



NOT YOUR GRANDPA'S CULTIVARS

the new conservation releases



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ABSTRACT

Three new types of conservation plant releases are now available from USDA Plant Materials Centers as less thoroughly tested but still useful alternatives to traditional cultivars. These “pre-varietal” releases include “tested,” “selected,” and “source-identified” plant material and have distinct labeling. They help meet a strong customer demand for native plant material that is available more quickly than it takes to develop and test a cultivar for a particular conservation use.

KEY WORDS

pre-varietal, tested, selected, source-identified, germplasm, restoration

NOMENCLATURE

USDA NRCS (2004)

Open Range Germplasm winterfat (*Krascheninikovia lanata*) was selected by the Bridger, Montana, PMC for range renovation, livestock and big game browse, wildlife plantings, and adaptation to climatic conditions of the northern Intermountain West.

Photo courtesy of USDA NRCS Bridger, Montana, Plant Materials Center.

As we have entered the fast-paced, rapid-response 21st century, we now expect immediate solutions for many of the problems we face; environmental and conservation difficulties are no exceptions. When the solution includes the use of living plant materials our time frame for developing that solution is mostly dictated by the time it takes to collect plant materials, germinate and establish those accessions, and evaluate their usefulness. In the past, landowners waited 10 y or more for availability of cultivated plant varieties (cultivars) that would perform well for specific conservation purposes, such as erosion control, forage production, windbreaks, living snowfences, and streambank stabilization. Now, customers are seeking plants for an even wider variety of uses, including conservation and environmental restoration applications, and they want them quickly. They are often looking for native plants to meet these needs.

In an effort to meet these demands, the USDA Natural Resources Conservation Service plant materials program is making native plant seeds available under a new classification of release known as “pre-varietal,” meaning they are not yet cultivars. These pre-varietal releases, known as tested, selected, or source-identified releases, allow plant materials centers (PMCs) to address both major needs of their customers: obtaining plant material quickly and obtaining it for specialized uses. In 2 to 6 y, plant materials with some evaluation enter commercial production, enabling landowners to get started sooner with their conservation goals. In addition, plants adapted to a limited area or serving a limited need can be released with less research cost and often less cost to the consumer.

These pre-varietal release classifications were developed by, and recognized by, the Association of Official Seed Certifying Agencies (AOSCA 2003). Consumers will find that commercial pre-varietal seeds are tagged according to AOSCA’s certification guidelines.

Also, pre-varietal seeds can be identified in the trade by their names: a descriptor term followed by the word “Germplasm,” for example, Tillamook Germplasm tufted hairgrass (*Deschampsia caespitosa* (L.) Beauv. [Poaceae]). Note, however, that you need to ask the supplier or check the seed tag color to know whether the seeds are tested, selected, or source-identified.

PLANT RELEASE CATEGORIES

Varietal (Cultivar) Releases

Cultivar releases are clearly distinguished by morphological, physiological, cytological, chemical, and other characteristics. They are uniform in these characteristics and when reproduced they retain these characteristics. That is, their traits are heritable. The conservation use and area of adaptation of cultivars is well understood. Commercially certified cultivar seeds are available in Foundation, Registered, and Certified stocks, tagged with white, purple, and blue tags, respectively (Table 1). These stock types generally indicate how the seeds were grown in the production facility—most seeds used in restoration activities are certified.

Pre-Varietal Releases

Tested Plants

Tested germplasm releases are progeny of plants whose parentage has been tested at multiple test locations. They have proven genetic superiority or possess distinctive traits for which heritability is stable; PMC staff typically spend 6 y or more validating superior traits. The approximate area of adaptation and conservation value of tested plants are at least partially understood. Commercially certified seeds are limited to 4 generations of production (G0, G1, G2, and G3), and are marked with blue tags (Table 1).

Selected Plants

Selected germplasm releases are progeny of plants selected from collec-

tions or populations. Their parentage has not been tested but they have promise of superior or distinctive traits, which may or may not be heritable; PMC staff typically spend 2 y or more validating superior or distinctive traits. The area of adaptation and conservation value of selected plant releases are not fully understood. Commercially certified seeds are limited to 4 generations of production (G0, G1, G2, and G3), and tags are green (Table 1).

Source-Identified Plants

Source-identified germplasm releases are progeny of plants that have no known comparative testing. Their parentage has not been tested and their traits may not be heritable. These plants are typically grown and evaluated for 1 y or more before release. The area of adaptation and conservation value of source-identified plants are not understood. The number of generations for which commercially certified seeds shall be grown is determined by the certification agency, and tags are yellow (Table 1).

ADVANTAGES AND DISADVANTAGES OF PRE-VARIETAL RELEASES

Tested or Selected Plants

Today, the plant materials program releases more tested and selected plants than cultivars. In just a few years, a PMC can collect seeds, gather establishment and management information, evaluate general performance indicators, and deliver quality plant products to the market. Tested or selected plants are particularly useful for conservation practices such as vegetative buffers and wildlife plantings, where highly uniform plant materials are unnecessary (sometimes even undesirable). Some of the tested or selected releases that have appeared in recent years include Open Range Germplasm winterfat (*Krascheninnikovia lanata* [Pursh] A.D.J. Meeuse & Smit [Chenopodiaceae])

TABLE 1

Characteristics of USDA NRCS conservation plant releases.

VARIETAL	PRE-VARIETAL		
	Tested	Selected	Source-identified
Cultivar			
Most testing	→ No testing		
Most known	→ Least known		
Seeds sold with white (Foundation), purple (Registered), or blue (Certified) tags.	Seeds sold with blue tags.	Seeds sold with green tags.	Seeds sold with yellow tags.

for range renovation and wildlife plantings, Bismarck Germplasm stiff sunflower (*Helianthus pauciflorus* Nutt. ssp. *pauciflorus* [Asteraceae]) for conservation buffers and prairie landscaping, Colfax Germplasm Lewis' mockorange (*Philadelphus lewisii* Pursh. [Hydrangeaceae]) for shelterbelts and wildlife food, and Tillamook Germplasm tufted hairgrass for wetland restoration.

These pre-varietal release alternatives do come with a cost however—their full scientific value is not completely understood. Tested germplasm releases have proven genetic superiority or possess stable distinctive traits, but their area of adaptation and conservation values are partially but not fully understood. Selected germplasm releases have promise of superior or distinctive traits which may or may not be heritable, and their area of adaptation and conservation values are not well understood.

Source-Identified Plants

Source-identified plants are more limited than other pre-varietal releases in their conservation utility. Because they have undergone no selection or testing, there is no scientific data suggesting they will perform as expected, and no information on their range of adaptation. The plant materials program generally does not release source-identified plants for Natural Resources Conservation Service conservation programs.

There is a demand, however, for source-identified plants. Ecological restoration or enhancement project supervisors may

prefer locally collected, source-identified plant materials because they would like to preserve and promote the genetic pool of nearby wild plant populations. One very successful source-identified release program is in place at the Elsberry, Missouri, PMC. The PMC, with university cooperators in Iowa, has released a number of source-identified wildflowers and grasses for highway plantings. Users of these plant releases are more concerned with the genetic origin and diversity of the plants they use rather than any guarantee of performance.

THE BOTTOM LINE

Are pre-varietal plant releases appropriate in every situation? No. In fact, the plant materials program still selects cultivars and strongly recommends their use for livestock forage and for critical area conservation work (for example, stabilizing eroding shorelines, wildfire-prone lands subject to severe erosion and invasive species encroachment, and sites with severe soil conditions such as salinity). Cultivars have been through enough rounds of rigorous evaluation and selection to ensure optimum performance when livestock nutrition and critical soil stabilization are at stake; pre-varietal plants may also work, but they certainly don't come with the same guarantee. A benefit of working with promising pre-varietal plants is that PMCs can release them with limited recommendations but continue to study them over several

years. PMCs may then release the more uniform selections as cultivars with well-defined performance expectations and known ranges of adaptation for critical area conservation work. But to accomplish quality conservation projects in a more convenient time frame, PMCs have made available a wealth of diverse, fairly reliable, native plants in the form of pre-varietal releases. Evaluate your project needs and you may find that it is possible to take advantage of these exciting new plant solutions.

REFERENCES

- [AOSCA] Association of Official Seed Certifying Agencies. 2003. URL: <http://www.aosca.org> (accessed 18 Feb 2003).
- [USDA NRCS] USDA Natural Resources Conservation Service. 2004. The PLANTS database, version 3.5. URL: <http://plants.usda.gov> (accessed 24 Nov 2004). Baton Rouge (LA): National Plant Data Center.
- [USDA NRCS] USDA Natural Resources Conservation Service. National Plant Materials Manual, draft policy, Part 540.74—Release Procedures.
- Young G, Ogle DG. 1996. Technical note 27: plant release procedures—cultivar-tested-selected-source identified. Boise (ID): USDA Natural Resources Conservation Service. Technical Note ID-TN27. 5 p.

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