

TECHNICAL NOTES

UNITED STATES DEPARTMENT OF AGRICULTURE
JULY 2009

NATURAL RESOURCES CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

PLANT MATERIALS TECHNICAL NOTE NO. 10

UNDERSTANDING SEED CERTIFICATION AND SEED LABELS

INTRODUCTION

The failure of many conservation plantings can often be related back to our lack of understanding seed certification, reading seed analysis tags, and purchasing the best quality seeds available.

Certification is the process by which a state seed certifying agency gives official recognition to seeds produced of a cultivar or named variety under a limited generation system which ensures genetic purity, identity, and a given minimum level of quality.

Recognized classes of certified seed include; Breeders Seed, Foundation Seed, Registered Seed, and Certified Seed.

In Louisiana, seed that is certified will also have a colored certification tag issued by the Department of Agriculture & Forestry, Seed Division which establishes that the seed meets minimal standards for that class of seed.

The most common levels of certification that would normally be available for consumer purchase would be "Registered Seed" or "Certified Seed". Breeder seed is usually reserved for future development and seed increase by the owner or developer of the seed line, and foundation seed would normally be used by a commercial seed company to establish new production fields.

Certified seed (Registered or Certified) if available should be your first choice for any seeding project. If a class of certified seed is not available, you should try to obtain non-certified seed that meets certification standards for purity, germination, weed seed, and noxious weed seed.

RECOGNIZED CLASSES OF CERTIFIED SEED IN LOUISIANA INCLUDE;

- Breeder Seed - Seed directly controlled by the originating or sponsoring plant breeding institution, firm or individual which is the source for the production of seed of the certified classes. Certification tag color is white.
- Foundation Seed - Progeny of breeder or foundation seed, handled so as to maintain specific genetic purity and identity, production of which must be acceptable to the Department of Agriculture and Forestry. Certification tag color is white.



Helping People Help the Land

An Equal Opportunity Provider and Employer



- Registered Seed - Progeny of breeder or foundation seed, handled under procedures acceptable to the Department of Agriculture and Forestry to maintain satisfactory genetic purity and identity. Certification tag color is purple.
- Certified Seed - Progeny of breeder, foundation or registered seed, handled under procedures acceptable to the Department of Agriculture and Forestry to maintain satisfactory genetic purity and identity. Certification tag color is blue.

PER-VARIETAL GERMPLASM SEED CERTIFICATION

Another relatively new method of seed certification includes Per-Varietal Release certification. Per-Varietal Germplasm Releases are becoming more common on the commercial market today and are now commonly being used for many native species releases. Within the NRCS Plant Materials Program, besides “Cultivar” releases, four plant release types are recognized and eligible for certification as Per-Varietal Germplasm Releases. These release types include, Tested, Selected, Source Identified, and Germplasm.

Per-Varietal Germplasm Releases include plants that have not been released as a cultivar (i.e. named variety). Per-Varietal Germplasm Releases procedures offer a way for plant breeders to offer certified seed to buyers that have not gone through a long an extensive testing program. These release types commonly referred to as ecotypes still have much of their original genetic identity but the full range of adaptation and many performance traits may not be fully known. Plants released using this alternative procedure become available to the end user sooner and offer the since of using a local ecotype.

AOSCA has established and published certification standards and guidelines for the certification of Pre-Varietal Germplasm releases although not all state certifying agencies recognize and adopt these plant release types within their respective state laws and regulations.

NRCS RECOGNIZED PER-VARIETAL GERMPLASM RELEASE TYPES INCLUDE;

- Tested - releases 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 AOSCA or the certifying agency. The seed or plants must be produced so as to assure genetic purity and identity from either rigidly controlled and isolated natural stands or individual plants, or seed or plant production fields or orchards. Purposeful genetic manipulation may or may not be conducted. Certification tag color is blue.
- Selected - release types include propagating materials of phenotypically selected plants of untested parentage that have promise but not proof of genetic superiority or distinctive traits. Selected release types will be produced so as to ensure genetic purity and identity from either natural stands or seed production areas, or seed or plant production fields or orchards. Certification tag color is green.
- Source Identified - releases are seed, seedlings, or other 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. No planned genetic manipulation is conducted. Certification tag color is gold.

- Germplasm - release refers to basic genetic plant material possessing one or more potentially desirable characteristics that may be of value in plant breeding, the release of which is in the best interests of United States agriculture and the state or agency research program. A germplasm release should not be moved into commercial use without further selection and development.

SEED TAGGING

All seed lots available for sell (certified or non-certified) will also have a seed analysis tag. The Federal Seed Act and Louisiana Seed Laws regulate seed quality standards and mandates what information is required on seed analysis tags. Within Louisiana the Department of Agriculture & Forestry, Seed Division establishes standards for those crops that are grown within the state and are eligible for certification (e.g. improved varieties, named cultivars). The Association of Official Seed Certification Agencies (AOSCA) sets minimum requirements and standards for various species but each state's certification agency will normally vary this information slightly to adapt to state situations.

Whether you select a named variety, a pre-varietal release, or a certified seed lot verses a non-certified seed lot each will vary widely in quality. The best way to evaluate the quality of an individual seed lot is by looking at the seed analysis tag and understanding key information that is included on the tag.

Federal and State Seed Laws require that each seed lot offered for sale must be truthfully labeled and contain adequate information to provide the end user a reasonable picture of the potential quality or problems associated with the lot. This applies to a single species or a mixture, certified or non-certified.

BASIC INFORMATION THAT SHOULD BE INCLUDED ON EACH SEED TAG INCLUDES:

- Kind and Variety - this may include the species or common name, and cultivar or variety name of the plant and distinguishes it from other seeds of the same kind.
- Lot number - defined quantity of seeds identified by a lot number or mark, every portion or bag of which is uniform, within permitted tolerances, relative to the factors which appear in the labeling.
- Origin - location identifying where the seed was grown. This may be listed as a state or may be a more specific location as with Pre-Varietal Releases.
- Net weight - total bulk weight of bag or container.
- Pure seed - (% Purity) A purity test separates pure seed, inert matter, other crop seed, and weed seed. Purity expresses the composition of the seed lot and its degree of contamination by unwanted components. Purity + inert matter + weed seed+ other crop seed must add up to 100%. Purity may vary greatly by species.
- Germination – (% Germination) a germination test determines the capability of a seed lot to produce normal seedlings under favorable controlled conditions.

- Dormant Seed – (% Dormant Seed) often referred to as hard seed and includes the portion of the seed sample that doesn't germinate during the seed test. Reasons for dormant seed are: 1) the seed coat is impervious to water, and/or 2) internal structures within the seed prohibit oxygen exchange.
- Germination Test Date - (In State, Out of State Shipment) the germination test date should be current due to the natural decline in germination over time. Seed test should be updated every 6-12 months depending on the species and state laws. For interstate shipments most states require a test to be no older than 6 months.
- Inert matter - (% Inert Matter) Inert matter includes dirt, plant parts, and certain types of damaged seeds. High levels of inert matter have an effect on planting efficiency especially when using a grassland seed drill. As with purity inert matter will vary by species.
- Other crop seed - (% Other Crop) Seeds of species of all kinds or varieties not of the kind or variety declared on the label.
- Weed seeds - (% Weed Seed) Includes seeds of all plants that are considered to be undesirable, troublesome, or not wanted. The amount of common, restricted, and noxious weed seed found in the lot will be listed separately.
- Name of restricted noxious seed - (Number per Pound of Seed) Noxious weeds are plants which are highly destructive and difficult to control by good cultural practices and the use of herbicides. Whenever a seed lot is tested it is examined for the presence of "Restricted" and "Prohibited" noxious weed seed. Each state has its own list of prohibited and restricted noxious weeds. Restricted noxious weeds are allowed in seed lots, but the number of weed seed per pound of seed is restricted. Prohibited noxious weeds are not allowed in any seed lot by rules outlined within the Federal Seed Act and state laws. Each state maintains its own list of "Prohibited" and "Restricted" noxious weeds as part of their state seed laws.
- Prohibited noxious seeds - (Number per Pound) Prohibited noxious weed seeds are not allowed in any number within a seed lot. Seed lots can not be sold if they contain any prohibited noxious weed seeds. The seed test must indicate that no prohibited noxious weed seeds are present.
- Name and address - This includes the name of the company responsible for the analysis. It is often the producer or grower of the seed. It may not always be the seller or the point of purchase or distribution.

EXAMPLE OF A SEED TAG USED AT THE USDA – NRCS, PLANT MATERIALS CENTER

Kind	SWITCHGRASS	
Variety	LNPI Selection	
Lot Number	SRE-02-08	
Date Tested		11/29/2008
Net Weight		50 LB.
Pure Seed		98.75%
Inert Matter		1.00%
Other Crop		0.00%
Weed Seed		0.00%
Germination		88.00%
Dormant Seed		5.00%
Total Germ & Dormant Seed		93.00%
Origin	Terrebonne Parish, LA	
Noxious Weed/LB	NONE	
Name	USDA-NRCS Golden Meadow Plant Materials Center	
Address	438 Airport Road, Galliano, LA 70354	

Learning to identify specific seed certification levels and choosing a particular seed lot will help to ensure that; 1) the seed lot quality is high; and 2) you have a better chance for stand establishment.

The use of Certified seed helps protect the buyer. It provides a guarantee to the user stating that the seed meets a specific standard level of high genetic purity, germplasm identity, high germinating ability, and minimum amounts of other crop seed, weed seed, and inert matter.

To obtain a clear understanding of seed certification standards a review of state seed laws, the Federal Seed Act, and AOSCA guidelines is in order. Contact the State Department of Agriculture or the crop improvement association in your state for specific information.

Morris J Houck
Plant Materials Specialist

REFERENCES

Louisiana Department of Agriculture & Forestry, Seed Programs, 2008, Louisiana Seed Certification Standards, Baton Rouge, LA.

Louisiana Department of Agriculture & Forestry, Seed Programs, 2008, Louisiana Seed Laws, Baton Rouge, LA.

USDA Natural Resources Conservation Service, 2007, National Plant Materials Manual, Fourth Edition, Beltsville, MD.

Association of Official Seed Certifying Agencies, 2003, The Native Plant Connection, Boise, ID.

USDA Agricultural Marketing Service, 2002, State Noxious-Weed Seed Requirements
Recognized in the Administration of the Federal Seed Act, Beltsville, MD

Association of Official Seed Analysis, 2008, Rules for Testing Seed Manual, Stillwater, OK.