

PLANT MATERIALS TECHNICAL NOTE

STANDARD AND PREFERRED FORAGE AND RECLAMATION PLANTS FOR USE IN MONTANA AND WYOMING

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IRRIGATED PASTURES OR ABOVE 11" PRECIPITATION ZONES (GRASSES)

(Preferred releases are underlined)

MEADOW BROMEGRASS

Standards: Regar, Fleet, Paddock, Cache, MacBeth, Montana
Attributes: Should only be used in a grass/legume mix.

ORCHARDGRASS

Standards: Latav (best for alfalfa mixes due to later maturing), Paiute (drought tolerant, early maturing), Potomac (early maturing)
New Release: **Profile**
Attributes: Drought tolerance, early maturing, improved disease resistance.

GREEN WHEATGRASS

Standard and New Release: **AC Saltlander** Agriculture Canada 2006
Attributes: Reported to not cross back with quackgrass. Excellent stand establishment. Rhizomatous. Finer leaved than NewHy. Salinity tolerance equal to tall wheatgrass.

HYBRID RS WHEATGRASS

Standard: NewHy (use only in high salinity areas, will cross w/ quackgrass)
New Release: **RS-Hoffman** ARS – Logan/Utah St. Exp. Sta. 2002
Attributes: Forage production. Less rhizomatous, taller in stature and has longer flag leaves than NewHy. Infertile with NewHy.

INTERMEDIATE WHEATGRASS

Standards: Oahe, Greenar, Rush, Reliant
New Release: **Manifest** ARS – Mandan /Bismarck PMC 2007
Attributes: Excellent stand establishment with improved forage yields.
Higher tiller densities lead to improved stand persistence.

PUBESCENT WHEATGRASS

Standards: Luna, Manska

BASIN WILDRYE (native)*

Standards: Trailhead, Magnar
New Releases: **Continental** ARS – Logan, Utah/Bridger PMC, UCEPC 2009
Attributes: Restoration of disturbed rangeland to improve wildlife habitat and provide site stabilization.
Washoe Germplasm (Selected Class) Bridger PMC 2002
Attributes: Local ecotype demonstrating good performance on amended acid soils and heavy impacted sites. Very drought tolerant.

*Basin wildrye has also been planted in more arid environments with good results.

ARID/SEMI-ARID PASTURES (GRASSES)*

(Preferred releases are underlined)

*The native species listed above and below may also be used for reclamation purposes.

ALTAI WILDRYE

Standards: Prairieland, Pearl, Eejay
New Release: **Mustang** ARS – Logan/Utah State University 2004
Attributes: Seedling vigor and forage production

BLUEBUNCH WHEATGRASS (native)

Standards: Goldar, Whitmar (beardless type), P-7
Attributes: first release of bluebunch wheatgrass. Best suited to sites with greater than 12 inches annual precipitation.
New Release: **Anatone Germplasm** ARS – Logan/Aberdeen PMC 2003
Attributes: Better seedling vigor. Do not graze until firmly established, put in seeding mix with other native species (thickspike, western, green needlegrass). Only graze one out of every three yrs. in the spring, need 6" of growth first.

CANADA BLUEGRASS

Standards: Reubens, Talon
New Release: **Foothills Germplasm** (Selected Class) Bridger PMC 2001
Attributes: Good seedling vigor. Good establishment on infertile sites.

CRESTED WHEATGRASS (AGCR)

Standards: Fairway, Ephraim, Parkway, Ruff, Roadcrest, Douglas
Attributes: More suited for roadside ditches and low-maintenance lawns where low growing plants are desirable. Douglas has higher digestibility.

CRESTED WHEATGRASS (AGDE)

Standards: Nordan, Summit

CRESTED WHEATGRASS (AGCR x AGDE)

Standard: Hycrest

New Release: **Hycrest-II** ARS – Logan, Utah 1996
Attributes: Increased growth characteristics under cold temperatures. Plant as a component of a grass mix in heavier soils with less than 15" annual precipitation.

GREEN NEEDLEGRASS (native)

Standard: Lodorm

New Releases: **Fowler Germplasm** ARS – Logan/Agriculture Canada 2010
Attributes: Seed yield and better germination from this Alberta, Canada source
AC Mallard Ecovar Agriculture Canada 2002
Attributes: No major differences from other cultivars or selections. Generally used in pasture mixes. Graze from early June through early October. Plant in late fall due to seed dormancy issues.

INDIAN RICEGRASS (native)

Standards: Rimrock, Nezpar, Napi, Paloma
Attributes: long-lived very drought tolerant native grass for stabilization of sandy soils and as winter forage for livestock and wildlife. Dormant fall plant.

New Release: **White River Germplasm** (Selected Class) ARS Logan, Utah 2006
Attributes: For use in southwestern Wyoming

RUSSIAN WILDRYE

Standards: Bozoisky-Select, Mankota, Swift, Mayak, Sawki, Cabree

New Release: **Bozoisky II** ARS – Logan, Utah 2006
Attributes: Early spring or fall grazing with retained protein levels. Will respond to irrigation. Very palatable. Very competitive, fibrous root system. Requires 18-24" rows for optimum production on dryland.

SIBERIAN WHEATGRASS

Standard: Vavilov

New Release: **Vavilov II** ARS – Logan, Utah/Aberdeen PMC 2008
Attributes: More drought tolerant with finer leaves and stems and stays green longer than crested. Competes well with cheatgrass. Early spring through early summer and fall grazing. Weakly rhizomatous.

SLENDER WHEATGRASS (native)

Standards: Pryor, Revenue, San Luis

Attributes: May be included in all mixes (10-15%) and most plantings due to quick establishment. Slender wheatgrass is a relatively short-lived perennial and plant density tends to decrease over time.

New Releases: **Copperhead Germplasm** (Selected) Bridger PMC 2007
Attributes: Very well adapted to amended acid and heavy metal impacted soils, rapid establishment and site stabilization.

First Strike ARS Logan, UT/US Army 2006
Attributes: Improved seedling vigor, germinates quicker than many varieties, overall plant vigor and persistence in response to drought.

SNAKE RIVER WHEATGRASS (native)

Standard: Secar

New Release: **Discovery** ARS – Logan/Aberdeen PMC 2007
Attributes: Improved seedling vigor and forage yield over Secar. Drought tolerant. Always has an awn.

TALL WHEATGRASS

Standards: Jose, Largo, Platte, Alkar

Attributes: Best salinity tolerance of all wheatgrasses, early spring grazing, palatability issues after heading.

THICKSPIKE WHEATGRASS (native)

Standards: Critana

Attributes: Very similar to streambank wheatgrass.

Bannock

Attributes: Native drought tolerant, mildly forming sod. Increased forage production compared to Critana on western side of the Continental Divide.

WESTERN WHEATGRASS (native)

Standards: Rosana, Rodan, Arriba, Barton, Flintlock

New Release: **Recovery** ARS – Logan, Utah/Aberdeen PMC/US Army 2009
Attributes: Rapid seedling establishment.

ARID/SEMI-ARID PASTURES (FORBS AND LEGUMES)*

(Preferred releases are underlined)

ALFALFA, CREEPING

Standards: Travois, Rangelander, Drylander, Iroquois, Rambler, Spredor I-III,

New Release: Spredor IV Viterra Seed 2002

Attributes: More disease resistance, grazing tolerance, stand persistence

ALFALFA, YELLOW-FLOWERED

Standard: *Medicago sativa* spp. *falcata* (non-native) Bud Smith Ranch, SD

Attributes: Improved drought tolerance by going dormant, fibrous root system instead of taproot, poor seed production, alfalfa weevil resistance, stand persistence when inter-seeded with grasses. Do not graze in the summer. Use 4' to 5' row spacing when interseeding into pastures. Plant at 1 lb PLS/acre.

New Releases: Don ARS Logan, Utah 2008

Yellowhead Agriculture Canada 2005

SD201 South Dakota St. University 1998

BIRDSFOOT TREFOIL

Standards: Dawn, Empire, Leo

Newer Release: Norcen University of Minnesota 1983

Attributes: Better winter hardiness

SAINFOIN

Standards: Remont, Eski, Melrose

New Releases: Delaney University of Wyoming/Montana St. University 2007

Attributes: Multi-cut sainfoin with higher yields.

Shoshone University of Wyoming/Montana St. University/NRCS 2006

Attributes: Resistance to root-knot nematode

SUNFLOWER (native)

Maximilian Medicine Creek Germplasm (Selected Class) Bismarck PMC 2000

Attributes: Range and pasture seedings, wildlife habitat, prairie restoration and landscaping, hedge or screen, and has potential for use in filter strips.

Stiff Bismarck Germplasm (Selected Class) Bismarck PMC 2000

Attributes: Prairie restoration, native landscaping, range improvement.

NATIVE RECLAMATION (FORBS AND GRASSES)

(Preferred releases are underlined)

BLANKETFLOWER

Standard and New Release: Meriwether Germplasm (Selected class) Bridger PMC pending
Attributes: Good for reclamation, xeriscape

BIG SQUIRRELTAIL

Standard and New Release: Sand Hollow Germplasm ARS – Logan/Utah St. U/Aberdeen PMC 1996
Attributes: Rangeland restoration uses, palatability issues due to prominent awns

BOTTLE BRUSH SQUIRELTAIL

Standards: Toe Jam, Fish Creek (subsp. *elymoides*)
Attributes: More suited for lower precipitation areas.

New Releases: Wapiti Germplasm, Pueblo Germplasm (subsp. *brevifolius*)
Meeker UCEPC 2005
Attributes: Establishes easily, good for fire restoration, palatable grazing in the winter, good for erosion control and competition for invasive weeds.

BLUE GRAMA

Standards: Alma, Hachita, Lovington, Bad River Ecotype

New Releases: Butte Ecovar Agriculture Canada 2003
Attributes: More dense basal leaf area and earlier and longer green period.
Birdseye Wind River Seed 2000
Attributes: Wyoming seed source. Late June to early October grazing.

BUFFALOGRASS

Standards: Cody, Tatonka

New Release: Legacy University of Nebraska 2000
Attributes: Quicker establishment compared to Cody, used mainly for low maintenance lawns (use sod or plugs).

FUZZY-TONGUE PENSTEMON

Standard and New Release: Old Works Germplasm (Selected Class) Bridger PMC 2002
Attributes: Adapted to acid/heavy metal laden soils

FOUR-WING SALTBUSH

Standards: Wytana, Rincon,

New Release: Snake River Plains Germplasm (Selected Class) Aberdeen PMC 2002
Attributes: Long-lived, mid-sized, drought and cold tolerant shrub for rangeland and natural plantings in northern climates.

LITTLE BLUESTEM

Standards: Camper, Blaze, Cimmaron, Pastura, Badlands Ecotype (Selected Class)
New Release: **Spirit Ecovar** Agriculture Canada 2003
Attributes: Native selection adapted to 10" to 12" precipitation areas. Zone 3.

MOUNTAIN BROME

Standards: Bromar, Garnet Germplasm

NEVADA BLUEGRASS

Standard & New Release: **Opportunity Germplasm** (Selected Class) Bridger PMC 2008
Attributes: Adapted to amended acid/heavy metal laden soils.

PRAIRIE CORDGRASS

Standard and New Release: **Red River Natural Germplasm** (Selected) Bismarck PMC 1998
Attributes: Foliage abundance, rate of spread, seed production, and overall vigor.

PRAIRIE CONEFLOWER

Standard: **Stillwater Germplasm**
Attributes: Good seedling and plant vigor, northern adapted

NARROW-LEAVED PURPLE CONEFLOWER

Standard and New Release: **Bismarck Germplasm** (Selected Class) Bismarck PMC 2000
Attributes: Composite of accessions from 11 sites in ND.

PURPLE PRAIRIECLOVER

Standards: Kaneb, Bismarck Germplasm
Attributes: Adapted to northern latitude, good vigor

SANDBERG BLUEGRASS

Standard: High Plains Germplasm
Attributes: Good drought resistance, good seed production.

SLENDER WHITE PRAIRIECLOVER

Standard: Antelope Germplasm
Attributes: Northern adapted, good seedling vigor, good persistence

SWEETGRASS

Standard and New Release: **Spirit** (Selected Class) Bridger PMC 2004
Attributes: strong vanilla odor, origin of cultural significance

WESTERN YARROW

Standard: Great Northern Germplasm, Eagle
Attributes: Good seedling and plant vigor, robust plants

WINTERFAT

Standard: Hatch
New Releases: Open Range Germplasm (Tested Class) Bridger PMC 2002
Attributes: Excellent seedling vigor, adapted to high plains
Northern Cold Desert Germplasm (Selected Class) Aberdeen PMC 2002
Attributes: Cold tolerant native shrub for rangeland and natural area plantings

NATIVE RECLAMATION (SHRUBS AND TREES)

(Preferred releases are underlined)

BUFFALOBERRY

Standard: Sakakawea
New Release: Mill Creek Germplasm (Selected Class) Bridger PMC 2009
Attributes: Adapted to amended acid/heavy metal laden soils

AMERICAN BLACK CURRANT

Standard and New Release: Riverview Germplasm Bismarck PMC 2010
Attributes: Establishment, fruit production, wildlife value less snow breakage

HACKBERRY

Standard: Oahe
New Release: Prairie Harvest Germplasm (Selected Class) Bismarck PMC 2009
Attributes: Superior growth, form, and winter hardiness

ROCKY MOUNTAIN JUNIPER

Standard: Bridger-Select Germplasm (Selected Class)
Attributes: Seedling survival, superior rate of height growth, uniformity, use in windbreaks, shelterbelts, riparian forest buffers, xeriscapes

BUR OAK

Standard and New Release: Ekalaka Germplasm (Selected Class) Bridger PMC 2008
Attributes: Good replacement for green ash, good for wildlife, use in windbreaks, shelterbelts, riparian forest buffers, xeriscapes

PONDEROSA PINE

Standard: Hunter Germplasm
Attributes: Excellent rate of height growth under semi-arid conditions, adapted to rolling hills and foothills east of the Continental Divide, use in windbreaks, shelterbelts, riparian forest buffers, xeriscapes

SILVERBERRY

Standards: Dupuyer Streambank Germplasm Bridger PMC 2000
Attributes: Suckering, multi-stemmed shrub, excellent for streambank stabilization.
Pondera Floodplain Germplasm Bridger PMC 2000
Attributes: Suckering, multi-stemmed shrub, excellent for upper bank stabilization.

WESTERN SNWBERRY

Standard: Trapper Germplasm
New Release: **Prospectors Germplasm** (Selected Class) Bridger PMC 2002
Attributes: Adapted to amended acid/heavy metal laden soils

POTENTIAL FUTURE RELEASES

WOOLY CINQUEFOIL

Test Material: **9076274** (Deer Lodge County, MT)
Attributes: Adapted to amended acid/heavy metal laden soils

DOTTED GAYFEATHER

Test Material: **9058079** (Phillips County, MT)
Attributes: Widely adapted east of Continental Divide in Montana and Wyoming, late summer through fall blooming period.

SILVERLEAF PHACELIA

Test Material: **9081632** (Deer Lodge County, MT)
Attributes: Adapted to amended acid/heavy metal laden soils

WOODS ROSE

Test Material: **9081638** (Deer Lodge County, MT)
Attributes: Adapted to amended acid/heavy metal laden soils

SEED SOURCES

Wyoming Crop Improvement Association	307-754-9815	mdmoore@uwyo.edu
Montana Seed Growers Association	406-994-5121	Rlarrison@montana.edu
Utah Crop Improvement Association	435-797-2082	stanford.young@usu.edu
NDSU Foundation Seed Stocks	701-231-8140	dale.williams@ndsu.edu

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmsbr9398.pdf>

- ID Technical Note 33: Plant and Seed Vendors for Idaho, Montana, Nevada, Eastern Oregon, Utah, Eastern Washington and Wyoming.

<http://www.plant-materials.nrcs.usda.gov/pubs/ndpmcot7342.pdf>

- Growers of Bismarck Plant Materials Center Grasses and Forbs
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MISCELLANEOUS INFORMATION WEB SITES

<http://www.plant-materials.nrcs.usda.gov/pubs/mtpmspu1138.pdf>

- Dryland Pastures in Montana and Wyoming - Species and Cultivars, Seeding Techniques and Grazing Management; Holzworth, L.K., J. Mosley, D. Cash, D. Koch, and K. Crane. 2001. Bridger Plant Material Center, Montana State University, University of Wyoming, Montana NRCS State Office, Bozeman, MT. EB 19.

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmctn5976a.pdf>

- ID Technical Note 7 (revised): Mixing Seed with Rice Hulls.

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmstn5465.pdf>

- ID Technical Note 9A: Plants for Saline to Sodic Soil Conditions.

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmstn6306.pdf>

- ID Technical Note 10: Pasture and Range Seedings: Planning – Installation – Evaluation – Management.

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmctn7247.pdf>

- ID Technical Note 19: Calibrating a Seed Drill for Conservation Plantings.

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmctn4620.pdf>

- ID Technical Note 24: Grass, Grass-Like, Forb, Legume, and Woody Species for the Intermountain West.

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmstn10092.pdf>

- ID Technical Note 26: Legume Inoculation.

<http://www.plant-materials.nrcs.usda.gov/pubs/idpmctn380201.pdf>

- ID Technical Note 38: Users Guide to Description, Propagation and Establishment of Wetland Plant Species and Grasses for Riparian Areas in the Intermountain West.

ftp://ftpfc.sc.egov.usda.gov/MT/www/technical/plants/technotes/PMC_Tech_Note_MT46_Rev3.pdf

- MT Technical Note 46: Seeding Rate Specifications and Recommended Cultivars and Germplasm for all Vegetative Practices.

<http://www.plant-materials.nrcs.usda.gov/pubs/mtpmcarcoalbed.pdf>

- Fact Sheet for the Reclamation of Plant Seedlings on Coalbed Methane Pipelines and Drilling Sites; R. Hybner and L. Holzworth.

<http://www.plant-materials.nrcs.usda.gov/pubs/ndpmctn9415.pdf>

- Improved Forage Grass Releases by the Bismarck Plant Materials Center and Partners.

<http://www.plant-materials.nrcs.usda.gov/pubs/ndpmcbk7681.pdf>

- Grasses for the Northern Plains: Growth Patterns, Forage Characteristics and Wildlife Values, Volume 1 - Cool Season. Sedivec, K., D. Tober, W. Duckwitz, D. Dewald, J. Printz. 2007. NDSU Extension Service, Fargo, ND. October 2007. 89p.

<http://www.plant-materials.nrcs.usda.gov/pubs/ndpmcbk9425.pdf>

- Grasses for the Northern Plains: Growth Patterns, Forage Characteristics and Wildlife Values, Volume 2 - Warm Season. Sedivec, K., D. Tober, W. Duckwitz, D. Dewald, J. Printz, and D. Craig. 2009. NDSU Extension Service, Fargo, North Dakota, Fargo, ND. August 2009. 67p.

<http://ars.usda.gov/npa/frri/plantsforthewest>

- Plant Releases: Plants for the West. USDA-ARS Forage and Range Research Laboratory – Logan, Utah, 27p.

REFERENCES

1. Forage and Reclamation Grasses of the Northern Great Plains and Rocky Mountains, M. Majerus, 2009.
2. Range Plants of Montana, EB 122, Montana State University Cooperative Extension Service, July 2004.
3. Grasses for the Northern Plains: Growth Patterns, Forage Characteristics and Wildlife Values, Volume 1 - Cool Season. Sedivec, K., D. Tober, W. Duckwitz, D. Dewald, J. Printz. 2007. NDSU Extension Service, Fargo, ND. October 2007. 89p
4. Grasses for the Northern Plains: Growth Patterns, Forage Characteristics and Wildlife Values, Volume 2 - Warm Season. Sedivec, K., D. Tober, W. Duckwitz, D. Dewald, J. Printz, and D. Craig. 2009. NDSU Extension Service, Fargo, North Dakota, Fargo, ND. August 2009. 67p.
5. Plant Releases – Plants for the West, USDA- ARS Forage and Range Research Laboratory – Logan, Utah.