retain their distinguishing feature."

   When any stock being presented for certification has been previously released under a different designation, the Certification Board reserves the right to refuse further consideration until the sponsoring breeder or originator files documentary evidence from the USDA Seed Branch indicating that such a stock of seed is free to move in interstate commerce under the proposed new designation.

2. A statement of **origin** and breeding procedure.

3. Description of the **morphological characteristics** (such as tuber skin and flesh color, height, uniformity, leaf, and flower characteristics, etc.), physiological characteristics of value to field inspectors, and such other factors as the breeder or sponsor considers pertinent.

4. Evidence of **performance** including data on yield, insect or disease resistance, and other factors supporting the value of the variety. These performance tests may be conducted by private companies or Agricultural Experiment Stations, and shall include appropriate check varieties that are used extensively in the area of intended usage.

5. A statement giving the **region** of probable adaptation and **purpose** for which the variety will be used. This should include areas within state or countries where the breeder of the variety has tested it and anticipates recommending and merchandising it.

6. Procedure for **maintenance** of stock seed classes shall be described. At the time a variety is accepted for certification, a sample of propagating material, if requested, shall be presented to the certifying agency. The certifying agency can request a sample of stock seed or propagating material at any time while the variety is in the certification program.

7. When varieties are reviewed for acceptance into the Oregon Certification Program, a favorable report from the USDA-ARS Plant Variety Protection office will be considered.

8. Seed will be eligible for certification upon meeting the appropriate certification standards. Information pertaining to the certification of a private variety will be made available only to the specified firm or individual (owner/agent) upon written request to the OSCS office.

VI. VARIETIES CERTIFIED

A. Varieties Eligible for certification in Oregon, see Appendix page 22. Appropriate forms may be obtained from the Oregon Seed Certification office, Crop Science Building, Room 031, Oregon State University, Corvallis, OR 97331- 3003. See Page 10.

B. Variety Approval Status: Four groups are recognized within the OSCS system:

1. **Public (or "open") -** released or nationally recognized varieties with no restrictions on production.

2. **Proprietary Varieties -** Varieties protected by Plant Variety Protection (PVP) or US Patent. These varieties must have owner's permission for production of certified seed potatoes (see more on approval or proprietary variety in part C of this section below).

3. **Experimental Varieties**: The field increase of stock seed to be used for experimental purposes may be examined by OSCS personnel provided such a request is made before planting. An appropriate tag will be issued to declare the intended use of the seed for experimental purposes (i.e. a white tag). This tag will not imply that the experimental variety has been accepted into the certification program as a released variety. Fees for this service are the same for certification services.

4. **Heirloom Varieties**: Are generally older varieties which are often widely grown for which OSCS has not been able to identify a living breeder/owner to act as a mediator should slight differences occur among differing sources of the variety. "Heirloom Varieties" must meet a basic variety description on file (color of tuber flesh & skin, tuber shape, flower color, any prominent haulm characteristics, see OSCS Policy Sheet #16 for more detailed information). "Heirloom Varieties" are listed under the 'Experimental' category in the OSCS database, but list the Contactor as "Heirloom Variety". The database automatically bypasses the search of 'approved growers list' for these varieties.

C. Approval of "Proprietary" Varieties: All potato material with proprietary status in the United States must have the permission from owner or agent prior to release of inspection reports or issuing final certification. For the sake of applying this rule, '*proprietary in the United States*' is defined as a variety that has either a PVP 'certificate issued' or 'pending,' or is a pre-commercial advanced experimental line of a university/USDA/private variety development program, requiring MTA for production. Though rare, a potato variety that has been patented would also fall under this category. Growers are assumed to be approved to produce a proprietary variety if the variety owner has not responded to the request for a grower approval within 30 days. The status of each accepted variety is listed in the Appendix, Part A (page 22).

VII. MICROPROPAGATION (LAB /GREENHOUSE)

*Note: 1) Special testing requirements for material derived from **True Potato Seed** (TPS) on file. 2) Information on requirements for material in the **Experimental Line Selection Program** on file.*

A. Basic Requirements for Plant Material Increases:

1. All micropropagation facilities must be approved by the certification agency within the state/province.

2. All material must be documented as to source of the variety and must be approved as noted on page 10.

3. All tests required by these standards must be conducted by a laboratory approved by the Oregon Seed Certification Service, unless indicated otherwise. See approved protocols on file.

4. Entry level material must be isolated from all other material and limited to 50 *in vitro* propagules per line selection. All plant material to be mass micro-propagated must have met the testing protocol of Section B below.

5. Records - Good records to document the movement of plant material through increase is required (see page 12, "I. Required Records"). Records must be available for audit by the approving seed certification agency.

6. Minimum greenhouse and laboratory physical standards must be met. Certification agency inspection of facility is required on a regular basis. Physical and procedural requirements are available on request. Strict sanitation must be maintained during increase of *in vitro* or greenhouse plant material.

B. Testing Requirements for Entry Level *

Testing of 100 percent of the mother plants, as outlined in Figure 1, page 26 of these standards for the following pathogens is required. All mother plants will be screened for bacteria and fungi with Richardson medium and/or nutritional broth. Acceptable protocols are available upon request. Screening with Richardson medium and/or nutrient broth may be done by production lab.

1. *Clavibacter michiganensis* subsp. *sepedonicus* by ELISA or PCR. (See protocol on file defining an acceptable *in vitro* plant determined by these tests, amended as per PCAC January 2015).

2. *Pectobacterium* by crystal violet pectate (CVP), with the *Pectobacterium* tested for being defined as *Pectobacterium atrosepticum* and *Pectobacterium carotovorum* subsp. *carotovorum* and *Dickeya* spp. Greenhouse minitubers are only rejected for Nuclear Class if found to yield positive tests for *Pectobacterium atrosepticum* or *Dickeya* spp but not for *Pectobacterium carotovorum* subsp. *carotovorum.*

3. Potato viruses X, Y, S, M, A, Leafroll, and PMTV by ELISA, or other approved test.
4. Potato spindle tuber viroid by cDNA, dot hybridization or gel electrophoresis.
5. All plant material to be mass propagated must test negative for the pathogens listed above.
6. Plant material may be requested by the certification office.

* tests as (or more) sensitive than those shown permissible.

C. Testing Requirements for Existing *in vitro* Plant Material *

1. To be considered as existing *in vitro* Plant Material, Entry Level Material must have passed all tests on *in vitro* or grow out plantlets.
2. Source of *in vitro* plant material may be from *in vitro* plantlets, *in vitro* microtubers, Nuclear plantlet nodal cutting and Nuclear sprouts.
3. Yearly testing for potato virus X, Y, S, M, A, leafroll, and PMTV by ELISA, or other approved test.
4. Screening for bacteria and fungi with Richardson medium and/or nutrient broth may be done by production lab.
5. *Clavibacter michiganensis* subsp. *sepedonicus* by ELISA or PCR.
6. *Pectobacterium* (as defined in B2 above) by crystal violet pectate (CVP).
7. Potato spindle tuber viroid (PSTVd) need be tested only once at Entry Level stage.

* tests as (or more) sensitive than those shown permissible.

D. Sampling Requirements for Laboratory or Greenhouse Mass Propagated Plants and/or Tubers

1. All pathology samples must be taken and laboratory results completed prior to shipping of plantlets or tubers. A minimum of one percent of the plants or tuber population, but no less than 20 samples (or 20% of lots having 100 plants or less), must be tested for*Pectobacterium* (as defined in B2 above)* and *Clavibacter michiganensis* subsp. *sepedonicus** bacteria, and potato viruses X, Y, and leafroll **.

   * Protocol on file specifying what constitutes a confirmation of diagnosis for *Pectobacterium* and *Clavibacter michiganensis* subsp. *Sepedonicus*. Tests using CVP, bioassay, or other recommended tests for the purpose intended will be limited to 5 bulked plants per test.

   ** Virus tests limited to methods at least as sensitive as ELISA. No more than 5 plants or tubers may be bulked when running the ELISA tests.

2. The sampling will be taken under the supervision of a seed certification agency. Tests are to be conducted by an independent diagnostic laboratory approved by OSCS or the certification agency in the state of origin.
3. Nuclear class stock has a zero tolerance for the above-mentioned pathogens.

E. Inspections: Upon receipt of the application, a certification agency will make at least two inspections of the micropropagation facilities (includes laboratory and/or greenhouse increase). See page 26 for reference material.

F. Test Results: Completed test results described in paragraph C above must accompany the certification Shipping Certificate sent to the Oregon grower. This must include sample designation, type of test, laboratory name, and signature of laboratory representative.

G. Classification of Stock Produced Through These Guidelines:

1. **Lab produced** microtubers or other tissue-cultured material purchased by the seed grower would be considered Pre-Nuclear stock.
2. **Green/screen house** plantlets or minitubers purchased by the seed grower produced in a protected environment, and adequately pathogen tested as discussed in part D, would be considered Nuclear stock.
3. The progeny from Nuclear class stock would be eligible for certification as FY1 stock. (FY1 production protocol available upon request).

H. Publishing Seed Sources: The seed source in the seed directories may list private laboratory or greenhouse providing the planting material.

I. Records Required to Retain:

1. Inventory of all plant material on hand and testing results.
2. Individual records for each line being mass increased, showing step-by-step flow through for each increase and the actual number of plants or micro-minitubers on inventory.
3. These records must be retained for seven years.

VIII. SEED STOCK DOCUMENTATION

Documentary evidence of the seed source used for planting must accompany the application. Certification tags from other states will be accepted when accompanied by a **North American Certified Seed Potato Health Certificate (NAHC)** issued by the state of origin**.** All seed stock must complete a WGO, except when winter testing is not required based on lot size, or in special cases when approved in advance by the OSCS office (see exception for seed lots coming from states that only offer tuber testing for the post-harvest test in Part X1V-B, page 18). Proof of certification of Oregon-grown seed will consist of tags or invoices, shipping certificates from Oregon and other states will be accepted as proof of certification of planting stock for re-certification if methods of maintaining lot identity meet the approval of the OSCS office. When growers use their own seed, the lot number of the seed source must be shown on the application.

IX. SEED ELIGIBLE FOR CERTIFICATION

(See Appendix page 25 for comparison with other states)

Nuclear, FY1 & FY2 - FY6

All seed potatoes certified in Oregon are produced under the Limited Generation Program.

All lots entered for re-certification in Oregon must have been subject to a WGO (see page 17) with the exception of (1) lots of 750 pounds or less; or (2) lots approved based on existing policy (see *Policy Statement #2 - OSCS Policy Regarding Accepting Lots Which Have Not Had A WGO).* Oregon will accept lots in which the PHT consisted of tuber testing only provided there is no WGO option in the state/province of origin.

Application acceptance cutoff: Applications for recertification of potato lots for class FY1 and higher will **not be accepted after June 30**.

Specific requirement by class:

A. Nuclear, must be produced according to page 11 (**Testing Requirements for Entry Level**) of the these standards.

B. FY1, 2, 3, 4, and 5 class lots from any source meeting the following requirements:

1. Originating progeny tuber must have been tested for BRR, *Pectobacterium sp.,* and viruses A, M, LR, S, X, Y, PMTV, and SPTVd.
2. Class being planted must meet disease tolerances for Oregon's limited Generation requirements for the class.

C. See pages 10 and 22 ("Varietal Eligibility" & "Varieties Certified", respectively) for further seed stock requirements.

D. Seed must be FY5 or higher (lower FY number). FY6 class of seed shall not be eligible for recertification. The OSCS office must decide exceptions for seed stocks not meeting requirements. Any exceptions will be identified by the prefix "EXC" (Exception Class). EXC is limited to two increases after initial production of EXC-1. See Appendix, page 27, for special requirements in meeting the EXC class.

E. Seed Categories

Table 2 – Seed Categories – Class Produced

Seed Planted	Class Produced	Field Year *a*
Pre-Nuclear (lab)	Nuclear	greenhouse
Nuclear (GH)	FY1	first
FY1	FY2	second
FY2	FY3	third
FY3	FY4	fourth
FY4	FY5	fifth
FY5	FY6	sixth *b*

a – maximum, may be less if previous lot was down-graded
b – may be extended 1 year for seed of varieties in very short supply as 'special case' with variety breeder/owner approval.

F. Generations Eligible for Recertification

1. **Nuclear** (N) - Plant material produced according to page 11. Seed must be derived from mother plants that have been tested and found free of PVX, PVY, PVM, PVS, PVA, PLRV, PMTV and any other rod shaped viruses, PSTVd, *Clavibacter michiganense* subsp. *sepedonicus* and *Pectobacterium carotovoa* subsp. *carotovora*. Stock must be increased via tissue culture, stem-cutting (SC), techniques or derived from true potato seed (TPS). Lots not qualifying for Nuclear Class can be downgraded to a class for which standards are met in regard to disease tolerances.
2. **FY1** - Must be produced from Nuclear stock.
3. **FY2 -** Must be produced from FY1 class or higher seed stock.
4. **FY3** - Must be produced from FY2 or higher seed stock.
5. **FY4** - Must be produced from FY3 or higher seed stock.
6. **FY5** - Must be produced from FY4 or higher seed stock.
7. **FY6** - Must be produced from FY5 or higher seed stock

with a maximum of 2% mosaic in the post-harvest test. This class is not eligible for recertification in Oregon, however may be extended 1 year for seed of varieties in very short supply as 'special case' with variety breeder/owner approval (see Oregon Certification Handbook page 3, Item b under "Limitations of Generations").

G. Official Sub-class designations: Sub-class designations are used to specify certain aspects of a class that are not related to its field-year or of having met tolerances for disease/off-type of the class noted. These are indicated by a post-fix label following the class. Current sub-class designations used on Oregon are:

Table 2B - Sub-class used in Oregon

-SC	material derived from "**stem cut**" lines,
-TPS	material derived from "**true potato seed**"
-LSP	material in the certified **line selection program**
-PVX	lots lab tested for PVX*
-PVY	lots lab tested for PVY*
-PLRV	lots lab tested for PLRV*
-OUO	lots for grower's own use only**

* Must be within the tolerances listed in Table 6.
** Cannot be sold as certified seed the subsequent year but may be used by the same grower to produce a certified lot.

X. CROP HISTORY

Table 3 - Years Out of Potatoes

Generation Produced	Years out of Potatoes*
Nuclear	Approved Lab/Greenhouse
FY1 - FY2	Three years
FY3 - FY4	Two years
FY5 - FY6	One year

* Unless prior crop was a higher class and same variety.

A. Bacterial Ring Rot (BRR): Land will not be eligible for certified seed production until the fifth year following the identification of BRR. Volunteers in a field with the above history will disqualify the field for certification.

B. Volunteers: Potato plants found between the planted rows are not permitted if they exceed the tolerance shown for "Variety mixture / off type" on Table 5, (pg. 16), except where the previous crop was the same variety and a higher generation than that being produced.

NOTE: A volunteer is defined as plants that cannot be identified as scattered seed pieces from this year's planting.

XI. FIELD MANAGEMENT

A. FY1 Class Seed Production – Special recommendations and requirements for the handling, testing, growing, storage, and increase procedures for early generation seed stock (EGSS) materials are available from the OSCS office. EGSS should be planted and harvested prior to handling any other seed generations. The earliest generation should be handled prior to later classes within the program.

B. Lot Identification: Seed lots must be staked at both ends with lot number and variety, and flagged at least every 300 feet along dividing rows. A skip row is required between different varieties.

C. Isolation - Table 4

Table 4. Isolation Requirements

Classifications of seed being produced	Isolation Required
Nuclear	Approved Greenhouse or Laboratory
FY1 - FY2	300 feet from fields or lots planted with seed higher than FY4 class. *1, *2, *4
FY3 – FY4	300 feet from fields or lots planted with seed higher than certified FY5. *2, *3
FY5 – FY6	Distinct separation from commercial fields. *5

*1 Must be isolated from fields/lots using FY5 or FY6 seed as planting stock.
*2 Waived if adjacent to experimental varieties that are documented as having the same or higher testing status of those being certified in the block.
*3 Must be isolated from fields using FY6 for planting; also does not apply to Own Use Only sub-class.
*4 It is strongly recommended that FY1 & FY2 lots be isolated from alfalfa stands due to potential spread of alfalfa mosaic virus.
*5 Fields not entered for certified seed production.

D. Spread of Potato Pathogens: Precautions should be taken when roguing, irrigating, or cultivating to prevent the spread of potato pathogens.

E. Roguing of diseased and off-type plants: Roguing should begin early in the season and be performed as often as necessary. Plants, seed pieces, and all new tubers from

diseased hills must be removed from fields and destroyed. Leaving them in the field may be cause for rejection. However, roguing bacteria ring rot plants is not permitted in a Certified seed field.

F. Insect Vector Control: Vector control should be maintained throughout the growing season. It is recommended that the grower follow pest control program described in the current PNW Insects Management Handbook (see page 3 for link).

G. Fall Harvest: Field planted lots not harvested by December 21 are not eligible for certification.

XII. FIELD & HARVEST INSPECTIONS

A. Overall Provisions:

1. **Inspections**: Inspections are performed according to prescribed procedural methods and will include at least two field inspections, the first to occur before (or close to) row closure. Fields must meet the minimum tolerances for each certified class as shown on Table 5 to be to be accepted for certification at that class. Any field condition making a thorough inspection impossible may be cause for withholding certification pending the WGO results. The WGO sample size under these conditions may be double the number of tubers normally required for the acreage inspected if deemed appropriate. FY1 seed stock will be exempt from the double sample size. Additional field, digging, bin, and tuber inspections, including laboratory tests, will be made at the discretion of the inspector.

2. **Grower Notification**: Each grower must notify OSCS of a spraying date(s) for the inspector's protection. Growers are urged to use spray schedule signs in all fields.

3. **Refusal to Inspect**: Any field condition making thorough inspection impossible, such as frost, weeds, blight, *Rhizoctonia* etc., may be cause for refusal to inspect or withholding of certification pending winter test plot results. In such cases, the winter test sample may be at double the standard sample size required if deemed appropriate.

4. **Late Blight** found during field inspection and confirmed by lab diagnosis will be reported on the Field Inspection Report and Final Report.

5. **Bacterial Ring Rot (BRR) Inspections**: Lots withdrawn after a 1st inspection but prior to 2nd inspection (and not destroyed) must be inspected for BRR where conditions allow (even if grower's own seed).

6. **Zero Tolerance** means none found during the normal inspection procedures. Zero is not a guarantee that the lot inspected is free of disease or other varieties. Lots showing more disease than permitted for the class being produced will be downgraded, or refused certification. See definition of seed lot (page 38).

7. **Descriptions of Symptoms** expressed by diseases noted in these Standards, and recent information about such diseases, can be found in the current online edition of the PNW Plant Disease Management Handbook – Potato Section (https://pnwhandbooks.org/plantdisease).

B. Chemical Damage:

1. The presence of chemical damage severe enough to mask disease symptoms will be a basis for reclassification of the seed lot.

2. Visible symptoms of chemical injury of any magnitude to an incident of 3% or more of the sample inspected in the field may result in the field being withheld from certification pending WGO where results will be noted on the final reports. A representative of the Certification office may sample fields held for winter test on a grid basis before harvest. The samples will be tested in the greenhouse.

3. Additional fees covering the additional expenses of sampling and testing of fields exhibiting symptoms of chemical damage may be charged to the grower(s) as deemed necessary by the Seed Certification office.

C. Bacterial Ring Rot: Any BRR found in a seed lot of a Seed Farm will be cause to remove the lot from certification. All lots on that Seed Farm planted with the same seed lot as the rejected field will also be refused certification. BRR is not permitted in or out of count and is a non-roguable disease. A third or additional inspection will be required on remaining seed lots and a winter test at double the normal size may be required if deemed appropriate. All other seed lots associated with or planted after the rejected lot will not be eligible for recertification, but will be eligible for commercial planting if all other certification requirements are met. The Certificate of Final Certification and/or tag shall be clearly marked with the words "Not Eligible for Recertification" for those lots so identified. The grower shall be responsible for ensuring all appropriate tags and shipping certificates are labeled as not eligible for recertification. Protocols are on file specifying what constitutes a confirmation of diagnosis for BRR.

D. Inspection of Non-Certified Fields: All acreage planted to potatoes, but not entered into the certification program for re-certification on a seed farm, must be inspected at least once during the growing season for the presence of bacterial ring rot, except: (1) when a grower plants his own certified seed, or (2) when the adjacent certified lots are for the producers 'own use only' and will not be eligible for sale as certified seed.

No BRR is permitted in fields not entered for certification. Finding bacterial ring rot in the uncertified fields will cause Certified seed fields to be subject to the BRR requirement noted on Page 15 ("C. **Bacterial Ring Rot**").

Table 5 - Tolerances - Field/Harvest Inspections

	CLASS								
				FY3		FY4-FY5		FY6	
Factor *a, d*	Nuc *b*	FY1 *b*	FY2 *b*	1st	2nd	1st	2nd	1st	2nd
Leafroll	0.00	0.00	0.05	0.20	0.10	0.50	0.25	0.50	0.25
Mosaic	0.00	0.00	0.10	0.30	0.20	2.00	1.00	3.00	2.00
Other visible viruses *g*	0.00*e*	0.00	0.10	0.30	0.20	2.00	1.00	3.00	2.00
Total visible virus	0.00	0.00	0.10	0.50	0.20	2.00	1.00	4.00	3.00
Blackleg *c*	0.00*f*	0.00	0.10	0.30	0.20	3.00	1.00	3.00	1.00
Variety mixture/ off type	0.00	0.00	0.01	0.20	0.10	0.50	0.25	2.00	0.50
Chemical Injury	3% *h*			<-- (all classes) -->					

a There is a zero tolerance for the following at all classes: **Spindle Tuber Viroid, Bacterial Ring Rot, and Root-Knot Nematode**. Tolerance for disease symptoms caused by **Tobacco Rattle Virus, Potato Mop Top Virus, and Potato Virus Y-ntn** strains in foliage or tubers is not to exceed 0.5% for seed eligible for recertification, nor 2.0% for certified seed ineligible for recertification.

b Last inspection requirements. Seed exceeding these tolerances on the 1st inspection are classed as TBD (to be determined).

c As caused by *Pectobacterium* spp. or *Dickeya* spp. bacterium. This tolerance is based on the presence of a typical, inky black stem symptoms near soil surface without obvious symptoms of White Mold (*Sclerotinia sclerotiorum)*. It is not based on laboratory identification. Tolerance does not take into consideration the presence of blackleg bacteria that may be present on the plant but not causing disease symptoms or other symptoms such as aerial stem rot, below ground stem decay, tuber decay, or early dying. Tolerance is no indication that this is a true value for the amount of blackleg in a seed lot.

d Protocols on file specifying what constitutes a confirmation of diagnosis.

e Also, zero tolerance for PVX, PVY and PLRV with ELISA testing.

f Plants or tubers tested for bacteria.

g Does not include Calico (Alfalfa Mosaic Virus) which is reported as a percent found, but not scored against the lot. Disease caused by Phytoplasma (I.e. Purple Top, Aster Yellow, etc.) or *Candidatus liberibacter* (Zebra Chip) are reported but are not counted against the class unless severe enough to mask scoring of other diseases

h Field withheld from certification pending Winter Grow-Out results where results will be noted on the final reports.

Table 6 - Tolerances - Latent Virus Testing *a*

	Generation					
	N	FY1	FY2	FY3	FY4-5	FY6
Latent Virus						
PVX	0.0	0.0	1.00	3.00	6.00	6.00
PVY	0.0	0.0	0.10	0.20	1.00	2.00
PLRV	0.0	0.0	0.10	0.20	1.00	2.00
Sampling Frequency *b* (Plants/acre)	*c*	25%	500	50	20	20

Footnotes

a Latent virus testing is only required at Nuclear class (i.e. greenhouse produced material) for all varieties. Latent virus testing of field-produced classes beyond FY1 class (FY2-FY6) is only used to assign a sub-class and not to downgrade a lot. See XIII. LATENT VIRUS TESTING, page 17, for additional details).

b Minimum number of plants to be sampled is 100**.** Maximum sample is 400 leaves per field.

c See page 12 “Sampling Requirements” for information of number of plants to be sampled.

A special application for the inspection of uncertified fields must be completed along with a map showing the location of each field.

Failure to comply with the seed farm inspection requirement will result in downgrading the seed grower's entire crop one generation.

E. Harvest Inspections: A harvest or bin inspection of tubers is a requirement for final certification unless this inspection is considered not possible by the harvest inspector due to circumstances out of the grower's control. Any lot not so inspected will have the sentence "*No harvest/bin inspection conducted on this lot*" included on the Final Report. Lots not inspected due to lack of cooperation by the grower, such as failure in communicating harvest dates to the Harvest Inspector, may not be eligible for certification.

XIII. LATENT VIRUS TESTING

A. Leaf Sampling & Latent Virus Determination: Field Sampling: Leaf samples will be taken in late August, or from the Winter Grow-Out sample, by Seed Certification personnel for virus determination. Applications for virus testing from the field must be made by July 30. A late fee will be charged for acreage applied for after this date. Winter Test Sampling: Requests for latent virus testing of a lot from the Winter Grow-Out sample should be indicated at the time the WGO sample is delivered, and at least within 4 weeks of tuber delivery.

In field testing, test results for FY1 class generation seed lots can be identified with specific sections of no more than 40 plants each. Only those sections with test results that exceed the tolerance will be downgraded. Any lot for which the % of removed blocks exceeds 7% will be sub-classed "Own Use Only" and not available for sale as certified seed.

The standard sample for Latent Virus Testing of WGO lots is 400 leaves per lot (regardless of lot size), or 100% of emerged plants for lots with less than 400 plants. The grower may request additional sampling for larger lots.

* NOTE: FY1 class seed for "Own Use Only" is exempt from the requirement for latent virus testing provided a Winter Grow-Out sample of at least 220 tubers is submitted.

B. Latent PLRV Testing (for symptomless varieties): All varieties identified by the breeder/developer or a seed certification agency as not readily expressing PLRV symptoms, or recognized as showing only very mild symptoms of PLRV in field and Winter Grow-Out greenhouses, must be lab tested by ELISA (or test of better or equivalent sensitivity) for the presence of PLRV through FY2.

C. Official Testing Laboratories: The OSCS office shall keep a list of plant diagnostic laboratories that are recognized for official testing of certified samples to determine eligibility of a seed lot. The OSCS office will select one or more labs for final diagnosis of the sample.

D. Tolerances for Latent Viruses: Tolerances are based on percent virus infection as determined through laboratory testing of leaf samples collected at the sampling frequency indicated in Table 6. Seed lots that meet the specified PVX, PVY, and PLRV test tolerances for the seed generation being evaluated will have the respective sub-class PVX, PVY or PLRV designation added to the classification of that seed lot. Zero tolerance means none found in the sample tested, using approved laboratory test procedures. Zero is not a guarantee that the lot tested is free of disease. Only the generations indicated will be downgraded if the percent virus exceeds the specified tolerance.

XIV. POST-HARVEST TESTING REQUIREMENTS
(AKA Winter Grow-Out, WGO)

A. Lots Requiring Winter Testing*: All seed lots entered for certification require WGO for final certification, with the exception of:

Lots documented to be 750 pounds or less; or

Lots shipped within 90 days of harvest.*

For those seed lots entered for the WGO, and shipped prior to completion of WGO, the statement, "*Pending Winter Test Results*" will be printed on the tag or Certificate of Final Certification. The policy on granting this exemption to the Winter Grow-Out for "Special Cases" is on file.

* NOTE: The Necrotic Virus Management Plan requires that all lots shipped out-of-state be subject to a Post-Harvest Test and an inspection for internal virus-cause necrosis to be eligible for re-certification.

B. Acceptance of tuber tested lots: A Post-Harvest Test (PHT) in Oregon is construed to mean a Winter Grow-Out of plants that are then visually evaluated. Lots that have only been subjected to laboratory-based tuber testing as the PHT will only be accepted from states or provinces where a WGO is not an option. Tuber tested lots from states or provinces where there is a WGO option will only be accepted as a 'special case' (policy on file).

C. Dates: WGO samples should be submitted by November 20 or an additional fee will be charged. **No WGO samples will be accepted after December 1.** Growers will be responsible for transportation of sample to the winter test greenhouses in Corvallis. Planting sequence will be determined by the date of arrival at Corvallis.

D. Minimum sample size:

Winter test samples must be submitted in bags weighing no more than approximately 50 pounds.

Sample amounts:

Fields less than 1 acre:	220 tubers*
Fields 1-20.9 acres:	420 tubers
Fields 21-40.9 acres:	840 tubers
Fields 41 acres and above:	1,260 tubers

* May be eye-indexed if early generation material

E. Sample Selection: The sample must be representative of the **lot**. The sample can either be (1) handpicked from all over the lot; or (2) a few tubers selected from each truckload.. Sampling from cellars is strongly discouraged. Tuber size should be four to six ounces. Exceptions to this rule for small lots will be considered. Contact the OSCS office for acceptable alternatives. Exceptions to this rule for small lots will be considered. Contact the OSCS office for acceptable alternatives.

F. Sample Maturity: Tubers must be the same maturity as that required for storage. Immature tubers break down during the high temperature dormancy-breaking treatment, resulting in loss of part of the sample. Immature tubers of certain varieties do not respond to dormancy-breaking procedure. Conversely, OSCS staff should be informed of any varieties known to have very short dormancy, or lots that have been stored more than 2 months from harvest, to avoid over exposure to gibberellic acid during standard handling of the WGO lots.

G. Winter Grow-Out Tolerance (percent visible symptoms): WGO readings are used solely as a basis for determining a seed lot's eligibility for re-certification, and no longer used for downgrading of lots. The final class of the lot (other than rejection for 'zero tolerance' factors) will be based on the final field inspection. Potato varieties showing no or little visual symptom expression when infected by PVY may be serologically tested during the winter.

Zero tolerance for disease or other varieties means none found during the normal inspection

Table 7 – Tolerances For Recertification – Winter Grow-Out (% of sample) *a*

	Visible virus				Chemical
Leafroll	Mosaic	Other *b*	Total	Variety mixtures/OT *c*	Injury
0.3	2.0	2.0	2.0	1.0	*d*

There is a zero tolerance for **Spindle Tuber Viroid, Bacterial Ring Rot, and Root-Knot Nematode** at all classes. No disease that may result in an APHIS-sanctioned quarantine may be certified seed and must be reported to the Oregon Department of Agriculture if found and confirmed. The following diseases, when observed in the WGO sample at more than a trace, are noted on the final reports but not scored against the lot: Blackleg, Late Blight, Powdery Scab, Calico, White Mold.

a- **Use of tolerances***:* Starting in 2020 the WGO readings will be used solely as a basis for determining a seed lot's eligibility for re-certification, and no longer used for downgrading of lots. The final class of the lot (other than rejection for 'zero tolerance' factors) will be based on the final field inspection.

b- **Other Visual Virus**: Includes diseases caused by phytoplasma organisms (i.e., Purple Top, Aster Yellow) and Zebra Chip (if confirmed). Does not include virus-infected plants showing no visual symptoms.

c- **Variety Mix and Genetic off-types**: Includes off variety mixes and any visual generic off-types like Giant Hill.

d- **Chemical injury** observed in the Winter Grow-Out is only noted when conditions linked to the greenhouse environment can be ruled out. Injury above 3% of the lot is noted in the "Remarks" sections of the Final Reports and North American Health Certificate. There is no 'cap' on amount of chemical injury allowed for a lot to be eligible for certification at any class or to be eligible for re-certification.

procedures. **Zero is not a guarantee that the lot inspected is free of disease or other varieties**.

XV. BIN & STORAGE REQUIREMENTS

A. Storage Location: The grower must notify the OSCS office or harvest inspector of the storage location(s) before storing a crop. Bin inspections will be made at the discretion of the certification inspector.

B. Sanitation: Sanitation shall include careful cleaning and disinfection of the storage area and all equipment. New sacks must be used for FY1 and FY2 class seed. Disposable boots and gloves, &/or disinfectant solution, should be available to visitors to sanitize shoes, knives, etc.

C. Prohibited Diseases: No BRR or visible external symptom of root-knot nematode or wart is allowed in any class of certified seed. The discovery of these diseases will be cause for rejection. Any seed stored in a cellar with potatoes having BRR will not be eligible for recertification. However, the seed could be sold for commercial planting.

D. Separation & Maps: Certified seed lots in storage must be clearly distinguished from other seed lots and stored separately from commercial potatoes. Empty bins or tight walls between certified and commercial seed lots are acceptable (paper is not acceptable). Where more than one seed lot is stored in a cellar, all bins should be numbered, and those cellars and bins used for storing each lot must be recorded and cellar maps submitted to the OSCS office before tags, shipping certificates, or greenhouse results will be issued.

XVI. SORTING REGULATIONS

A. Prohibited Diseases: No BRR, root-knot nematode, or wart, are allowed in certified seed. Policy available upon request as to how seed is evaluated for BRR and root-knot nematode infections, and how it is reported. Discovery and proof of the presence of these diseases after tagging and/or sale may be basis for certification withdrawal by the Oregon Seed Certification office.

B. Sanitation: All equipment that makes contact with the tuber (sacks, truck beds, pliers, bin boards, etc.,) should be disinfected each year before use and between each lot. Disinfection is not effective or satisfactory unless given adequate exposure time and preceded by scouring for removal of dirt, debris, rot smears, etc.

C. Exotic Diseases: Lots showing a disease new or uncommon to Oregon may have certification withheld pending further investigation (i.e. Corky Ringspot, Zebra Chip, Potato Yellow Vein Virus). No disease that may result in an APHIS-sanctioned quarantine is allowed in certified seed and must be reported to the Oregon Department of Agriculture if found and confirmed.

D. Physiological Disorders: Heat, frost, rot, excessive sprouting, or other conditions adversely affecting seed value may be cause for rejection if excessive.

XVII. TAGGING, SEALING, AND SHIPPING

A. Tags attached: All seed moved to another area of production must have tags attached or be accompanied by a Certificate of Final Certification. Failure to do so will be cause for withdrawal of certification. Tags and certificate booklets can be obtained through the OSCS office. Certificates are available online through the eCertification page (see page 3).

B. Tag Colors: Three colors of tags are available for use on Oregon Certified Seed Potatoes; color of tag designates grade only. The blue color represents the US#1 Seed Potato Grade, and the yellow, the Contract Grade between buyer and seller. White tags are used for "Experimental Varieties" (see page 11, Part VI-b).

C. Tags and Certificate of Final Certification: Appropriate statements will be placed on each certification tag or Certificate of Final Certification to identify the seed stock. Tags and Certificates will indicate the following:

1. **Variety**
2. **Class** of seed: Nuclear, FY1, FY2, 3, 4, 5, or 6.
3. **Sub-class**: of PVX, PVY, PLRV, OUO, TPS, SC, LSP (and combination thereof). Unless sub-class is TSP or SC, the material is assumed to be derived from *in vitro* material.
4. **"Pending Winter Test Results"** if testing has not been completed at time of tagging and a sample has been submitted for winter testing.
5. "**Not Eligible for Re-certification**" if lot is FY6 or exceeds tolerances for re-certification as shown in Table 7. Lots exceeding 2% mosaic in the WGO will have the statement "*Not Eligible for Re-certification due to excessive mosaic observed in the PHT*"

D. SEALING: the use of seals is optional on bulk seed in Oregon, but shippers should be aware of the sealing requirements of the receiving state.

XVIII. GRADE INSPECTIONS

Shipping-point inspections on Oregon seed are carried out by the Oregon Department of Agriculture Commodity Inspections Division ((503) 986-4570). They are optional on lots of Oregon certified seed potatoes not shipped out-of-state. The seed grower must check the shipping point inspection requirements of the receiving states before moving seed out of Oregon. The quality of graded potatoes is the full responsibility of the seed grower. When the buyer or importing state requests a shipping point inspection, the U.S. No. 1 seed potato or Contract Grade tolerance will be followed.

GRADE REQUIREMENTS

1. **U.S. No. 1 Seed Potatoes**: See Appendix, page 33.
2. **Contract Grade**: Contract grade shall consist of potatoes that meet all the requirements of grade and condition established by a buyer-seller agreement except that not more than 1% late blight, soft rot, wet break-down, or dirt or debris will be allowed. No bacterial ring rot or root knot nematode based on visible external symptoms permitted. This grade will be tagged with a yellow tag.

NOTE: Oregon participates in the **Seed Potato Quality Management Program** (aka "MOU"), which requires adhering to the requirements in the "**Necrotic Virus Management Plan Management Plan for Potato**" (NVMP). Under these two agreements some conditions unique to interstate seed shipments include: (1) All seed shipped out of state must be inspected for necrotic arcs caused by one of the 'necrosing viruses (PVY, PMTV, TRV, AlfMV); (2) A post-harvest test is required for all seed lots transported across state/provincial or international boundaries that are to be entered into the certification process or sold for use in commercial production, (3) The post-harvest test of tolerant varieties, i.e. those in which virus symptoms cannot reliably be observed, will use ELISA (or another approved assay) rather than visual observation to determine the virus incidence. These rules only apply to seed shipped out-of-state.

For more information on the NVMP see:

https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/5/6962/files/2018/06/Potato-Tuber-Necrotic-Disease-Management-Plan-6-14-18-2h32laj.pdf

The grower is also advised that some states have additional special requirements for seed being shipped into their states, so the certification agency of the destination state should contacted to determine if requirement additional to those required in Oregon are needed for seed imports. An **Agency Contact List** has been posted at:

https://seedcert.oregonstate.edu/potato-certification-national-level

APPENDIX

Experimental Line Selection Program (ELSP) is available upon request.

A. Varieties Eligible for Certification in Oregon (as of 2-23-2023)

Designations as presented below relate to how OSCS applies the requirement, found on page 11, that all varieties listed as 'proprietary in the US' need the owner's permission for certified production. The OSCS definition of 'proprietary in the US' is found on page 38. The legal owner of a variety listed as 'public' may challenge that listing by contacting OSCS, however, once a seed lot is accepted into the program, the variety status <u>for that lot</u> will not change for that production year or any further production <u>by that grower</u>.

Variety Identification & Owner Chart at: https://seedcert.oregonstate.edu/potato-varieties

1. <u>Public</u> Varieties Eligible for Certification in Oregon *(no restrictions on production)*

Adora [a]
Agata [a]
Atlantic
Avalanche [a]
Bannock Russet
Bintje
Brigus
Butte
CalRed
CalWhite
Caribe
Carlingford
Cascade
Century Russet
Cherry Red
Chieftain
Chipeta
Ciklamen
Coastal Russet
Denali
Desiree
Divina [a]
Donna
Fontenot
Frontier Russet
Gemchip
Gogu Valley
Goldrush [a]
HiLite Russet
HO2000 ("Blushing Belle")
Ida Rose
IPM-ABR
Irish Cobbler
Kennebec
Krantz
La Ratte
Lady Claire [a]
Lemhi Russet
Maris Peer
Maris Piper
Molli [a]
Morning Gold
Monona
Moonlight
Nooksack
Norchip
NorDonna [a]
Norgold Russet
Norking Russet
Norland (inc. Red, Dark Red)
NorValley [a]
Penta [a]
Pike
Pioneer
Ranger Russet
Red La Soda
Red Pontiac
Red Ruby
Redsen
Rose Gold
Russet Burbank
Russet Norkotah
Russet Norkotah 112 [a]
Russet Norkotah 223 [a]
Russet Norkotah 278 [a]
Russet Norkotah Selection 3
Russet Norkotah Selection 8
Russet Nugget
Sangre
Sante
Shasta
Shepod
Sierra
Snowden
Steuben
Targhee
Tejon
Viking
White Rose
Yukon Gold

a = PVP Expired

A. Varieties Eligible for Certification in Oregon (cont. page 2)

2. Proprietary Varieties Eligible for Certification in Oregon

Growers of proprietary varieties must have owner's permission for certification.

A91556-1W (Ivory Rose)
AC Stampede Russet
Accelerate
Achill
Acoustic
Alegria
Alpine Russet
Alturas
AmaRosa
Anouk
Anuschka
Apache Baby
Boomer
Blazer Russet
Canela Russet
Castle Russet
Cecile
Challenger
Classic Russet
Clearwater Russet
Colorado Rose
Crimson Red
Cultivate
Dakota Crisp
Dakota Diamond
Dakota Jewel
Dakota Pearl
Dakota Ruby
Dakota Russet
DarkRed Chieftain
Defender
Echo Russet
Elfe
Fabula
FL 945
FL 1533
FL 1867
FL 1879
FL 2048
FL 2126
FL 2137
FL 2204
Gala
Gem Russet
GemStar Russet
Generate
Hamlin Russet
Highland Russet
Hodag
Huron Chipper
Invigorate
Ivory Crisp
Ivory Russet
Jacqueline Lee
Klamath Russet
Lady Alba
Lady Amarilla
Lady Anna
Lady Liberty
Lady Terra
Lamoka
Mackinaw
Marcy
Mazama
Modoc
Mountain Gem Russet
NDA050237B-1R
Nicolet
Owyhee Russet
Payette Russet
Penni
Perline
Piccolo Star
Premier Russet
Princess
Purple Majesty
Purple Pelisse
Purple Prince (aka Mi Negra)
Red Sunset
Rio Grande Russet
Rock
Romanze
Russet Legend
Russet Norkotah 296
Saginaw Chipper
Smilin Eyes
Soprano
Summit Russet
Tebina
TerraRossa
Teton Russet
Toscana
TX1523-1Ru/Y
(aka "Sierra Gold")
Umatilla Russet
Upstate Abundance
Wallowa Russet
Waneta
Western Russet
Willamette
WinemaYukon
Gem Yukon
Nugget

A. Varieties Eligible for Certification in Oregon (cont. page 3)

3A. Experimental Varieties[*1] (considered proprietary)

ATTX961014-1R/Y	2018
POR12PG28-1	2022

*[*1] Approval of Experimental Varieties removed after 5 years of inactivity, year equals last year produced in OR.*

3B. Heirloom Varieties (considered Experimental, non-proprietary)

All Blue	Butternut	Purple Eyes
Amber	French Fingerling	Raspberry Fingerling
Andes Gold	German Butterball	Red Thumb
Andes Sun	Hot Dog	Rose Finn Apple
Austrian Crescent	Lions Paw	Ruby Crescent
Banana	Magic Myrna	Russian Banana
Blossom	Ozette	Yagana
Blue Tomcat	Peanut	Yellow Finn
Burgundy	Peruvian Cream	Zapallo

B. Limited Generation Certified Seed Potatoes

LIMITED GENERATION CERTIFIED SEED POTATOES
- Field Planting Comparison Table -
Adapted from table prepared by Potato Association of America**

	YEAR IN THE FIELD *							
Agency	1	2	3	4	5	6	7	8
Alaska	G	G2	G3	G4	G5	G6	G7	G8
California	G1	G2	G3	G4	G5	.....	.....	.....
Colorado	G1	G2	G3	G4	G5	G6	.....	.....
Idaho	FY1	FY2	FY3	FY4	FY5	FY6	FY7	.....
Maine	FY1	FY2	FY3	FY4	FY5	FY6	.....	.....
Michigan	FY1	FY2	FY3	FY4	FY5	FY6	.....	.....
Minnesota	G1	G2	G3	G4	G5	G6	C	.....
Montana	N	G1	G2	G3	G4	.....	.....	.....
Nebraska / Wyoming ***	FY1	FY2	FY3	FY4	FY5	FY6	.....	.....
Nevada	N	G1	G2	G3	G4	G5	.....	.....
New York	(U)G1	(U)G2	(U)G3	G4	G5	G6	.....	.....
N. Dakota	FY1	FY2	FY3	FY4	FY5	FY6	C	.....
Oregon	FY1	FY2	FY3	FY4	FY5	FY6	.....	.....
Utah	N (G1)	G2	G3	G4	G5	G6	.....	.....
Washington	N	G1	G2	G3	G4	G5	.....	.....
Wisconsin	FY1	FY2	FY3	FY4	FY5	FY6	C	.....
Canada	PE (G1)	E1 (G2)	E2 (G3)	E3 (G4)	E4 (G5)	F (G6)	C (G7)	.....

* Year in the field unless lot downgraded due to exceeding tolerance for specific trait or disease. Some states use a separate system to denote eligible class and field year. See state regulations (link below) for specifics on class terminology by state.

** The most current version of this chart, including more extensive footnotes, and the current PAA State Regulations chart posted at: https://seedcert.oregonstate.edu/potato-certification-national-level

*** Wyoming Certification is conducted 100% by Nebraska.

C. Testing requirement for Entry Level Mother Plants

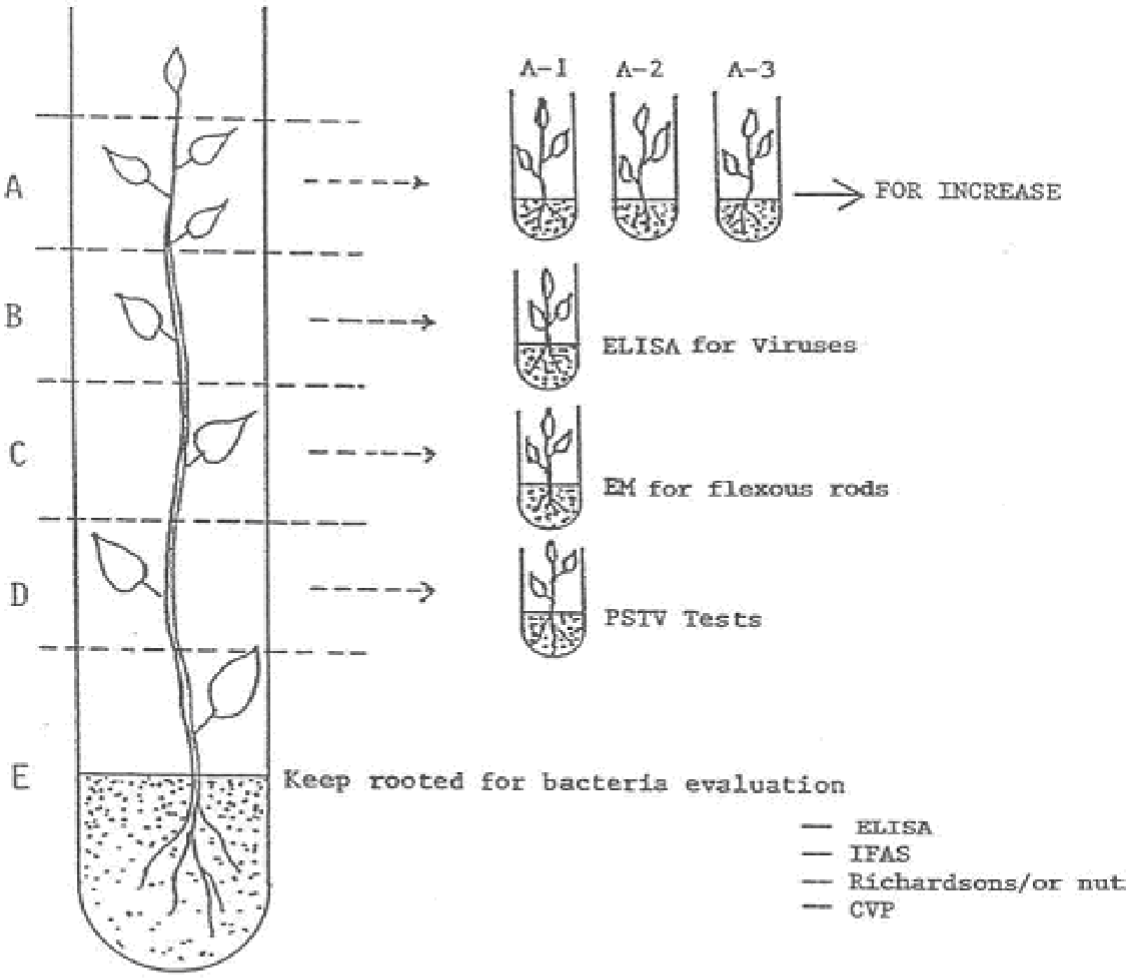

Figure 1. Subdivision of a plantlet into nodal segments for different pathological tests. When B, C, and D have produced 3 inches of growth, they are ready to be tested.

Additional References Available for Early Generation Production

"OSCS Laboratory Pathology Testing Audit & Facilities Inspection"

"Nuclear Class Production Lab & Greenhouse – requirements and recommendations"

(Includes: "OSCS Greenhouse Inspection Checklist")

"Nuclear Class Production - General notes" OSCS PP Procedure Sheet (#8a)

"FY1 Class Seed Potato Production" - OSCS PP Procedure Sheet (#8b)

"Tagging of Certified Potato Lots" OSCS PP Procedure Sheet (#14)

D. Limited Generation Seed Stock Exemption Class ("EXC Program")

Requirements:

1. Permitted only when insufficient quantity of Limited Generation seed stock of a given variety, clone, or selection exists in Oregon and with the permission of the originator of the variety or line where applicable.
2. Requests for exemption should be made in writing to the Oregon Certification office prior to planting. The request must include: (1) the reason(s) that an exemption from the Limited Generation Program is being made; (2) the source of planting stock; and (3) the name of the originator of the variety or line where applicable.
3. If the clone has not been released as a variety, an Experimental Variety Request application must be submitted to the OSCS office.
4. If there is no suitable Entry Level material available for the variety or line as defined in "VII. MICROPROPAGATION - B. Testing Requirements for Entry Level on page 11 of the Potato Standards, Ten (10) typical tubers of the variety or clone must be submitted during the first year of exemption to an approved lab for clean-up, testing, and in vitro propagation for potential increase under the Limited Generation program.

NOTE: the EXC program is not to be used to qualify seed that has not been subjected to a WGO (see Policy Statements #2 "No Winter Test" for details).

Classes: Three (3) classes of seed stock are recognized under this program:

A. EXC-1

1. Increase will be limited to **1,100 pounds** of planting stock.
2. Seed sources over 100 pounds must have fifty (50) tubers tested for bacterial ring rot, PVY, and PLRV by an approved plant diagnostic lab using approved testing as listed on pages 11 and 12. Testing costs will be borne by the representative requesting exemption.
3. Seed must be unit-planted. Seed sources derived from a pathogen tested tissue culture program, but NOT meeting the Limited Generation Requirements because of the presence of PVS, will not have to be unit planted.
4. Field certification tolerances for this class will coincide with those listed for FY4 (see page 14).
5. Must be winter tested and meet FY4 tolerances.

B. EXC-2

1. Seed source must be from EXC-1.
2. Field certification tolerances for this class will be those listed for FY5.
3. Seed must be winter tested and meet FY5 tolerances.

C. EXC-3

1. Seed sources must be from EXC-1 or EXC-2, or where no EXC-1 or EXC-2 seed available, seed from a Limited Generation Program (as defined in the Standards) may be used. Seed increase at this level is limited to one year.
2. Field certification tolerances for this class will be FY6.
3. Post-harvest testing is required; however seed is not eligible for re-certification.

E. Oregon Administrative Rules containing OARs 8-15-13

OREGON DEPARTMENT OF AGRICULTURE

DIVISION 52 - PEST AND DISEASE CONTROL

603-052-0830

Commercial Potatoes Produced in Oregon to be Grown from "Certified Seed"

(1) As authorized by ORS 570.405 to 570.435, a control area is established for the protection of the Oregon potato industry against the introduction and spread of serious bacterial, fungal, viral, and nematode diseases of potatoes. Such control area includes all of the state of Oregon.

(2) The following methods of control are declared to be proper methods to be used in the control area described in section (1) of this rule:

(a) All commercial potato plantings in Oregon in excess of one acre in size shall be propagated from "certified seed" only;

(b) All Oregon potato growers shall be responsible for obtaining proper certification documents or tags to verify that all seed potatoes used for potato propagation comply with this rule. Such documents shall be retained by the grower for one calendar year and shall be provided to the Oregon Department of Agriculture upon written request for such documentation. Such documentation shall include the total weight of certified seed potatoes received by the grower in questions, and shall be issued only by a legal certifying agency in the state or country of origin. Falsification of seed potato certification documents shall be deemed to be in violation of ORS 570.410;

(c) Oregon Department of Agriculture officials may sample any potato seed lot for the purpose of testing and verification of compliance with "certified seed" only standards. Such department official may enter any potato field for the purpose of conducting inspections which may be required to carry out this rule;

(d) Definitions: "Certified seed" shall be limited to seed which meets those standards established for "certified seed" by the representing agency officially recognized by the state or country of origin.

(3) Exceptions to the "certified seed" only requirement may be permitted by the Director of the Oregon Department of Agriculture when availability of "certified seed" does not allow compliance with this rule. Such exceptional permit shall be obtained prior to planting. Specific requirements may be stipulated in the Director's permit.

(4) Any violation of this rule shall be deemed to be a violation of ORS 570.410 and may subject the violator to the penalty provisions of ORS 570.990.

Stat. Auth.: ORS 561 & ORS 570 Stats. Implemented: ORS 561.190, ORS 561.510 - ORS 561.600, ORS 570.305, ORS 570.405 & ORS 570.410 - ORS 570.415 Hist.: AD 5-1990, f. & cert. ef. 3-19-90

F. United States Standards for Grades of Seed Potatoes

Effective March 6, 1987 ***(Reprinted - January 1997)***

Agricultural Marketing Service

https://www.ams.usda.gov/grades-standards/seed-potatoes-grades-and-standards

Fruit and Vegetable Division – Fresh Products Branch

United States Standards for Grades of Seed Potatoes

§51.3000 General.

Compliance with the provisions of these standards shall not excuse failure to comply with provisions of applicable Federal or State Laws.

§51.3001 Grade.

"U.S. No. 1 Seed Potatoes" consist of unwashed potatoes identified as certified seed by the state of origin by blue tags fixed to the containers or official State or Federal State certificates accompanying bulk loads, which identify the variety, size, class, crop year, and grower or shipper of the potatoes, and the State certification agency.

These potatoes must meet the following requirements:

(a) Fairly well shaped.
(b) Free from:
(1) Freezing injury;
(2) Blackheart;
(3) Late Blight Tuber Rot;
(4) Nematode or Tuber Moth injury;
(5) Bacterial Ring Rot;
(6) Soft rot or wet breakdown; and,
(7) Fresh cuts or fresh broken-off second growth.
(c) Free from serious damage caused by:
(1) Hollow Heart; and,
(2) Vascular ring discoloration.
(d) Free from damage by soil and any other cause. (See §51.3005 - 06).
(e) Size:

(1) Minimum diameter, unless otherwise specified, shall not be less than 1-1/2 inches (38.1 mm) in diameter;
(2) Maximum size, unless otherwise specified, shall not exceed 3-1/4 inches (82.6 mm) in diameter or 12 ounces (340.20 g) in weight.

§51.3002 Tolerances.

In order to allow for variations incident to proper grading and handling in the foregoing grade, the following tolerances, by weight, are provided as specified.

(a) For defects:

(1) 10 percent for potatoes in any lot which are seriously damaged by hollow heart;
(2) 10 percent for potatoes in any lot which are damaged by soil;
(3) 5 percent for potatoes in any lot which are seriously damaged by vascular ring discoloration;

(4) 11 percent for potatoes which fail to meet the remaining requirements of the grade including therein not more than 6 percent for external defects and not more than 5 percent for internal defects: Provided, that included in these tolerances not more than the following percentages shall be allowed for the defects listed:

	Percent
Bacterial Ring Rot	0.00
Serious damage by dry or moist type Fusarium Tuber Rot	2.00
Late Blight Tuber Rot	1.00
Nematode or Tuber Moth injury	0.00
Varietal mixture	0.25
Frozen, soft rot or wet breakdown	0.50

Provided that en route or at destination, an additional 0.50 percent, or a total of 1 percent, shall be allowed for potatoes which are frozen or affected by soft rot or wet breakdown.

(b) For off-size:

(1) For undersize: 5 percent for potatoes in any lot which fail to meet the required or specified minimum size.

(2) For oversize: 10 percent for potatoes in any lot which fail to meet the required or specified maximum size.

§51.3003 Application of tolerances.

Individual samples (See §51.3004) shall not have more than double the tolerances specified, except that at least one defective and one off-size potato may be permitted in any sample; Provided, that en route or at destination, one-tenth of the samples may contain three times the tolerance permitted for potatoes which are frozen or affected by soft rot or wet breakdown; and provided further, that the averages for the entire lot are within the tolerances specified for the grade.

§51.3004 Samples for grade and size determination.

Individual samples shall consist of at least 20 pounds (9.06 kg). The number of such individual samples drawn for grade and size determination will vary with the size of the lot.

§51.3005 Definitions.

(a) "Fairly well shaped" means that the potato is not materially pointed, dumbbell-shaped or otherwise materially deformed.

(b) "Nematode or Tuber Moth injury" means the presence of, or any evidence of, Nematode or Tuber Moth.

(c) Soil:

(1) "Fairly clean" means that at least 90 percent of the potatoes in the lot have no more than 10 percent of the surface covered with caked soil.

(2) "Damage by soil" means that caked soil covers more than 25 percent of a potato's surface.

(3) "Loose soil" -- A lot of seed potatoes is not considered damaged by the presence of loose soil, clods, rocks, vines, and foreign material, but such will be considered a tare factor if the following allowances are exceeded:

8 ounces (226.80 g) in a 100 pound (45.3 kg) container.
4 ounces (113.40 g) in a 50 pound (22.65 kg) container.
2 ounces (56.70 g) in a 25 pound (11.33 kg) container or less.1 percent in a bulk load

(d) "Shriveling" -- Damage by shriveling means that the individual potato is more than moderately shriveled, spongy or flabby.

(e) "Freezing injury" means that the potato is frozen or shows evidence of having been frozen.

(f) "Soft rot or wet breakdown" means any soft, mushy or leaky condition of the tissue.

(g) "Zero Tolerance" (0.00) means none found during the normal inspecting procedures. Certification of a lot is not a guarantee that the lot inspected is free of a zero tolerance disease or injury.

(h) "Damage" means any defect or any combination of defects which materially detracts from the internal or external appearance of the potato, or any external or internal defect which cannot be removed without a loss of more than 5 percent of the total weight of the potato (See §51.3006).

(i) "Serious damage" means any defect or any combination of defects which seriously detracts from the internal or external appearance of the potato, or any internal or external defect which cannot be removed without a loss of more than 10 percent of the total weight of the potato (See §51.3006).

(j) "External defects" are defects which can be detected by examining the surface of the potato. Cutting may be required to determine the extent of the injury (See §51.3006, Table I).

F. US Standards for Grades of Seed Potatoes

(k) "Internal defects" are defects which cannot be detected without cutting the potato (See §51.3006, Table II).
(l) "Permanent defects" are defects which are not subject to change during storage or shipment.
(m) "Condition defects" are defects which may develop or change during storage or shipment.

§51.3006 Classification of defects.

(a) Brown discoloration following skinning, dried stems, flattened depressed areas (showing no underlying flesh discoloration), greening, skin checks and sunburn do not affect seed quality and shall not be scored against the grade.

(b) Table I -- External Defects.

x-indicates method of scoring unless otherwise noted.

Defect	Damage		
	When materially detracting the appearance of the potato	or	When removal causes a loss of from more than 5 percent of the total weight of the potato.
Air cracks	.....		X
Bruises	.....		X
Cuts and broken-off second growth (healed)	X.....		X
Elephant hide (scaling)	X.....		
Enlarged, discolored or sunken lenticels	X.....		
Folded ends	X.....		
Second growth	X.....		
Shriveling	When more than moderately shriveled, spongy, or flabby.		
Sprouts	When more than 20 percent of the potatoes in any lot have any sprout more than 1 inch (25.4 mm) in length.		
Surface cracking	X.....		X
Flea Beatle injury	X.....		X
Grub damage	X.....		X
Rodent and/or bird damage	X.....		X
Wireworm or grass damage	Any hole more than 3/4 inch (19.1 mm) long or when the aggregate length of all holes is more than 1-1/4 inches (31.mm). [1]		
Dry rots	.....		X
Rhizoctonia	X.....		
Scab, pitted	X.....		X
Scab, russet	When affecting more than 1/3 of the surface.....		
Scab, surface	When affecting more than 5 percent of the surface		
Silver Scurf	When affecting more than 25 percent of the surface.....		
Growth cracks	When seriously detracting from the appearance.....		
Pressure bruises and sunken areas-with underlying flesh discolored.	.....		When removal causes a loss of more than 10 percent of the total weight.

[1]- Definitions of damage and serious damage are based on potatoes that are 2-1/2 inches (63.5 mm) in diameter or 6 ounces (170.10 g) in weight. Correspondingly lesser or greater areas are permitted on smaller or larger potatoes.

F. US Standards for Grades of Seed Potatoes

(c) Table II- Internal Defects.

Defect	Damage		
	When materially detracting from the appearance of the potato	or	When removal causes a loss of more than 5 percent of the total weight of the potato
Ingrown sprouts.....	.....		X
Internal discoloration occurring interior to the vascular ring (such as, Internal Brown Spot, Mahogany Browning and Heat Necrosis.).	When more than the equivalent of three scattered light brown spots 1/8 inch (3.2 mm) in diameter [1]		
All other internal discoloration **excluding** discoloration confined to the vascular ring.	.....		X

[1] - Definitions of damage and serious damage are based on potatoes that are 2-1/2 inches (63.5 mm) in diameter or 6 ounces (170.10 g) in weight. Correspondingly lesser or greater areas are permitted on smaller or larger potatoes.

Defect	Serious Damage		
	When seriously detracting from the appearance of the potato	or	When removal causes a loss of more than 10 percent of the total weight of the potato
Internal Discoloration confined to the vascular ring.	.....		X
Hollow Heart or Hollow Heart with discoloration.	When affected area exceeds that of a circle 3/4 inch (19.1mm) in diameter.[1]		

[1] - Definitions of damage and serious damage are based on potatoes that are 2-1/2 inches (63.5 mm) in diameter or 6 ounces (170.10 g) in weight. Correspondingly lesser or greater areas are permitted on smaller or larger potatoes.

NOTE:

For " **U.S. Export Standards for Seed Potatoes**" See:

https://www.ams.usda.gov/grades-standards/seed-potatoes-grades-and-standards

For information on '**State National Harmonization Program'** see

https://www.aphis.usda.gov/plant_health/acns/downloads/SeedHealthProgram/snhp-mou-generic-template.pdf

http://nationalplantboard.org/wp-content/uploads/docs/2012_meeting/npb_2012_snhp.pdf

G. Review of Out-of-State Requirements for Seed Shipped at Harvest

For any lots shipped off farm at harvest there are the following considerations:

1. Cellar Inspections: OSCS only inspects cellars that are in-state or near the state line. Cellar inspections are not required to have potato seed certified, but are considered educational and help document the condition of your storage at the time of filling should a need arise. Having cellars in another state independently inspected would be the responsibility of the grower if so desired.

2. Winter Grow-Out (WGO) samples: Be sure to take your WGO sample prior to shipping! Under the NVMP all out-of-state seed shipments are required to have a post-harvest test, that include a test for PVY.

3. Appropriate Forms – All certified seed shipped off farm must be accompanied by appropriate official certification paperwork to maintain certified status. When shipped at harvest, the use of a "Shipping Certificate" (online) is most appropriate, though a tag could be requested. **Lots shipped off-farm without being accompanied by a Shipping Certificate (or tag) are no longer considered certified**. In addition, the harvest inspector or OSCS Office must be informed as to the exact destination of the material shipped (i.e. storage location, and map of storage if used for multiple lots).

4. Necrotic Arc Inspections: The Necrotic Virus Management Plan (NVMP) requires that all potato seed lots shipped out-of-state be inspected for internal necrotic arcs after at least two months of storage. Lots shipped out of state at harvest are not exempt from this requirement, but it will be up to the receiver of this seed to have it inspected and to inform the seller and OSCS if necrotic arcs are found in excess of the tolerances (0.5% to be eligible for re-certification, 2.0% for certified seed).

5. Phytosanitary requirements of destination states/countries. Various states and countries have imposed particular phytosanitary requirements in excess of the OSCS requirements. For example, Colorado requires an additional Late Blight and PVYn test of the tubers be conducted, Nebraska has a nematode requirement, Idaho and New Brunswick now require all lots be PVY tested, etc. OSCS recommends that you contact the seed certification agency of the destination state to inquire of any such requirements BEFORE shipping (or contact OSCS for assistance, the Agency Contact List is posted at:

   https://seedcert.oregonstate.edu/potato-certification-national-level

   Seed headed to Canada must be tested for Bacterial Ring Rot at an APHIS approved lab and contain a statement that the farm used to produce the seed was free of potato cyst nematodes (see http://www.inspection.gc.ca/english/plaveg/protect/dir/d-98-01e.shtml for specific Canadian requirements. A listing of APHIS approved labs (or BRR testing) is available upon request.

   All aspects of requirements involving a Phytosanitary Certificate or Inspections at Shipping Point are the domain of the Oregon Department of Agriculture. Contact Elizabeth A. Savory, Plant Health Program Manager, ODA for specific information- (503) 986-4570.

B. DEFINITIONS

Approved Labs: Laboratories are approved by the certification agency in the state or province of origin.

Commercial: Any potato field not entered into the OSCS potato certification program for re-certification.

Entry Level Material: Plant material new to propagation lab, disease status not yet confirmed by recipient lab.

Experimental Line Selection Program: Program where lots consist of multi-genetic clones, derived from a single mother plant that may, or may not, be true-to-type.

Experimental Variety: Pre-released potato material within a recognized variety development program that is a single genotype with definable and unique characteristics. Experimental Varieties within the OSCS program must have a basic variety description on file and have completed an "Experimental Variety" approval application. Experimental Varieties are only eligible for white tags. All Experimental Varieties are considered proprietary; the owner's permission is required to be propagated at any certified class.

Limited Generation Program: Seed lots drop to the next (i.e., older) class with each year of production. Seed under the tissue culture program is not more than seven years away from the initial mother plant or protected environment. The term "higher" (i.e. higher class or generation) refers to a class or generation closer to the initial mother plant, and "lower" refers to a class or generation that has been grown for *more* years in the field.

Isolation: Procedural and physical separation to prevent pathogen spread to disease tested stock.

Lot: The area of seed potatoes designated by the grower that is the same variety and source class. Seed lots must be **staked** at both ends and at least every **300 feet** along dividing rows with a **skip row between varieties**.

Micropropagation: The production of *in vitro* plants or microtubers and/or greenhouse plants or minitubers.

Microtubers: Tubers produced *in vitro.*

Minitubers: Tubers produced under controlled greenhouse conditions.

Mosaic: Visual symptoms observed in a potato plant from potato virus Y or potato virus A.

Mother Plant: Initial *in vitro* plant from which Pre-Nuclear class plantlets or tubers are derived. Plants used for *in vitro* propagation must be retested each year.

Post-Harvest Test: Oregon's Post-Harvest Test is a Winter Grow-Out performed in a greenhouse: see Winter Grow-Out below. Oregon requires all potato lots to have post-harvest testing completed for final certification.

Proprietary Variety: (applying rule VI-C on page 11) Approved proprietary varieties grown in Oregon must have the owner's permission to produce certified seed. Varieties registered in Canada, but not having a PVP or University release, are not considered 'proprietary' in regards to Oregon certification rules on grower needing owner approval to apply for certification.

Seed Farm: A Seed Farm is a clearly independent operation, managed separately, and includes all land, facilities (storage, etc.) equipment, operational personnel and where the lowest class planted must have been certified.

Sub-class: Sub-class designations are used to specify certain aspects of a class that are not related to its field-year or having met tolerances for disease/off-type of the class noted (see page 14).

Volunteer: Potato plant not believed to be derived from the seed stock listed on the application.

Winter Grow-Out – A post-harvest grow out evaluation for presence of seed-borne diseases, and off-types. Chemical damage observed in the winter test is reported to grower but only scored when factors related to the greenhouse can be ruled out.

Zero Tolerance - Zero tolerance means none found during the normal inspection procedures. ***Zero is not a guarantee that the lot inspected is free of the disease.***

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* *Clavibactor michiganensis* subsp. *sepedonicus*

** *Pectobacterium* sp. includes *Dickeya* sp.

Oregon Seed Certification Service
Oregon State University
Corvallis, Oregon