

PLANT MATERIALS TECHNICAL NOTE

Seed Source Selection, Use of Certified Seed, and Appropriate Seed Release Class Improve Conservation Planting Success

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Figure 1. Combining Foundation seed of ‘Rosana’ western wheatgrass, a Cultivar Class conservation plant material.

Introduction

Natural Resources Conservation Service field office personnel recommend plant materials for numerous conservation applications designed to protect and enhance our natural resources. The origin of seeds and plants used (seed source), and their quality, play a significant role in the success of conservation plantings. This is particularly true when the conservation plan requires the

use of native shrubs and forbs. The purpose of this document is to provide guidance to field office planners on choosing seeds and plants most likely to be well-adapted to the geographic and climatic conditions of the intended planting site and to encourage producers to select plant materials that have been produced under standards designed to assure the identity of the species and optimize product quality.

I. Using Well-Adapted Seed Sources

Conservation practice specifications in the NRCS Field Office Technical Guide (eFOTG) assist planners selecting plant materials for conservation practices. These guidelines are typically based on matching edaphic, geographic, and climatic features to native plant distribution maps or field testing sites in order to suggest where a species is likely to grow well. Cultural treatments suggested or required by a practice may determine (expand or limit) the number of potentially suitable species.

Once a potentially well-adapted species is selected, the origin of seed or other stock types for that species deserves important consideration. The terms “origin” and “seed source” do not refer to the location where the seeds or plants were commercially produced (unless collected in the wild) but rather to the location of the native stand(s) where the original progeny were collected. Seed source becomes even more important as supplemental care is reduced, i.e., origin tends to become more critical in long-term plant survival and performance as maintenance activities such as irrigation and weed control are decreased, which is often typical for native conservation plantings.

Choosing the best available seed source also reflects the goal of the conservation plan, as well as the land manager’s objectives. Habitat restoration plantings with minimal maintenance on private lands may allow for more flexibility in seed source than projects on public lands where genetic preservation issues may be more restrictive. As an example, Hunter Germplasm ponderosa pine is a native species consisting of a bulk of several seed sources from Nebraska, Montana, Wyoming, and South Dakota. It is an east side ponderosa pine (*Pinus ponderosa* var. *scopulorum*) well-adapted to sites east of the Continental Divide. It has been extensively tested under dryland conditions in low precipitation zones under clean cultivation. It is an excellent choice for windbreaks, shelterbelts, wildlife habitat, and living snow fences in most locations, private or public, in eastern Montana and Wyoming. It has not been tested for reforestation uses, and although it may be well suited for this purpose, local ecotypes and seed sources may prove superior for large-scale timber production and reforestation efforts. If local seed sources were not available for such a forestry application, then Hunter may be the best alternative. Seeds and plants of unverified origin should not be used.

A hierarchal system of seed source preferences that conservation planners might consider when selecting seed source is as follows:

Ideal Scenario: Local Seed Source (within relatively close proximity to the planting sight) + Promising Performance Testing (performs well in the intended geographic area or similar environment)

Good Scenario: Non-Local Seed Source + Promising Performance Testing

Acceptable Scenario: Local Seed Source + No Performance Testing

Poor Scenario: Non-Local Seed Source + No or Poor Performance Testing

Unacceptable Scenario: No seed origin data.

Assuming they are recommended for the planting site, plant materials tested and selected from the NRCS Plant Materials Program, as well as releases from other agencies and programs, typically prove superior to non-tested sources for a given conservation use.

Preferred release information is given for numerous species in *Grass, Grass-Like, Forb, Legume, and Woody Species for the Intermountain West*, Montana Technical Note MT-59 (Rev. 1) at <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes/pmtechnoteMT59.html>. and in *Seeding Rates and Recommended Cultivars*, MT-46 (Rev. 3) at <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes/pmtechnoteMT46.html>.

II. Verifying Plant Identity and Maximizing Product Quality by Using Certified Seed

While seed source affects species adaptation to site conditions, seed and plant quality also contributes to planting success. Guaranty of quality is assured by using seeds produced within the standards required by seed certification agencies. This includes standards for the verification of identity and heredity, minimum germination (seed), minimum purity (seed), and weed and other crop tolerances (seeds and plants). Under ideal conditions, even seedlings should be produced from seeds certified for quality. When uncertified or “common” seed is used, the risk of misidentification, low germination, and contamination by weeds and other crops increases. Certification also assures quality by mandating minimum isolation distances from other crops during seed production to avoid cross pollination, and tracks production from the seeds the grower plants, the seed production field, through processing, sampling, laboratory testing, and labeling.

For a good explanation of the information on a standard seed analysis tag, reference *Reading Seed Packaging Labels and Calculating Seed Mixtures*, MT-38 at <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes/pmtechnoteMT38/>.

For sources of certified seed, reference *Plant and Seed Vendors for Idaho, Montana, Nevada, Eastern Oregon, Utah, Eastern Washington and Wyoming*, MT-57 at <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes/pmtechnoteMT57.html>.

III. Understanding Plant Selection and Seed Certification Classes

In a plant selection program, one or more collections of a single species are tested for certain characteristics such as survival, growth, and function. The ability of the species to provide a conservation service (such as soil stabilization), and to determine the adaptation of the species to ecological sites or disturbance conditions are also tested. One or more collections are then “selected” for superior performance and become the genetic basis for the selection (also known as a release). The amount of testing, and thus the confidence a particular conservation plant will establish and provide conservation benefit, is reflected in the certification class. The NRCS makes four certified¹ release classes available to the commercial seed industry; “Cultivar,” “Tested,” “Selected,” and “Source Identified.” Cultivars are considered “varieties”, whereas Tested, Selected, and Source Identified selections are “pre-varieties” or Germplasm. The rules of seed certification are governed by the Association of Seed Certifying Agencies (AOSCA).

Bags of certified seed should have two tags, one tag containing seed test information, the other tag specifying certification class. The seed test tag is normally white and contains laboratory analysis results as governed by federal regulations and standards. The certification tag is color coded with the class printed in large font at the top (see Figure 2). The color code of Cultivar class seed tags signifies generation; white for Breeder (generation 0, G0) and Foundation (generation 1, G1),

¹ The word “certified” refers to any class of seed produced under the guidelines and standards of certification agencies, whereas the word “Certified” refers to a single class and/or generation of seed produced from a cultivar.

purple for Registered (generation 2, G2), and blue for Certified (generations 3 and 4, G3 and G4). Pre-Variety Germplasm seed tags are color coded according to release category; blue for Tested, green for Selected, yellow for Source Identified, with specific generation information listed on the tag.

CULTIVAR TAGS PRE-VARIETAL TAGS



Figure 2. Color coded labels for the various release classes.

The AOSCA guidelines define two development methods for all release types, genetic manipulation or no genetic manipulation. Releases can be genetically manipulated by the following methods:

1. selection for heritable traits
2. when distinct populations are bulked (as in the Hunter ponderosa pine example above)
3. when individuals are crossed
4. inducement of mutations
5. or biotechnology methods.

The NRCS Plant Materials Program only uses selection for specific traits or bulked population for genetically manipulated releases. Releases developed with no genetic manipulation and with protocols established to minimize non-purposeful selection will have a "natural" designation on the seed tag (see the Selected Class seed label in Figure 2). Populations, accessions, or ecotypes of "natural" development track releases are selected based on a comparison with other populations of

the same species, but individuals within the population are not selected for expressed traits. All release types except Source Identified are eligible for genetic manipulation or natural track depending on the development method. Source Identified releases can only be natural track.

Release type is determined by testing for the conservation need, market demand and availability, source of the original plant material, and plants available to meet the need. All classification types use original site data and species literature searches to support releases. Source Identified, Selected and Tested Classes may subsequently undergo further selection and evaluation for later release in the next higher seed class. Release classifications are based on accepted criteria.

Classification Criteria

Cultivar. An assemblage of cultivated plants of a species clearly and uniformly distinguished by morphological, physiological, cytological, chemical, or other characteristics is a Cultivar. Cultivars maintain distinguishing characteristics when reproduced sexually or asexually as determined by testing. Superior traits are validated statistically using replicated studies on multiple sites over a period typically lasting seven to 11 or more years. Testing includes initial, advanced, and final evaluations. Field plantings are used to validate performance, superior traits, area of adaptation, and conservation values. Cultivars are intended to address high priority needs over a broad area where there is a projected demand and a limited number of adapted commercially available materials. The number of generations a Cultivar can be increased is limited to a maximum of four in most cases. The number of years a production field may be maintained per generation varies by species. Cultivar is an international term. The term “variety” is also used interchangeably for Cultivar (see Figure 1) but should not be confused with the taxonomic variety of a plant species. Cultivars undergo the most extensive testing of the certification classes, and therefore, planners and producers will have greater confidence the plants will establish and provide the intended conservation benefit.

Tested. Tested releases are pre-varietal releases having distinctive traits or genetic superiority stable over generations statistically proven by replicated studies over a period of three to six years. Initial and advance evaluation plantings are used, and field plantings can be part of the testing. The complete area of adaptation may not be known. Seeds are produced to ensure genetic purity and identity. Similar to Cultivars, the number of generations a Tested release species can be increased is limited to a maximum of four in most cases. The number of years a production field may be maintained per generation varies by species.

Selected. Selected releases are pre-varietal releases selected using observable physical or biochemical characteristics determined by genetic makeup and environmental influences from untested parentage. They show promise but have no proven genetic superiority. Testing is limited to initial evaluations that may or may not be replicated, normally on sites typical of a conservation need. Comparisons to other accessions or Cultivars are made for one or two years. Seeds are produced to ensure genetic purity and identity. The number of generations a Selected release can be increased is limited to a maximum of four in most cases. The number of years a production field may be maintained per generation varies by species.

Source Identified. Source Identified releases are seeds or other propagating materials collected from natural stands, seed production areas, fields or orchards where no selection or testing of the parent population is made. Use of Source Identified materials is only expected when there is a high priority and urgent need for identified plant materials, there is a lack of commercially available plant materials for the identified need, there is a high potential for immediate use in the identified need area, a local population source exists, or a local population is required. Soil-site characteristics, climate, and other physiographic data must be documented. Every seed harvest from the natural population is designated G0 and unlimited generations are allowed. Anyone can initiate Source

Identified releases to secure locally adapted ecotypes for restoring indigenous plant communities on disturbed site.

Cultivar, Tested, and Selected class plant materials all meet either ideal or good seed source preferences listed above depending on their source location. Conservation planners and producers are encouraged to use these plant materials because testing has proven their ability to establish and provide the intended conservation benefit with greater certainty than common plant materials sources. Source Identified plant materials are used where a local seed source is mandated or the population attributes of a local ecotype improves establishment and performance, and Cultivar, Tested, and Selected classes are not available. Use of common seed increases the risks of poor establishment and the planting will not meet the conservation need. See Table 1 for release listing by corresponding PMC.

If you have further questions regarding a specific plant release, please contact the releasing organizations listed below:

COPMC

Upper Colorado Environmental Plant Center
5538 RBC #4
Meeker, Colorado 81641
970-878-5003

IDPMC

USDA-NRCS
Aberdeen Plant Materials Center
P.O. Box 296
Aberdeen, Idaho 83210
208-397-4133

MTPMC

USDA-NRCS
Bridger Plant Materials Center
98 South River Road
Bridger, Montana 59014
406-662-3579

NDPMC

USDA-NRCS
Bismarck Plant Materials Center
3308 University Drive
Bismarck, North Dakota 58504
701-250-4330

WAPMC

USDA-NRCS
Pullman Plant Materials Center
P.O. Box 646211, Washington State University
Pullman, Washington 99164
509-335-6892

ARSFRL

Forage and Range Research Laboratory
USDA-ARS
696 North 1100 East
Logan, Utah 84322
435-797-3066

ARSGFBRU

Grain, Forage and Bio-energy Research Unit
USDA-ARS
137 Keim Hall, University of Nebraska East Campus
Lincoln, Nebraska 68583-0379
402-472-1490

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References

Idaho State Office. 2006. Plant germplasm development; Traditional and alternative approaches. TN Plant Materials No. 27. <ftp://ftp-fc.sc.egov.usda.gov/ID/programs/technotes/plantgerm.pdf>.

Table 1. The list of conservation plant materials in this publication follows the same color coding and also shows the number of generations allowed for each pre-variety plant release.

PMC	Release name	Common Name	Scientific Name	Origin	Tag	Tag	Tag	Tag	Tag	Tag	Tag
COPMC	Long Ridge Germplasm	Utah serviceberry	<i>Amelanchier utahensis</i>	Garfield County Colorado	G1 Seed	G2 Seed or Plants	Common				
COPMC	'Summit'	Louisiana sage	<i>Artemisia ludoviciana</i>	Georgetown Summit Idaho	Foundation	Registered	Certified	Common			
COPMC	'Hobble Creek'	mountain big sagebrush	<i>Artemisia tridentata ssp. vaseyana</i>	Utah County Utah	Foundation	Registered	Certified	Common			
COPMC	'Rincon'	fourwing saltbush	<i>Atriplex canescens</i>	Rio Arriba County New Mexico	Plants only	Plants only	Certified	Common			
COPMC	Garnet Germplasm	mountain brome	<i>Bromus marginatus</i>	Powell County Montana	G1	G2	Common				
COPMC	'Peru Creek'	tufted hairgrass	<i>Deschampsia caespitosa</i>	Peru Creek County Colorado	Foundation	Certified	Common				
COPMC	Pueblo Germplasm	bottlebrush squirreltail	<i>Elymus elymoides</i>	Pueblo County Colorado	G1	G2	G3	Common			
COPMC	Wapiti Germplasm	bottlebrush squirreltail	<i>Elymus elymoides</i>	Rio Blanco County Colorado	G1	G2	G3	Common			
COPMC	'San Luis'	slender wheatgrass	<i>Elymus trachycaulus ssp. trachycaulus</i>	Rio Grande County Colorado	Foundation	Registered	Certified	Common			
COPMC	'Timp'	Utah sweetvetch	<i>Hedysarum boreale</i>	Orem County Utah	Foundation	Registered	Certified	Common			
COPMC	'Hatch'	winterfat	<i>Krascheninnikovia lanata</i>	Hatch County Utah	Foundation	No Class	Certified	Common			
COPMC	Colorow Germplasm	black chokecherry	<i>Prunus virginiana</i>	Rio Blanco County Colorado	G1 Seed	G2 Plants	Common				
COPMC	Maybell Source	antelope bitterbrush	<i>Purshia tridentata</i>	Moffat County Colorado	G0	G1	G2	Common			
COPMC	ARS 2678	Kura clover	<i>Trifolium ambiguum</i>	Europe	Germplasm release	Common					
IDPMC	'Nezpar'	Indian ricegrass	<i>Achnatherum hymenoides</i>	Whitebird (North Central) Idaho	Foundation	Registered	Certified	Common			

IDPMC	'Ephraim'	crested wheatgrass	<i>Agropyron cristatum</i>	Aukara Turkey	Foundation	Registered	Certified	Common			
IDPMC	'Vavilov II'	Siberian wheatgrass	<i>Agropyron fragile</i>	Kazakhstan	Foundation	Certified	Common				
IDPMC	Snake River Plains Germplasm	fourwing saltbush	<i>Atriplex canescens</i>	Power, Owyhee, and Elmore Counties Idaho	G1	G2	G3	Common			
IDPMC	'Regar'	meadow brome	<i>Bromus biebersteinii</i>	Washington State University of Washington	Foundation	Registered	Certified	Common			
IDPMC	'Paiute'	orchardgrass	<i>Dactylis glomerata</i>	Aukara Turkey	Foundation	Registered	Certified	Common			
IDPMC	'Bannock'	thickspike wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	Pocatello Idaho, The Dalles Oregon, and Quincy Washington	Foundation	Registered	Certified	Common			
IDPMC	'Sodar'	streambank wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	Grant County Oregon	Foundation	Registered	Certified	Common			
IDPMC	Northern Cold Desert Germplasm	winterfat	<i>Krascheninnikovia lanata</i>	Washington, Utah, and Oregon	G1	G2	G3	Common			
IDPMC	'Magnar'	basin wildrye	<i>Leymus cinereus</i>	Saskatchewan Canada	Foundation	Registered	Certified	Common			
IDPMC	Maple Grove Germplasm	Lewis flax	<i>Linum lewisii</i>	Millard County Utah	G3	G4	G5	Common			
IDPMC	'Appar'	prairie flax	<i>Linum perenne</i>	Europe	Foundation	Registered	Certified	Common			
IDPMC	'Recovery'	western wheatgrass	<i>Pascopyrum smithii</i>	Rosebud County Montana and Central Colorado	Foundation	Registered	Certified	Common			
IDPMC	Richfield Selection	firecracker penstemon	<i>Penstemon eatonii</i>	Sevier County Utah	G1	G2	G3	Common			
IDPMC	Clearwater Selection	Venus penstemon	<i>Penstemon venustus</i>	Clearwater County Idaho	G1	G2	G3	Common			

IDPMC	Anatone Germplasm	bluebunch wheatgrass	<i>Pseudoroegneria spicata ssp. spicata</i>	Asotin County Washington	G1	G2	G3	G4	Common			
IDPMC	'Goldar'	bluebunch wheatgrass	<i>Pseudoroegneria spicata ssp. spicata</i>	Asotin County Washington	Foundation	Registered	Certified	Common				
IDPMC	'Delar'	small burnet	<i>Sanguisorba minor</i>	Europe	Foundation	Registered	Certified	Common				
IDPMC	'Rush'	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Europe	Foundation	Registered	Certified	Common				
IDPMC	'Tegmar'	dwarf intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Bolu Turkey	Foundation	Registered	Certified	Common				
MTPMC	Great Northern Germplasm	western yarrow	<i>Achillea millefolium var. occidentalis</i>	Flathead County Montana	G1	G2	G3	Common				
MTPMC	'Rimrock'	Indian ricegrass	<i>Achnatherum hymenoides</i>	Yellowstone County Montana	Foundation	Registered	Certified	Common				
MTPMC	'Garrison'	creeping foxtail	<i>Alopecurus arundinaceus</i>	Europe	Foundation	Certified	Common					
MTPMC	'Lutana'	cicer milkvetch	<i>Astragalus cicer</i>	Europe	Foundation	Registered	Certified	Common				
MTPMC	'Wytana'	fourwing saltbush	<i>Atriplex aptera</i>	Musselshell County Montana	Foundation	Registered	Certified	Common				
MTPMC	'Goshen'	prairie sandreed	<i>Calamovilfa longifolia</i>	Goshen County Wyoming	Foundation	Registered	Certified	Common				
MTPMC	Antelope Germplasm	white prairie clover	<i>Dalea candida</i>	Stark County North Dakota	G1	G2	Common					
MTPMC	Dupuyer Streambank Germplasm	silverberry	<i>Elaeagnus commutata</i>	Pondera County Montana	G0	G1	G2	Common				
MTPMC	Pondera Floodplain Germplasm	silverberry	<i>Elaeagnus commutata</i>	Pondera County Montana	G0	G1	G2	Common				
MTPMC	'Critana'	thickspike wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	Hill County Montana	Foundation	Certified	Common					

MTPMC	Copperhead Germplasm	slender wheatgrass	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	Deer Lodge County Montana	G1	G2	Common				
MTPMC	'Pryor'	slender wheatgrass	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	Carbon County Montana	Foundation	Registered	Certified	Common			
MTPMC	Spirit Germplasm	sweetgrass	<i>Hierochloe odorata</i>	Toole County Montana	G0 Plants	G1 Plants	G2 Plants				
MTPMC	Bridger-Select	Rocky Mountain juniper	<i>Juniperus scopulorum</i>	Montana, North Dakota, and Wyoming	G1	G2	Common				
MTPMC	Open Range Germplasm	winterfat	<i>Krascheninnikovia lanata</i>	Montana and Wyoming	G1	G2	G3	Common			
MTPMC	'Trailhead'	basin wildrye	<i>Leymus cinereus</i>	Musselshell County Montana	Foundation	Registered	Certified	Common			
MTPMC	Washoe Germplasm	basin wildrye	<i>Leymus cinereus</i>	Deer Lodge County Montana	G1	G2	G3	Common			
MTPMC	'Shoshone'	multistem wildrye	<i>Leymus triticoides</i>	Europe	Foundation	Registered	Certified	Common			
MTPMC	'Rosana'	western wheatgrass	<i>Pascopyrum smithii</i>	Rosebud County Montana	Foundation	Registered	Certified	Common			
MTPMC	Old Works Germplasm	fuzzytongue penstemon	<i>Penstemon eriantherus</i> var. <i>eriantherus</i>	Deer Lodge County Montana	G1	G2	G3	Common			
MTPMC	Hunter Germplasm	ponderosa pine	<i>Pinus ponderosa</i>	Montana, Nebraska, and South Dakota	G1	G2	Common				
MTPMC	Foothills Germplasm	Canada bluegrass	<i>Poa compressa</i>	Eurasia	G1	G2	G3	Common			
MTPMC	High Plains Germplasm	Sandberg bluegrass	<i>Poa secunda</i>	Natrona, Campbell, and Uinta Counties Wyoming	G1	G2	G3				
MTPMC	Opportunity Germplasm	Nevada bluegrass	<i>Poa secunda</i>	Deer Lodge County Montana	G1	G2	Common				
MTPMC	'Bozoisky-Select'	Russian wildrye	<i>Psathyrostachys juncea</i>	Russia	Foundation	Registered	Certified	Common			

MTPMC	Ekalaka Germplasm	bur oak	<i>Quercus macrocarpa</i>	Montana, North Dakota, and Wyoming	G1	G2	G3	Common				
MTPMC	Stillwater Germplasm	prairie coneflower	<i>Ratibida columnifera</i>	Carbon and Stillwater Counties Montna	G1	G2	Common					
MTPMC	Prospectors Germplasm	common snowberry	<i>Symphoricarpos albus</i>	Deer Lodge County Montana	G1	G2	G3	Common				
MTPMC	Trapper Germplasm	western snowberry	<i>Symphoricarpos occidentalis</i>	Western Montana	G1	G2	Common					
ARSGFBRU	'NU-ARS AC2'	crested wheatgrass	<i>Agropyron cristatum</i> ssp. <i>pectinatum</i>	Europe	G1	G2	Common					
NDPMC	'Nordan'	crested wheatgrass	<i>Agropyron desertorum</i>	Europe	Foundation	Certified	Common					
NDPMC	Survivor Germplasm	false indigo	<i>Amorpha fruticosa</i>	Washington County Idaho	not in Seed Certification							
NDPMC	'Bison'	big bluestem	<i>Andropogon gerardii</i>	Oliver County North Dakota	Foundation	Certified	Common					
NDPMC	'Bonilla'	big bluestem	<i>Andropogon gerardii</i>	Beadle County North Dakota	Foundation	Certified	Common					
NDPMC	'Sunnyview'	big bluestem	<i>Andropogon gerardii</i>	Union County South Dakota	Foundation	Certified	Common					
NDPMC	Killdeer	sideoats grama	<i>Bouteloua curtipendula</i>	Bowman and Dunn Counties North Dakota	Common							
NDPMC	'Pierre'	sideoats grama	<i>Bouteloua curtipendula</i>	Stanley County North Dakota	Foundation	Certified	Common					
NDPMC	Bad River Ecotype	blue grama	<i>Bouteloua gracilis</i>	Haakon County South Dakota	G2	G3	Common					
NDPMC	Bismarck Ecotype	buffalograss	<i>Buchloe dactyloides</i>	Dickey and Morton Counties North Dakota	not in Seed Certification							
NDPMC	'Oahe'	hackberry	<i>Celtis occidentalis</i>	Potter County South Dakota	not in Seed Certification							

NDPMC	Prairie Harvest Germplasm	common hackberry	Celtis occidentalis	Polk County Minnesota	not in Seed Certification						
NDPMC	'Centennial'	cotoneaster	Cotoneaster integerrimus	Europe	not in Seed Certification						
NDPMC	'Homestead'	Arnold hawthorn	Crataegus anomala	North Eastern United States	not in Seed Certification						
NDPMC	Bismarck Germplasm	purple prairieclover	Dalea purpurea	Lyman County South Dakota	G1	G2	G3	G4			
NDPMC	Bismarck Germplasm	narrow-leaved coneflower	Echinacea angustifolia	Western North Dakota	G1	G2	G3	G4			
NDPMC	'Mandan'	Canada wildrye	Elymus canadensis	Morton County North Dakota	Foundation	Certified	Common				
NDPMC	'Cardan'	green ash	Fraxinus pennsylvanica	Wibaux County Montana	not in Seed Certification						
NDPMC	Medicine Creek Germplasm	Maximilian sunflower	Helianthus maximiliani	Hughes County South Dakota	G1	G2	G3	G4			
NDPMC	Bismarck Germplasm	stiff sunflower	Helianthus pauciflorus ssp. pauciflorus	Western and Central South Dakota	G1	G2	G3	G4			
NDPMC	'Midwest'	Manchurian crabapple	Malus mandshurica	Asia	not in Seed Certification						
NDPMC	'Lodorm'	green needlegrass	Nassella viridula	Burleigh County North Dakota	Foundation	Certified	Common				
NDPMC	'Dacotah'	switchgrass	Panicum virgatum	Morton County North Dakota	Foundation	Certified	Common				
NDPMC	'Forestburg'	switchgrass	Panicum virgatum	Sanborn County South Dakota	Foundation	Certified	Common				
NDPMC	'Rodan'	western wheatgrass	Pascopyrum smithii	Morton County North Dakota	Foundation	Certified	Common				
NDPMC	'McKenzie'	black chokeberry	Photinia melanocarpa	Europe	not in Seed Certification						
NDPMC	'Canam'	hybrid poplar	Populus	No longer available	not in Seed Certification						

NDPMC	'Prairie Red'	hybrid plum	Prunus	Hand County South Dakota	not in Seed Certification						
NDPMC	'Scarlet'	Mongolian cherry	Prunus fruticosa	Mongolia	not in Seed Certification						
NDPMC	'Regal'	Russian almond	Prunus tenella	Eurasia	not in Seed Certification						
NDPMC	'Mankota'	Russian wildrye	Psathyrostachys juncea	Siberia	Foundation	Certified	Common				
NDPMC	'McDermand'	Ussurian pear	Pyrus ussuriensis	Manchuria	not in Seed Certification						
NDPMC	Silver Sands Germplasm	sandbar willow	Salix interior	Floyd County Iowa	not in Seed Certification						
NDPMC	Badlands Ecotype	little bluestem	Schizachyrium scoparium	South West North Dakota and West Central South Dakota	G2	G3	Common				
NDPMC	Itasca Germplasm	little bluestem	Schizachyrium scoparium	East North Dakota, Central South Dakota, and North East Minnesota	G2	G3	Common				
NDPMC	'Sakakawea'	silver buffaloberry	Shepherdia argentea	Manitoba Canada	not in Seed Certification						
NDPMC	'Tomahawk'	indiangrass	Sorghastrum nutans	North and South Dakota	Foundation	Certified	Common				
NDPMC	Red River Natural Germplasm	prairie cordgrass	Spartina pectinata	North Dakota, South Dakota, and Minnesota	G1	G2	Common				
NDPMC	'Legacy'	late lilac	Syringa villosa	Northern China	not in Seed Certification						
ARSGFBRU	'Haymaker'	intermediate wheatgrass	Thinopyrum intermedium	Eurasia	Foundation	Certified	Common				
NDPMC	'Manifest'	intermediate wheatgrass	Thinopyrum intermedium	Eurasia	Foundation	Certified	Common				
NDPMC	'Manska'	pubescent intermediate wheatgrass	Thinopyrum intermedium	Eurasia	Foundation	Certified	Common				
NDPMC	'Reliant'	intermediate wheatgrass	Thinopyrum intermedium	Eurasia	Foundation	Certified	Common				

WAPMC	Kendrick Germplasm	Saskatoon serviceberry	Amelanchier alnifolia	Latah County Idaho	not in Seed Certification							
WAPMC	Newport Germplasm	Saskatoon serviceberry	Amelanchier alnifolia	Pend Oreille County Idaho	not in Seed Certification							
WAPMC	Okanogan Germplasm	Saskatoon serviceberry	Amelanchier alnifolia	Okanogan County Washington	not in Seed Certification							
WAPMC	'Bromar'	mountain brome	Bromus marginatus	Washington State University of Washington	Foundation	Registered	Certified					
WAPMC	'Trailer'	western clematis	Clematis ligusticifolia	Walla Walla and Benton Counties Washington	not in Seed Certification							
WAPMC	Cheney Selection	western dogwood	Cornus sericea ssp. occidentalis	Spokane County Washington	not in Seed Certification							
WAPMC	Harrington Origin	redosier dogwood	Cornus sericea ssp. sericea	Lincoln County Washington	not in Seed Certification							
WAPMC	Wallowa Selection	redosier dogwood	Cornus sericea ssp. sericea	Wallowa County Washington	not in Seed Certification							
WAPMC	'Latar'	orchardgrass	Dactylis glomerata	Russia	Foundation	Registered	Certified					
WAPMC	Union Flat Germplasm	blue wildrye	Elymus glaucus	Palouse Hills Region Washington	Foundation	Certified						
WAPMC	'Secar'	Snake River wheatgrass	Elymus wawawaiensis	Nez Perce County Idaho	Foundation	Certified						
WAPMC	'Umatilla'	snow buckwheat	Eriogonum niveum	Umatilla County	Foundation	Certified						
WAPMC	'Covar'	sheep fescue	Festuca ovina	Turkey	Foundation	Certified						
WAPMC	'Durar'	hard fescue	Festuca trachyphylla	Europe	Foundation	Registered	Certified					
WAPMC	'Volga'	mammoth wildrye	Leymus racemosus	Russia	Foundation	Certified						
WAPMC	Colfax Germplasm	Lewis' mock orange	Philadelphus lewisii	Whitman County Washington	Foundation	Registered	Certified					
WAPMC	St. Maries Germplasm	Lewis' mock orange	Philadelphus lewisii	Benewah County Idaho	not in Seed Certification							

WAPMC	'Cougar'	Kentucky bluegrass	<i>Poa pratensis</i>	Unknown	not in Seed Certification						
WAPMC	'Canbar'	Canby bluegrass	<i>Poa secunda</i>	Columbia County Washington	Foundation	Certified					
WAPMC	'Sherman'	big bluegrass	<i>Poa secunda</i>	Sherman County Oregon	Foundation	Registered	Certified				
WAPMC	'Whitmar'	bluebunch wheatgrass	<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	Whitman County Washington	Foundation	Registered	Certified				
WAPMC	'Curlew'	Drummond willow	<i>Salix drummondiana</i>	Ferry County Washington	Foundation	Registered	Certified				
WAPMC	'Silvar'	coyote willow	<i>Salix exigua</i>	Columbia County Washington	not in Seed Certification						
WAPMC	'Palouse'	Lemmon's willow	<i>Salix lemmonii</i>	Jefferson County Oregon	not in Seed Certification						
WAPMC	'Rivar'	Mackenzie willow	<i>Salix prolixa</i>	Columbia County Washington	not in Seed Certification						
WAPMC	Blanchard Origin	blue elderberry	<i>Sambucus nigra</i> ssp. <i>cerulea</i>	Bonner County Idaho	not in Seed Certification						
WAPMC	Okanogan Selection	common snowberry	<i>Symphoricarpos albus</i>	Okanogan County Washington	not in Seed Certification						
WAPMC	'Alkar'	tall wheatgrass	<i>Thinopyrum ponticum</i>	Russia	Foundation	Registered	Certified				
ARSRRL	P-7 Germplasm	bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	Washington, Idaho, Oregon, Utah, Wyoming, and Montana	G1	G2	G3	G4			
ARSRRL	Sand Hollow Germplasm	big squirreltail	<i>Elymus multisetus</i>	Gem County Idaho	G0	G1	G2	G3	G4	G5	
ARSRRL	Toe Jam Creek Germplasm	bottlebrush squirreltail	<i>Elymus elymoides</i> ssp. <i>californicus</i>	Elko County Nevada	G0	G1	G2	G3	G4	G5	G6
ARSRRL	Pleasant Valley Germplasm	bottlebrush squirreltail	<i>Elymus elymoides</i> ssp. "C"	Baker County Oregon	G0	G1	G2	G3	G4	G5	

ARSRRL	Antelope Creek Germplasm	bottlebrush squirreltail	<i>Elymus elymoides</i> ssp. "C"	Wasco County Oregon	G0	G1	G2	G3	G4	G5	
ARSRRL	Fish Creek Germplasm	bottlebrush squirreltail	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	Blain County Oregon	G0	G1	G2	G3	G4	G5	
ARSRRL	Rattlesnake Germplasm	bottlebrush squirreltail	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	Elmore County Idaho	G1	G2	G3	G4	G5		
ARSRRL	Star Lake Germplasm	Indian ricegrass	<i>Achnatherum hymenoides</i>	McKinley County New Mexico	G1	G2	G3	G4	G5		
ARSRRL	White River Germplasm	Indian ricegrass	<i>Achnatherum hymenoides</i>	Rio Blanco County Colordao	G1	G2	G3	G4	G5		
ARSRRL	Reliable Germplasm	sandberg bluegrass	<i>Poa secunda</i>	Yakima County Washington	G0	G1	G2	G3	G4	G5	
ARSRRL	Cucharas Germplasm	green needlegrass	<i>Nassella viridula</i>	Huerfavo County Colorado	G0	G1	G2	G3	G4	G5	
ARSRRL	Yakima Germplasm	western yarrow	<i>Achillea millefolium</i> var. <i>occidentalis</i>	Yakima County Washington	G0	G1	G2	G3	G4		
ARSRRL	Majestic Germplasm	western prairie clover	<i>Dalea ornata</i>	Central Oregon	G0	G1	G2	G3	G4	G5	
ARSRRL	Spectrum Germplasm	western prairie clover	<i>Dalea ornata</i>	Washington, Oregon, and Idaho	G0	G1	G2	G3	G4	G5	
ARSRRL	NBR-1 Germplasm	basalt milkvetch	<i>Astragalus filipes</i>	Utah, Idaho, Oregon, and California	G0	G1	G2	G3	G4	G5	
ARSRRL	'Recovery'	western wheatgrass	<i>Pascopyrum smithii</i>	Montana, North Dakota, and Colorado	Foundation	Registered	Certified	Common			
ARSRRL	'Discovery'	Snake River wheatgrass	<i>Elymus wawawaiensis</i>	Whitmar and Asotin Counties Washington	Foundation	Registered	Certified	Common			
ARSRRL	'FirstStrike'	slender wheatgrass	<i>Elymus trachycaulus</i>	Colorado and Wyoming	Foundation	Registered	Certified	Common			
ARSRRL	'Continental'	basin wildrye	<i>Leymus cinereus</i>	Canada and Musselshell County Montana	Foundation	Registered	Certified	Common			

ARSFRL	'Vavilov II'	Siberian wheatgrass	Agropyron fragile	Kazakhstan	Foundation	Registered	Certified	Common			
ARSFRL	'Hycrest II'	crested wheatgrass	Agropyron cristatum	Europe	Foundation	Registered	Certified	Common			
ARSFRL	'Bozoisky-II'	Russian wildrye	Psathyrostachys juncea	Russia	Foundation	Registered	Certified	Common			
ARSFRL	'Mustang'	Altai wildrye	Leymus angustus	Europe	Foundation	Registered	Certified	Common			
ARSFRL	'Newhy'	RS hybrid	Elymus hoffmannii	United States and Europe	Foundation	Registered	Certified	Common			
ARSFRL	'Don'	falcata alfalfa	Medicago falcata	Europe	Foundation	Registered	Certified	Common			
ARSFRL	'Cache'	meadow bromegrass	Bromus riparius	Europe	Foundation	Registered	Certified	Common			
ARSFRL	'RoadCrest'	crested wheatgrass	Agropyron cristatum	Europe	Foundation	Registered	Certified	Common			