

# A PREVARIETY GERmplasm PROGRAM FOR NEW MEXICO



January 2021

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## Glossary

**Accession** — Plant material (plant, seed, or vegetative part) collected and assigned a unique number to maintain its identity during evaluation, increase, and storage.<sup>1</sup>

**AOSCA** — The Association of Official Seed Certifying Agencies is an internationally recognized organization that sets minimum standards to support the production, identification, distribution, and promotion of certified classes of seed and other crop propagation materials.<sup>2</sup>

**Collection** — A plant sample (e.g., variety, strain, population) maintained for the purposes of conservation or use.<sup>3</sup>

**Cultivar** — See Variety

**Genetic diversity** — In a group such as a population or species, the possession of a variety of genetic traits and alleles that frequently result in differing expressions in different individuals.<sup>3</sup>

**Inspection** — A formal examination completed by a qualified professional approved by the SCA.

**Limited generations** — A restriction placed by the developer on the number of generations through which seed may be sold by a pre-variety name.<sup>1</sup>

**Manipulated-track** — Accessions are hybridized with other accessions or selected for distinctive traits within the population.<sup>4</sup>

**Natural-track** — An unrestricted representation of the wildland plant population on the original site.<sup>4</sup>

**Germplasm** — Seeds, plants, or plant parts that are useful in crop breeding, research, or conservation. Plants, seed, or cultures that are maintained for the purposes of studying, managing, or using the genetic information they possess.<sup>3</sup>

**Phenology** — dates or sequence of occurrence of different growth stages of plants.<sup>1</sup>

**Plant materials** — seeds, cuttings, or nursery stock.

**Population** — A group of organisms of the same species that occupy a particular geographic area or region. In general, individuals within a population potentially interbreed with one another.<sup>3</sup>

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<sup>1</sup> USDA. 2010. Natural Resources Conservation Service. Title 190 – National Plant Materials Manual: 542.1 GLOSSARY OF TERMS FOR USE IN PLANT MATERIALS. 190-V-NPMM, Fourth Edition, July 2010.

<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=27318.wba>

National Research Council. 1991. Committee on Managing Global Genetic Resources: Agricultural Imperatives. Managing Global Genetic Resources: The U.S. National Plant Germplasm System. Washington (DC). National Academies Press (US). Available from: <https://www.ncbi.nlm.nih.gov/books/NBK235632/>

<sup>2</sup> AOSCA. 2020a. Association of Official Seed Certifying Agencies. <https://www.aosca.org/>

<sup>3</sup> National Research Council. 1991. Committee on Managing Global Genetic Resources: Agricultural Imperatives. Managing Global Genetic Resources: The U.S. National Plant Germplasm System. Washington (DC). National Academies Press (US). Available from: <https://www.ncbi.nlm.nih.gov/books/NBK235632/>

<sup>4</sup> Young, Stan, Barry Schrupf, and Eugene Amberson. 2003. The AOSCA Native Plant Connection. Association of Official Seed Certifying Agencies. [https://www.aosca.org/wp-content/uploads/Documents/AOSCANativePlantConnectionBrochure\\_AddressUpdated\\_27Mar2017.pdf](https://www.aosca.org/wp-content/uploads/Documents/AOSCANativePlantConnectionBrochure_AddressUpdated_27Mar2017.pdf)

**Pre-Varietal Germplasm** — Native grasses, forbs, woody plants, and materials that have not been released as a formal variety.<sup>5</sup>

**Production field** — Grow-out of a seed accession for the purpose of increasing available plant materials.

**Propagating materials** — See Plant materials

**Purity** — the percentage of the desired species in relation to the total quantity, including other species, weed seed, inert material, and foreign matter.<sup>1</sup>

**Revegetation** — Establishing or re-establishing desirable plants in areas where desirable plants are absent or of inadequate density by management alone (natural revegetation) or by seeding or transplanting (artificial revegetation).<sup>1</sup>

**SCNWFP** — New Mexico State University Seed Certification and Noxious Weed Free Program is the official Seed Certifying Agency for the State of New Mexico.

**Seed certification** — A system whereby the seed of pre-varietal releases (and cultivars) is produced, harvested, and marketed under authorized regulation to ensure high quality and genetic purity.<sup>1</sup>

**Seed tag** — The mark of certified seed issued by an SCA. Provides quality assurance to the end user.

**SCA** — Seed Certifying Agencies are AOSCA members who, acting as a third party, implement AOSCA standards requiring seed collectors/producers to follow established requirements, procedures and standards in the production, identification, distribution and promotion of certified classes of seed and other crop propagation materials.<sup>2</sup>

**Source Identified seed** — propagating materials collected from natural stands, seed production areas, seed fields, or orchards where no selection or testing of the parent population has been made.<sup>1</sup>

**Variety** — A plant type within a cultivated species that is distinguishable by one or more characters. When reproduced from seeds or by asexual means (e.g., cuttings) its distinguishing characters are retained. The term is generally considered to be synonymous with cultivar.<sup>3</sup>

**Viability** — The ability of a seed to germinate under appropriate conditions.<sup>3</sup>

**Voucher** — A specimen preserved for future reference.<sup>3</sup>

**Wildland seed** — Seed from a population that has not undergone breeding.

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<sup>5</sup> AOSCA. 2020b. Association of Official Seed Certifying Agencies. Pre-Variety Germplasm Certification Standards.

## Pre-variety Germplasm

Pre-Varietal Germplasm (PVG) standards apply to propagating materials that have not been released as a variety (AOSCA 2020b). They are used to track the identity and purity of plant materials and provide quality assurance to the end user. Minimum PVG standards are set by AOSCA, though individual seed certifying agencies may set additional requirements.

Pre-Varietal germplasm may follow one of two tracks: natural-track or manipulated-track (Figure 1). Both tracks originate from wildland seed collections, but the natural-track germplasm is a sample from the wildland plant population that is unrestricted and has not undergone any form of genetic manipulation (Young *et al.* 2003). Manipulated-track refers to accessions that were hybridized with other accessions or selected for particular traits found within the population. Natural-track and manipulated-track germplasm types follow similar paths through germplasm development, and use cases for each will depend on the restoration objectives at the planting site.

Natural-track PVG germplasm may be classified as Source Identified seed (always a yellow tag), Selected, or Tested. Source Identified seed is a commonly utilized PVG category for restoration and revegetation projects, and development of source-identified seed is of high priority for federal and state land management agencies across the country. Source Identified seed is an unrestricted sample of plant materials, and seed can come from a single or multiple wild source. Selected class (green tag) seed comes from plants that show promise of superior or identifiable traits but are of untested parentage. In some cases, Selected natural-track germplasm can have more genetic diversity than Source Identified depending on what sources contributed to the germplasm; germplasm is selected based on one or more desirable traits but this does not necessarily equate to a narrowing of the genetic base. Tested class (blue tag) seed requires rigorous testing outlined by the SCA to confirm that traits of interest are heritable. While Source Identification does not apply to manipulated-track germplasm, manipulated-track Pre-Variety Germplasm may be either Selected or Tested class.

The terms Variety or Cultivar are used to refer to Tested germplasm which is deemed to have sufficient potential in the marketplace and is “released” following compliance with Federal and State seed laws. A new variety or cultivar may be developed from Tested seed that has gone through either the manipulated or natural track.

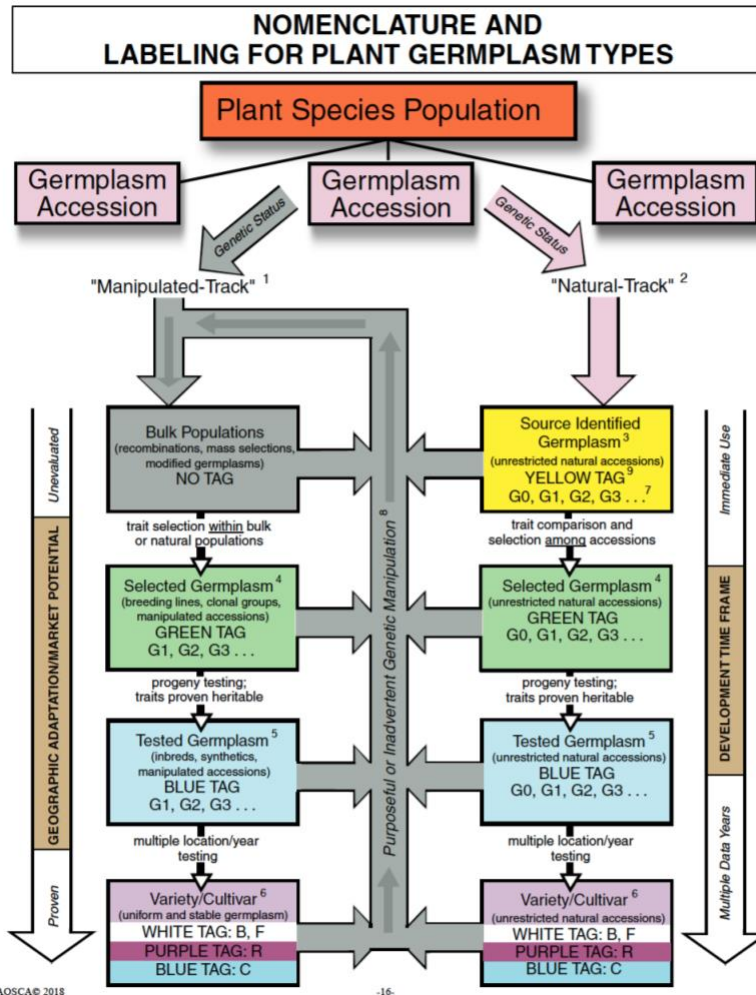


Figure 1. AOSCA germplasm development flowchart illustrating manipulated and natural-track pathways. Adapted from Young *et al.* 2003.

### PVG Program Resources from other States

Utah, Oregon, Idaho, Wyoming, and California have robust and well-established PVG programs. PVG certification standards, species standards, and supporting documentation from each of these programs were researched and referenced in the development of the New Mexico program. Lessons learned from these states SCAs have informed source verification standards and fee structures; specifically, aspects of the PVG program that are not dictated by AOSCA but are instead left up to the individual SCA. Documentation for the referenced programs can be accessed through the links listed below:

#### Oregon Seed Certification Service

Oregon State University  
 3050 SW Campus Way  
 Corvallis, OR 97331  
 Website: [Native and Naturalized Plant Species](#)  
 POC: Barry Schrumph (541) 737-4513



**Utah Crop Improvement Association**

4855 OMH, Utah State University

Logan, UT 84322

Website: [Utah Certified Seed](#)

POC: Stanford Young, PhD (435) 797- 2082; or Michael Bouck (435) 881-2058

**Wyoming Seed Certification Service**

747 Road 9

Powell, Wyoming 82435

Website: [Wyoming Seed Certification Service](#)

POC: Mike Moore (307) 754-9815

**California Crop Improvement Association**

Parsons Seed Certification Center, University of California

One Shields Avenue

Davis, CA 95616-8450

Website: [California Crop Improvement Association](#)

POC: John Palmer [ccia@ucdavis.edu](mailto:ccia@ucdavis.edu)

## New Mexico Seed Certification Program

### Administration

The New Mexico Seed Law designates the New Mexico State University Seed Certification & Noxious Weed Free Program (SCNWFP) as the official seed certifying agency of New Mexico. As an active member of AOSCA, the SCNWFP is responsible for all activities related to the certification and distribution of seed and other propagating materials in New Mexico. The SCNWFP maintains state certification standards in the [NMSU Seed Certification Manual](#) and on their [website](#).

### Current certification of native species

The “Tree, Shrub and Native Plant Classification Standards” in the New Mexico Seed Certification Manual currently apply to Source Identified seed. However, these standards do not adhere to AOSCA’s minimum requirements for PVG certification. While SCAs may require higher standards than those set by AOSCA, no member agency may certify a crop with lower standards. The PVG standards described in the section below were inserted into the New Mexico Seed Certification Manual and set new requirements for Source Identified seed that meet the AOSCA minimum requirements.

All mentions of Source Identified seed in sections I.B.2.c., I.B.2.d., I.B.3.c.ii., I.C.1, I.C.2, I.D., I.E.1., I.E.1., I.E.4.c., and III.B. of the “Tree, Shrub and Native Plant Classification Standards” in the New Mexico Seed Certification Manual were removed.

### New program for PVG

The New Mexico PVG standards detailed below include more stringent requirements than AOSCA. The standards apply to the certification of an individual accession that is maintained for conservation and use, where an accession is defined as a unique sample of seeds sourced from one or more wildland populations in a defined area (e.g., seed zone), or a unique sample sourced from a single production

field. The PVG Standards were inserted into the New Mexico Seed Certification Manual on Page 69, after the Tree Shrub and Native Plant Standards and before the Woody Plant Standards.

### Certification Standards

An accession must meet the New Mexico Pre-Variety Certification Standards and the Species Standards detailed in the following section to be eligible for PVG certification. **The PVG germplasm certification standards modify the General Certification Standards** in the [NMSU Seed Certification Manual](#) and are nearly identical to the AOSCA PVG standards. Any deviations from the AOSCA PVG standards are highlighted in the text below, where yellow indicates that the text is different from AOSCA standards in order to match terminology used in the state of New Mexico (e.g., AOSCA seed standards are called Genetic and Crop Standards, while New Mexico SCNWFP seed standards are called General Certification Standards), and blue indicates an addition to the AOSCA standards.

The certification standards may be used as a template by other states when developing a PVG program; the SCA may replace yellow text with equivalent language that matches that state’s general certification standards, while blue text can be included or removed to fit that state’s needs.

## NEW MEXICO PRE-VARIETY GERmplasm CERTIFICATION STANDARDS

(Effective January 2021)

indicates New Mexico-specific terminology

indicates addition to AOSCA standard

### I. APPLICATION OF GENERAL CERTIFICATION STANDARDS

- A. The general requirements for seed certification found in Sections I through XI of the New Mexico State University Seed Certification & Noxious Weed Free Program’s (SCNWFP) General Seed Certification Standards apply to (are basic to) all crops, and together with the following specific standards, constitute the certified Pre-Variety Germplasm standards.
- B. The General Seed Certification Standards are modified as follows:
  1. Section IV. Eligibility Requirements for Certification of Varieties
    - a. Eligible species include indigenous or non-indigenous trees, shrubs (including vines), or herbaceous plants (forbs and grasses).
    - b. These standards address seed and seedlings, and other propagating materials of native and naturalized species that have not been released as a variety.
      - 1) Source Identified Germplasm  
Source Identified propagating materials are seed, seedlings, or other propagating materials that are an unrestricted representation of a plant population on a given site, and for which no selection or testing of the parent population or its progeny has been made, produced so as to ensure genetic purity and identity from either:
        - (a) Rigidly defined natural stands or seed production areas, or
        - (b) Seed fields or orchards
      - 2) Selected Germplasm  
Selected propagating materials shall be the progeny of phenotypically selected plants of untested parentage that have promise but not proof of genetic superiority or distinctive traits, produced so as to ensure genetic purity and identity from either:
        - (a) Rigidly defined natural stands or seed production areas, or
        - (b) Seed fields or orchards. This definition is equivalent to the OECD “Untested Seed Orchard” category and may be labeled as such by special tag if required (see item 5.b)



3) Tested Germplasm

Tested propagating materials shall be the progeny of plants whose parentage has been tested and has proven genetic superiority or possesses distinctive traits for which the heritability is stable, as defined by the certifying agency, but for which a variety has not been named or released. These materials must be produced so as to ensure genetic purity and identity from either:

- (a) Rigidly controlled and isolated natural stands or individual plants, or
- (b) Seed fields or orchards.

Methods used and monitoring of selection and testing of parent material to qualify for different germplasm types shall be determined by the certifying agency for each species or group of species

2. Section III. Definitions of Terms Associated with Seed Certification

The terms Breeder, Foundation, Registered, and Certified designate and define classes of named and released varieties and are not applicable to pre-variety germplasms. Source Identified, Selected, and Tested germplasm types use numbers to designate generations.

The generation is not defined for indigenous or naturalized parent plants in an unrestricted wildland plant population. Seeds harvested from such populations in a non-selective manner are designated Generation Zero (abbreviated G0) since they are a natural, unrestricted representation of the parent plants. The germinant plants from this seed are also designated G0, from which G1 seeds are harvested. G1 seeds produce G1 plants from which G2 seeds are harvested, and so on.

The generation is defined as Generation 0 for parent plants preferentially selected from a cultivated or wildland population; this definition follows the convention for cultivated crop development. The seeds harvested from such G0 parent plants are designated G1. The germinant plants from this seed are also designated G1, from which G2 seeds are harvested. G2 seeds produce G2 plants from which G3 seeds are harvested, and so on.

3. Section VI. Limited Generations

- a. Limitation of generations for pre-variety germplasm is not required, but may be specified by the original applicant/developer of a designated germplasm. This limitation may be amended by the originator/developer. Such amendment shall be communicated in writing by the originator/developer to the owner of the specified seed lot, and to the **SCNWFP**. Such amendment must indicate whether it pertains to a specific seed lot, or is a permanent change for the germplasm. The **SCNWFP** will forward the communication to the AOSCA office for circulation to all seed certifying agencies (SCAs).
- b. The appropriate seed generation number for a designated germplasm must be tracked by the **SCNWFP**.
- c. No limitation of generations is defined for germplasm types collected from natural stands; such seed or other propagating materials is designated Generation 0 (G0).

4. Section VIII. Production of All Classes of Certified Seed

- a. An individual plant, clone, or stand of plants (or field or orchard) may be certified in producing Source Identified, Selected, or Tested seed. Seed production zones, **seed transfer zones**, and/or breeding zones may be defined as a unit of certification for **Source Identified and Selected seed**.
- b. For Source Identified seed collected from natural stands, verification of the collection site is required. Compliance with regard to correct identification of species, location of

natural stand, and seed yield must be verified by whatever means is deemed efficient and enforceable by the **SCNWFP**.

- c. For Selected or Tested seed collected from natural stands, at least one field inspection shall be made prior to pollination. At this time, compliance with regard to rouging and isolation as covered by the applicable standards will be checked. For Selected and Tested seed, an inspection will be made just prior to seed maturity or during harvest.
- d. All germplasm types grown in seed fields or orchards shall follow established certification requirements and standards for similar crop varieties if applicable, or those developed by a certification agency for a specific species.
- e. Producers of seedling or otherwise propagated nursery or container stock shall be supervised sufficiently so that the **SCNWFP** knows that the stock was produced from the germplasm type claimed.

#### 5. Section X. Labeling of Certified Seed

- a. The following tag or label colors shall apply:  
Source Identified Germplasm – Yellow  
Selected Germplasm – Green (Note **exception in 5b.** below)  
Tested Germplasm – Blue
- b. Format of face side of label: The respective seed germplasm type (TESTED, SELECTED, or SOURCE IDENTIFIED) must be printed on the top line across the tag or label. Exception: To satisfy requirements of the OECD Scheme, seed from Selected Germplasm seed orchards may be tagged with a pink tag having UNTESTED SEED ORCHARD printed on the top line across the tag or label.
- c. Content
  - 1) The generation of the seed may be indicated in the center of the tag along with such information as species, selection number, lot number, location, elevation, site index, seed zone and/or breeding zone, etc.
  - 2) Wildland collected seed documented solely by a SITE IDENTIFICATION LOG PART 1 (or equivalent information; see AOSCA Guidelines for Permitting & Certification of Wildland Collected Seed), shall be labeled as G0/G0 and is eligible for direct out-planting but not for seed increase
  - 3) If documentation includes both the SITE IDENTIFICATION LOG PARTS 1 and 2, (or equivalent information), then the seed may be eligible for increase. If a limitation of generations has not been specified, then the generation shall be listed on the tag as G0/GX, G1/GX, etc., where X = “unspecified” or “unlimited”. If a limitation of generations has been specified, then the generation of the tagged material and the number of increase generations permitted shall be stated on the certification tag, e.g. G0/G3, G1/G3, etc. (read “generation zero, or generation one of three generations” permitted).
  - 4) Accelerated downgrading of generation(s) can be specified on the tag to limit further increases, e.g., from G1/G3 to G2/G3 or G3/G3.
- d. Selected or Tested Germplasm may not be labeled as Source Identified Germplasm (see p. 16, AOSCA Nomenclature and Labeling for Plant Germplasm Types, Footnote 6.A.B.6).

#### C. **The Recommendations and Guidelines for Seed Certification are modified as follows:**

##### Section IX. Seed Sampling

For seed of species not covered by the rules for testing seeds of the Association of Official Seed Analysts, the analyses and testing shall be in accordance the rules of the International Seed Testing Association or appropriate state or federal laboratories as determined by the **SCNWFP**.

## II. LAND REQUIREMENTS

- A. For natural stands of the Tested germplasm type, the exact geographic source of the parent plants and the stand history must be known. Location (designated by section or comparable land survey unit) and elevation (nearest 500 feet) of the site of seed production must be shown on the tag.
- B. Location where Selected or Source-Identified seed was collected from natural stands shall be defined by means of administrative, geographic, latitudinal, or other appropriate boundaries or descriptions submitted by the applicant/developer of the germplasm, and reviewed and accepted by the state certifying agency. State, county (or parish, seed production area, or geographic zone), and elevation (nearest 500 feet) is the minimum required to be shown on the tag.
- C. For all germplasm types where seed or other propagating materials are produced in artificially established fields or orchards, the specific geographic origin of the parent material must be known and listed on the tag. The location printed on the tag shall be the location (specific site or county/parish or seed production area/zone) of the field or orchard.
- D. G1 through G5 shall be planted on land which no plants of the same genus were grown or planted for the specified number of years according to the chart which is a part of these PVG standards.

III. FIELD STANDARDS

A. Isolation

- 1. For rigidly controlled natural stands of Tested, Selected, or Source Identified germplasm types, an adequate isolation zone shall be maintained free of off-type plants and other cross pollinating species. The isolation distance shall be set for each species by the **SCNWFP** (available in **New Mexico PVG Species Standards**).
- 2. There shall be no isolation requirements for Selected or Source Identified seed collected from natural seed zones and/or breeding zones.
- 3. Isolation for all germplasm types when grown in seed fields or orchards shall follow isolation requirements for similar crop varieties if applicable, or those developed by **SCNWFP** for a specific species.

B. Specific

- 1. For all germplasm types grown in a seed field or orchard, off-type plants (and plants of inseparable other species or hybridizing species) are to be defined and appropriate tolerance set by the certifying agency.
- 2. Design and methods for establishing seed fields and orchards and the selecting and testing of plant material shall be in accordance with the requirements of the certifying agency for each species or group of species.

Pre-Variety Germplasm (Source Identified, Selected, Tested)

Recommended Minimum Genetic Requirements and Standards\*

| Species <sup>1</sup> |                   | G1             |                |                |                | G2 |         |     |     | G3 |         |     |      | G4, etc <sup>2</sup> |         |     |      |
|----------------------|-------------------|----------------|----------------|----------------|----------------|----|---------|-----|-----|----|---------|-----|------|----------------------|---------|-----|------|
| Repro.               | Habit             | L <sup>3</sup> | I <sup>4</sup> | F <sup>5</sup> | S <sup>6</sup> | L  | I       | F   | S   | L  | I       | F   | S    | L                    | I       | F   | S    |
| X Poll.              | Ann.              | 3              | 900-600        | 1000           | 0.25           | 2  | 450-300 | 500 | 0.5 | 1  | 330-165 | 250 | 0.75 | 1                    | 165-165 | 250 | 0.75 |
| X. Poll              | Per. <sup>7</sup> | 3              | 900-600        | 1000           | 0.25           | 2  | 450-300 | 500 | 0.5 | 1  | 330-165 | 250 | 0.75 | 1                    | 165-165 | 250 | 0.75 |
| Self Poll.           | Ann.              | 3              | 0 <sup>8</sup> | 1000           | 0.25           | 2  | 0       | 500 | 0.5 | 1  | 0       | 250 | 0.75 | 1                    | 0       | 250 | 0.75 |
| Self Poll.           | Per. <sup>7</sup> | 3              | 0              | 1000           | 0.25           | 2  | 0       | 500 | 0.5 | 1  | 0       | 250 | 0.75 | 1                    | 0       | 250 | 0.75 |

\*Where applicable, a pre-variety germplasm entity may be subject to AOSCA or **SCNWFP** genetic requirements and standards for released varieties of comparable individual species or crop groupings (e.g. Alfalfa, Grass or Woody Plants and Forbs). Seeds Harvested from wildland plant populations should utilize the G1 seed standards (footnote 6), but other requirements and standards are not applicable. These recommended requirements and standards do not apply to vegetative reproduction.

<sup>1</sup> Species mode of sexual reproduction (cross or self pollinated) and habit (annual or perennial).

- <sup>2</sup> The number of generations may be limited if specified by the applicant/developer (refer to Pre- Variety Germplasm Certification Standards, **Sec. I.B.3.a,c,d.; 5.c.**). When over 50% of the seed producing plants in a cultivated stand are volunteers (progeny or plants from the original seeding), then the generation shall be downgraded.
- <sup>3</sup> Land history: number of crop years that must elapse between removal of a species and replanting a different germplasm entity of the same species on the same land, unless cropping practices serve to diminish the seed reservoir more quickly.
- <sup>4</sup> Isolation in feet from any contaminating sources of pollen.
  - (a) The first number is for fields less than 5 acres; the second number is for fields of 5 acres or more.
  - (b) Isolation is required between all seed fields of the same species, except all types of Natural Track germplasms when from the same specified source.
  - (c) Isolation is not required between fields of different generations of the same germplasm entity (e.g., same Germplasm ID)
  - (d) Border removal applies to grass seed fields of 5 acres or more (for reference see AOSCA Seed Certification Handbook, Appendix II, footnote 20)
  - (e) A Source Identified seed field located within the same geographic source area as was identified for the germplasm entity before being increased, does not require isolation from naturally occurring plants of the same species adjacent to the seed field.
  - (f) Isolation is required between different species known to readily cross-pollinate. A species, for which its breeding system is unknown, will be treated as a cross-pollinating species for the purposes of these standards.
- <sup>5</sup> Field standards: minimum number of plants or heads in which one plant or head of an off-type or other germplasm entities of the same species is permitted.
- <sup>6</sup> Seed standards: maximum percentage of seed of off-types or other germplasm entities of the same species
- <sup>7</sup> The life of a cultivated stand may be limited as specified by the germplasm originator, otherwise it is unlimited as long as 75% of the plants present in the stand are those that were planted originally. If less than 75% remain, then the SCNWFP, in consultation with the germplasm originator, may require overseeding with eligible seed stock, or re-categorization to the “manipulated germplasm” track as indicated in the chart of AOSCA Nomenclature and Labeling for Plant Germplasm Types
- <sup>8</sup> Distance adequate to prevent mechanical mixture is necessary.

#### IV. SEED STANDARDS

Seed quality standards (beyond those listed in the above III.B.2 table, column S) **are set by the SCNWFP and available in the New Mexico PVG Species Standards reference document.** Additionally, the seed producer should consult state and federal laws regarding seed analysis labeling.

#### Species Standards

An accession must meet both the Certification Standards and the Species Standards (Appendix C) to be eligible for certification. Species standards were developed by referencing standards from other states for the same species or congeners and consulting with other SCAs with PVG programs to gain a better understanding of the basis for their seed and species standards. Species standards can generally be found on the websites of other SCAs with PVG programs. Where no standards previously existed, standards were developed by a qualified botanist. If different states provided different standards for the same species, the more stringent standard was used.

If a species was not referenced in any other program, the standards of a close relative or congener were recommended. It is understood that standards for new species will be refined as cleaning protocols are improved.

## Certification Procedure

For natural-track and manipulated-track germplasm, the SCNWFP will require seed collectors and producers to adhere to the Certification and Species Standards discussed above and the certification procedures detailed below. PVG certification of wildland collected seed and seed increased in production fields ensures identify and purity for seed users.

### *Wildland Seed Collection*

Wildland collected seed may be sold directly to end users, used for establishment of field/nursery production, or entered into plant germplasm development programs. Certification procedures for wildland collected seed are as follows, and the applicant or developer is responsible for each step unless stated otherwise:

1. Contact SCNWFP representative before collecting to obtain pre-collection applications and site identification logs for wild-collected seed.
2. File the Pre-Variety Germplasm Application (Appendix A) before harvest and file permits for collecting on public and private lands.
3. Complete Site Identification Log (Appendix D) or Seeds of Success (Appendix E) collection form at the time of harvest.
4. SCNWFP representative verifies the collection site and identifies and evaluates plant and seed samples before, during, and/or post-harvest.
5. Clean seed or have seed cleaned by an [approved processor](#).
6. Applicant stores seed in clean bins or bag in new, clean sacks.
7. SCNWFP representative draws a sample for analysis in an accredited seed lab.
8. SCNWFP representative tags the seed lot after compliance with applicable requirements and standards; seed purity and viability analysis may be required.

### *Field Production*

The applicant or developer may limit the number of generations for any field produced seed. Certification procedures for field production are as follows, and the applicant or developer is responsible for each step unless stated otherwise:

1. File for certification (Appendix C).
2. SCNWFP representative verifies origin and generation of planting stock.
3. SCNWFP representative completes seedling inspection.
4. SCNWFP representative completes field inspection before harvest to check compliance with species requirements for isolation and genetic purity. Control of prohibited and other specified weeds or other species may be required.
9. SCNWFP representative tags the seed lot after compliance with applicable requirements and standards; seed purity and viability analysis may be required.

### *Source Verification*

AOSCA PVG standards allow for the individual SCA to verify the source of an accession by “whatever means is deemed efficient and enforceable.” A number of factors influence the ease of verification and dictate the structure of an SCA’s verification program; such factors may include the accessibility or distance to collection sites, plant phenology and timing of the inspection, cost, or agency staffing and capacity. Any decisions made by the SCA regarding source verification should be supported by clear and

consistent documentation. A SCNWFP representative will complete a thorough review of documentation for all collections in the accession prior to conducting site visits to verify a seed source.

The collector or developer is required to submit a Site Identification Log or an SOS Field Data Collection form for each collection site. The data form or log must have the following information:

- State, county, and elevation of the collection site
- Driving directions (number of miles, to the tenth, along a named road, measured from an identified intersection; highway mile posts and remote cattle guards may be referenced)
- Description of the collection site by cardinal direction from the access road, and roughly its shape and size
- Name of EPA (Omernik's) Level III Ecoregion or Seed Zone
- Plant photos at the time of collection that include one in bloom and one in seed
- A site photo when the target species is in bloom (site photo will include the horizon and the location of the plant photo in the foreground).

The documentation for each collection should be reviewed, and the review should include an examination of site and plant photos to confirm that they appear to fit the location, as well as a review all of the collections for accurate concurrence. Any errors in documentation must be addressed by the collector. In cases where a specific accession has been found to not be from a location that was actually within the intended seed zone, or the location cannot be confirmed, those collection would be excluded from the seed lot. The SCNWFP representative may use online resources to support the review of the SOS Field Data Collection forms or Site Identification logs, including:

- Photos of species from a reliable source (SEINet, online herbarium, etc.)
- USGS topographic maps
- Google Earth
- New Mexico Department of Transportation highway mapping to plot lat/long coordinates and display mile markers.

Where GO seed collections are made by federal agency or by an NGO on behalf of a federal agency, and where Seeds of Success (SOS) protocols and documentation requirements are followed, a qualified inspector will verify **twenty percent** of the seed collection sites in the accession for the accession to be eligible for certification. The inspector may obtain specimens from wildland collections or seed increase fields to take to a university herbarium for identification.

### *Tagging*

A tag, which documents final certification of the seed, will include:

- Species scientific and common names
- Accession number
- State, county, and elevation range
- EPA (Omernik) Level III Ecoregion or Seed Zone
- Seed lot number
- A statement indicating that the tag is based on submitted documentation
- Where applicable, a Southwest Seed Partnership label reading: "SWSP Diversity Germplasm"



## Fees

Fees are set by the NMSU SCNWFP and are subject to change. The NMSU SCNWFP may choose to reduce or waive fees for governmental organizations or for non-profit organizations working on behalf of a governmental entity. Baseline fees will be charged for all activities related to certification, inspection, or source verification.

### *Baseline fees*

- Driving time = \$25.00/hour
- Inspection time = \$25.00/hour
- Mileage = \$0.54/mile
- Labels = \$0.60 each (when appropriate for packaging purposes)
- Hotel & airfare will be charged when incurred & fees are subject to change.

### *Field certification or inspection fees*

- \$6.00/acre (less than 10,000 total acres)
- \$5.00/acre (10,000 to 20,000 total acres).

### *PVG source verification fees*

- \$50 per inspection site. An inspection site includes all collection sites within a county, and inspection sites can include more than one species.

## References

- National Research Council. 1991. Committee on Managing Global Genetic Resources: Agricultural Imperatives. *Managing Global Genetic Resources: The U.S. National Plant Germplasm System*. Washington (DC). National Academies Press (US). <https://www.ncbi.nlm.nih.gov/books/NBK235638/>
- USDA. 2010. Natural Resources Conservation Service. Title 190 – National Plant Materials Manual: 542.1 Glossary of Terms for Use in Plant Materials. 190-V-NPMM, Fourth Edition, July 2010. <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=27318.wba>
- AOSCA. 2020a. Association of Official Seed Certifying Agencies. <https://www.aosca.org/>
- AOSCA. 2020b. Association of Official Seed Certifying Agencies. Pre-Variety Germplasm Certification Standards.
- Young, Stan, Barry Schrumf, and Eugene Amberson. 2003. The AOSCA Native Plant Connection. Association of Official Seed Certifying Agencies. [https://www.aosca.org/wp-content/uploads/Documents/AOSCANativePlantConnectionBrochure\\_AddressUpdated\\_27Mar2017.pdf](https://www.aosca.org/wp-content/uploads/Documents/AOSCANativePlantConnectionBrochure_AddressUpdated_27Mar2017.pdf)