



The North Dakota Seed Journal

SEPTEMBER 2016

Newsletter of the North Dakota State Seed Department

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Regulatory Program Report

Jason Goltz, Seed Regulatory Manager

All seed offered for sale to the public must be truthfully and properly labeled. Each year, the Regulatory Program collects samples from seed dealers and retail facilities to ensure the seed being marketed is in tolerance with what is stated on the label. We also monitor ads to ensure compliance with seed regulations, and on occasion will receive tips from the public on possible seed violations.

Department inspectors drew 1,318 samples for examination and testing. Stop sale orders were issued on 36 seed lots that were improperly labeled or out of date. The following is a breakdown of the stop sale orders issued:

- Outdated seed (32)
- Improperly/unlabeled seed (3)
- Attempted sale of uncertified PVP Title V seed (1)

Additionally, thirteen individuals were contacted regarding problematic advertisements for seed sales. These individuals did not possess a valid labeling permit and were also marketing seed which was not tested or not labeled. In some cases, advertisements offered a PVP variety which was not certified. Each person was educated on labeling requirements and the Plant Variety Protection Act, and received a warning. Some obtained the proper labeling permit and were brought into compliance. Others chose to voluntarily withdraw their ads and to stop marketing seed.

Three other violations were acted on:

- While inspecting an agronomy center that does not maintain a bulk retail license, an inspector found two bins of certified wheat stored in unapproved bins. The facility manager did not understand the requirements for retailing Certified classes of seed. Follow-up action included:
 - Facility was inspected under bulk retail guidelines
 - Facility applied for and was approved as a bulk retailer on a probationary basis
 - Official samples were taken of the two bins of wheat
 - Samples were tested for purity, seed count and variety identification

Because this violation was found in advance of any sales, and labeling and facility requirements were satisfactory, we were able to bring the facility into compliance without the need to issue a fine.

- A facility manager self-reported the sale of non-labeled seed. One sale of seed was made prior to final certification being completed. During final certification, the seed lot failed for excessive other crop (wheat in durum).
 - An official sample was taken which confirmed the level of contamination
 - The seller attempted to recover the seed, but was unsuccessful
 - Fines totaling \$500.00 were issued for labeling violations
 - consideration was taken due to self-reporting and in attempting to recover the seed
- NDSSD received multiple reports of a company from Canada advertising Pea and Soybean seed for sale on an online classified page. This company was also attempting to sell the seed farm to farm.
 - Both peas and soybeans were advertised as brands/variety not stated (VNS)
 - Peas and soybeans must be sold in North Dakota by variety name or number



The North Dakota Seed Journal is published and edited by the Seed Department, State of North Dakota, under the provisions of Chap. 258, S.L. 1931, as administrative and instrumental matter required for effective transaction of the Department's business and for properly fostering the general welfare of the seed industry in the state.

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From the Commissioner's Desk

This time of year, after finishing up the bulk of field inspection in most program areas, we usually go into evaluation mode. What's working and what isn't? Which crops are on the upward trend in acres and what's going down? What problems do we have seed quality-wise, program-wise and industry-wide?

An especially interesting evaluation tool is the USDA Ag Statistics Wheat Variety report. The report has been supported for years by the ND Wheat Commission and NDSU. For the past three years, the Seed Department has become an equal financial contributor. When Neal Fisher (NDWC Exec) asked for our support I immediately said yes; spring wheat is the largest certified crop in our program, and the survey contains great information for our growers and agency.

The survey is always interesting, this year it's surprising. It's no secret the wheat seed industry is transforming; private company investment and changes in public breeding programs most especially. This transformation is now being reflected in planted acres in North Dakota.

Just for fun, and since I still have Summer Olympics hangover, here are the medalists in the 2016 wheat planting survey:

Gold Medal: Syngenta varieties

Private company varieties have never held two out of the top three spots in planted acres statewide ... ever. *SY Soren* (#1 at 15.4%) and *SY Ingmar* (#2 at 11.5%) accounting for over a quarter of all spring wheat acres planted in North Dakota. What's really shocking; *SY Ingmar* increased from 3.1% in 2015 to 11.5% of planted acres this year.

Ken Bertsch..... State Seed Commissioner
Kent Sather..... Director, Potato Program
Jason Goltz..... Field Seed Program Manager
Joe Magnusson..... Field Seed Program Manager
Jeanna Mueller..... Seed Laboratory Manager
Jeff Prischmann.. Diagnostic Laboratory Manager
Kris Steussy Administrative Officer
Mike Oosterwijk Potato Program Supervisor

Clearly, straw strength is driving part of the shift. High rainfall/high yield environmental conditions the past few years are contributing to grower migration to yield/protein combinations that stand. More on *SY Ingmar* in a bit.

Silver Medal: NDSU varieties

It's been a long time, a really long time, since an NDSU variety didn't hold the top spot in the survey. That's akin to the US being the silver medalist in men's basketball after a long reign as the world elite program. *Elgin-ND*, *Barlow*, *Glenn*, *Faller* and *Prosper* come in right behind the previously mentioned *SY* varieties, and total another 25% or so of the market. Interestingly, *Glenn* is making a comeback due to high protein and quality factors.

The U.S. men's basketball program changed cultures by bringing in Mike Krzyzewski. NDSU has a new "coach" in its spring wheat program; Dr. Andrew Green arrived in June, filling the open breeder position. Dr. Green comes to NDSU with a strong resume in wheat breeding, and is generating positive feedback from constituencies. The men's basketball analogy may be horrible, since plant breeding is a long-term issue and Olympics happen every 4 years. Nonetheless, optimism is back in play with the largest public spring wheat program in the U.S.

Bronze Medal: University of Minnesota varieties

U of M varieties, *Linkert* and *Rollag* among others, continue to show strength especially in the eastern half of

the state. Dr. Jim Anderson at the U of M has done a great job of finding and incorporating genetics that fit the production environment (including economic) needs of growers.

I gave some thought to awarding a bonus medal called the "Ryan Lochte"; for suspicious or unethical activities involving the use of protected varieties. No data or statistics, rationale or reason, can convince me that a variety that has been in certification for two years, *SY Ingmar* in this case, can suddenly become the second most-used variety in North Dakota ... without some funny business. "Funny business" is code for illegal exchange.

We don't publish certified acres of private varieties at the request of the variety owners. I can say with certainty there hasn't been enough seed produced in the past two years to justify the planting report data, even accounting for normal/legal use of farm-saved seed. Readers should be aware that "unknown" and "other" varieties make up almost 13% of the reported planted acres. It's safe to assume part of that total is *SY Ingmar*, and other public and private protected varieties. Speculative or not, that's my evaluation of the report numbers.

The USDA, NASS North Dakota 2016 Wheat Varieties survey can be found at: https://www.nass.usda.gov/Statistics_by_State/North_Dakota/Publications/Crop_Varieties/pub/Wheat/whtvr16.pdf

Best wishes for a safe and profitable harvest season.



The Farmers Yield Initiative, or FYI, promotes legal seed trade, research, education, seed certification, and the enforcement of intellectual property rights authorized under the Plant Variety Protection Act (PVPA) and patent laws. The purpose of the initiative is to educate the public and encourage compliance with existing state and federal seed laws embodied in the PVPA and state seed certification regulations. If you suspect illegal seed activity please consider submitting a strictly confidential tip to help put a stop to illegal seed trade. You need not identify yourself during the phone call. The caller can remain anonymous, and it is toll-free. Phone completely confidential tips using the toll free number: (877) 482-5907

Email tips to: tips@farmersyieldinitiative.com

Mail tips to: Farmers Yield Initiative
PO Box 8850
Fayetteville, AR 72703

Administrative Corner

Kris Steussy, Administrative Officer

Seed Samples: The Basics

Envelopes for submitting your samples are available from the Department. Please contact us to have a supply sent to you. Our envelope includes the information we need to get your samples to our lab efficiently.



Tips for sending samples:

Seed that isn't field inspected:

- Please be sure your name is included with your sample, along with directions for the tests you want completed.
- Over-filled sample bags are more likely to break when shipped. For a purity, germination and seed count on cereals, we need approximately 4 cups of seed. For soybeans, we need 5 cups.
- When packaging your sample, please keep in mind we need to be able to undo the packaging without contaminating your sample. Please be conservative with tape! And we'd appreciate staples not being used on your packaging – it's hard on our fingers! Sometimes we spend a lot of time "breaking in" to your packaging! (see picture)



Carryover seed – Carryover seed needing an updated germination should be sent in the manila envelope pictured above. Please include a completed "Relabeling request" identifying your sample. The form can be found on our webpage under "on-line forms". We only need about 2 cups of seed for the new germination. If folded correctly, envelopes do not need to be taped. Please do not use our plastic bag to send carryover seed, they are used for final certification samples only.

Pre-germination – Seed for pre-germination testing can also be sent in the manila sample envelope and again, we only need about 2 cups of seed. To use the pre-germination result on your final sample, you need to identify field numbers on your sample. Pre-germination tests are not allowed on field peas, soybeans, field beans and other fragile crops.

New final certification samples – Plastic bags are available for certification samples. Our laboratories need full bags of barley and field pea for testing, however, over-filling the bags is more likely to cause them to break in shipping. Please don't over-tape or staple them in addition to the seal. We run the risk of slicing the bag trying to get them open and contaminating the sample, and it takes us a long time to carefully get into them.

Sample results can be emailed to you. If you want to save mail time, please provide us with your email address. A hard-copy of your report will still be mailed. NDSSD does not use your email address for any purpose other than sending lab results.

Variety ID Testing is a Requirement for Seed Certification

Jeff Prischmann, Diagnostic Lab Manager

Variety ID testing is required in North Dakota for spring wheat, field pea, and barley. The rules for testing requirements were implemented in 2010 to enhance the quality assurance process of seed certification for these crops.

Spring wheat certification samples are tested using wheat seed protein and polyacrylamide gel electrophoresis (PAGE). Seed proteins are extracted and tested to differentiate spring wheat varieties from each other based on a specific seed protein banding pattern or fingerprint. Appropriate control samples are utilized when a sample is tested to verify that the samples match.

Barley and field pea certification samples are tested utilizing seed DNA. This test uses PCR (polymerase chain reaction) in combination with specific markers to identify the correct variety and involves multiple steps which include: DNA extraction, PCR, and gel electrophoresis. This test is also very specific depending upon the DNA markers used and is able to distinguish barley and field pea varieties from one another when control samples are tested with the sample.

Due to the number of samples that are tested and the steps involved in these tests, wheat samples are generally completed in 2-3 days after receiving samples. DNA tests of barley and field pea are generally completed in 5-7 days. Growers should keep these time frames in mind when submitting samples for testing. In general, these tests are completed about the same time a germ test is completed or slightly before depending upon the crop. Also, samples that request only a seed purity or seed count may have those tests completed prior to the completion of a variety ID test.

These tests provide benefits to the seed producer. In a vast majority of samples, no problems will be found. However, there are a small number of problem samples that are usually discovered each year. The most likely problems that can be found include incorrectly labeled bins/seed lots and a mixture of two or more varieties in the same bin/seed lot.

In addition to variety ID testing for seed certification, variety ID testing is also available for spring wheat, oat, barley, and field pea as a service test that growers can utilize. The fees for these tests start at \$140 for wheat/oat and \$230 for barley/field pea. Growers are required to submit at least a 100g sample for this test and request a variety ID test. Please contact the department with any questions regarding variety identification testing.

Axtman Joins Seed Department Staff

The ND State Seed Department welcomed its newest staff member in July with the arrival of Sera Axtman to our Support Services team.

Sera's position as Administrative Assistant II has multiple responsibilities including organization and input of samples and data entry for inspection and testing programs. She will also contribute to the organization's public information programs.

Axtman is a graduate of both Lake Region State College and Minnesota State Community and Technical College with associate degrees. Sera's job site moves a short distance across campus after working with the NDSU Foundation and Alumni Association.

Welcome Sera!

State Seed Department Unveils New Logo

Did you notice a new look on the first page of the Seed Journal?



The new logo replaces the old linear style developed in 2001 and used since then. The new logo was developed by Dave Haasser and Deb Tanner of NDSU Ag Communication in consultation with NDSSD staff. Dave is a Graphic Designer and Deb is a Publication Coordinator/Designer and produces the Seed Journal for us. Thanks to both Dave and Deb!

Steps to Final Certification

Joe Magnusson, Field Seed Program Manager

With a high number of first-time growers applying for field inspection this year, it is critical that they (and all seed growers) understand the procedures required to legally sell their field inspected seed. Field inspected seed must be lab tested and final certified by the North Dakota State Seed Dept. before it can be sold for planting purposes.

Pre-Testing

Prior to investing in final certification, many growers want to know the quality of the seed lot. Pretesting for germination is recommended to ensure you have a product that is suitable to condition for final certification. The pretest results for small grains, if appropriate field numbers were included with the sample, can be used for final certification. We recommend retesting the germination after conditioning as the seed might have gone out of condition in storage.

Pretest results cannot be used for fragile crops such as soybeans, field peas and field beans and a new germination test is required after conditioning. Pretest results for disease testing such as loose smut in barley, ascochyta in lentils and chickpeas, and anthracnose and blight in field beans can be used for final certification as they should not change in storage.

Final Certification

There are two options for completing final certification:

1. Sell your unconditioned seed to an approved seed conditioner or bulk retail facility and they will have the seed conditioned and labeled in their name. The buyer is then responsible for costs of final certification and royalty fees. These entities can be found on our website (ndseed.com) or in the 2017 ND Field Inspected Seed Directory.

When you deliver the unconditioned seed you will be asked to fill out a grower's declaration transferring ownership to the new labeler, and they will ask if you had pretests done on the seed. You should also bring a copy of your field inspection report which would show other crop or weed seeds that may be difficult to separate.

2. Have the seed conditioned by a ND approved conditioner and label in your name for final certification. Approved conditioners, either mobile or stationary, can also be found on our website (ndseed.com) or the 2017 ND Field Inspected Seed Directory.

Be sure to clean bins, augers and other handling equipment prior to moving seed. The approved conditioner will collect representative samples from each lot during conditioning to submit to our department for final certification testing. It is important to note that once the seed is conditioned, each bin containing certified seed is considered a separate lot thus requiring analysis testing for each bin.

The tests required depend on the kind being certified but purity analysis, germination and seed count are required for most kinds. Hard red spring wheat, barley and field peas also require a variety ID test be performed on each lot submitted for certification. Disease testing is also required for loose smut in barley, ascochyta in lentils and chickpeas, and anthracnose and blight in field beans. If the seed meets or exceeds the minimum ND seed standards for that crop, you will be issued bulk certificates to use for seed sales. A bulk certificate must accompany each load of seed sold.

Research Fees

Most of the small grain varieties produced in ND now require a research fee be collected on seed sold for planting purposes. When you sell seed, make sure you collect this fee in addition to the cost of your seed. We will send a research fee reporting form in July for each labeler to report and pay the fees due. Varieties with research fees and the fees due per bushel can be found in the front of the 2017 ND Field Inspected Seed Directory or by calling our department.

Dormancy and the Effects on Seed Testing

Jeanna Mueller, Seed Lab Manager

The nature of a seed and how it behaves is a complicated science; and this behavior directly affects seed germination. The natural action for a seed is to germinate under favorable conditions that include light, moisture, and temperature, unless the seed kind has dormancy. Dormancy by definition "is viable seeds, other than hard seeds, that fail to germinate when provided the specific germination conditions for the kind of seed in question." (AOSA Rules for Testing Seeds)

Types of Dormancy:

Innate dormancy is a case where the seed is incapable of germination when freshly dispersed, even if conditions are suitable for seedling growth. This type of dormancy is imposed chemically by the presence of inhibitory compounds either in the seed coat or in the embryo. The seed must first experience some special environmental conditions such as chilling, or fluctuating temperature of specific photoperiods, both of which cause dormancy to break. In the seed lab many of our species tested, whether it is small grains, flax, or a native grass, require a pre-chill prior to germination.

Induced dormancy is a kind of secondary dormancy. In many species newly dispersed seeds have no innate dormancy, but if they are planted in less than optimal growing conditions they acquire this type of dormancy.

Enforced dormancy occurs when the seed is simply deprived of optimal conditions for growth. The seed requires sufficient moisture, oxygen, and light or a suitable temperature. This dormancy is purely environmental. It may occur when a seed is too deep in the soil, or is being shaded by another plant. This condition is eased in the lab because we provide optimal germinating conditions for the seed.

Innate dormancy is typically our only concern when testing seeds. We provide adequate moisture, optimal temperature, light and oxygen. We follow the AOSA Rules for Testing Seeds to utilize the optimal temperature for germination for each kind of seed. The AOSA standards provide optimal germinating and growing conditions, and also include the type of substrate or planting media to use.

In some cases, we are unable to break dormancy in the lab. For instance, in seeds of native grasses and forbs we use a tetrazolium test at the end of the germ testing period to check viability of any un-germinated seed (seed that is not obviously dead). These un-germinated seeds are evaluated for the viability of their essential structures and examined for evidence of seed deterioration. The TZ test is used primarily on native forbs and grasses, but can be used on any species and/or seed type.

Dormancy is essential for the survival of plant species. This information is crucial for the seed grower and the buyer. If you have any questions feel free to give us a call. Please send grasses and grass mixes as soon as possible.

Regulatory Program Report continued from page 1

- Soybeans were advertised as RR1 technology that could be saved and replanted
- NDSSD contacted the company to inform them of North Dakota labeling laws
- Company refused to provide variety identification for either crop
- NDSSD ordered the company to remove their ads and cease sales efforts in North Dakota
 - Although marketing attempts were reported, no completed sales were ever found
 - Calls to our office regarding this company ceased after the ads were removed

We encourage everyone involved in the seed industry to review and understand seed laws. To ensure compliance, contact the regulatory agency in the state you will be marketing seed. Staff at the North Dakota State Seed Department is always available to assist with questions on the proper labeling and reporting of seed sales. For more information on seed labeling visit our website at ndseed.com or call 701-231-5400.



Potato Program Update

Kent Sather, Director of Potato Programs

"This is not a normal season!" is the most quoted phrase of potato growers in eastern North Dakota this summer. The 2016 seed potato crop year appeared to start early. After a mild winter, planting started early on April 12. Soil moisture appeared sufficient for the beginning of planting. Major rain events slowed the process in May and June, causing fields to be planted as late as July 2.

Twenty nine certified seed potato growers submitted acreage applications totaling 15,584 acres, down from 19,195 acres (19%) from 2015. After the last of the seed was mucked in, the rains kept coming. Potato growing areas in Pembina and Walsh counties were especially affected. Growers watched planted acreage dissolve away because of drown out areas. A July 19th hail event, one of the worst on record, added insult to injury for several growers in the Crystal, Hoople and Grafton areas. Other summer wind and rainstorms buffeted crops, trees and buildings as well, causing cleanup and repair.

The threat of late blight spreading from Manitoba forced North Dakota growers to pay close attention to fungicide sprays, often flown on since ground rigs could not get through muddy fields. In the meantime, our NDSSD potato inspectors dodged storms and mudded their way through seed lots for the necessary summer inspections. That exercise is about complete, and results will be processed soon. Rejected acreage, yet to be tallied, will be primarily due to mosaic (PVY) levels in excess of North Dakota Seed Potato Certification tolerances.

Growers also submitted leaf samples from required seed lots to our lab crew for serological potato virus testing, including PVY and PVX. North Dakota is also participating in a *Dickeya dianthicola* survey. This bacterium, expressing similar symptoms to blackleg, recently was identified in some regions of the United States. Symptomatic blackleg stems are being subjected to lab testing against *Dickeya*. To date, no positives have been confirmed for *Dickeya dianthicola*.

Fields experiencing high soil moisture levels may continue to cause problems into harvest and through storage. Tubers may have greatly enlarged lenticels, a possible entry point for disease pathogens. Some tubers in the hill are breaking down. Any tubers with soft rot carried into storage may be problematic, continuing the rotting process in the pile. Careful management of storages will be crucial.

While there is some concern about yield and tuber quality of the later generation 2016 seed potato crop, there is hope for future years. Early generation North Dakota seed lots inspected free from viruses, and were not affected by persistent high levels of soil moisture. Yields should be good. In addition, NDSSD tissue culture and greenhouse staff harvested a good minituber crop in June and immediately planted a second greenhouse crop. These minitubers will supply North Dakota seed growers with the first field year crop of 2017, creating a source for crops beyond.

What is a normal season? That depends on your definition. The 2016 crop still needs to be harvested, stored and shipped. Then a return to a different normalcy would be greatly appreciated.

North Dakota State Seed Department

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Fargo, ND 58105-5257

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NDSSD Calendar

- Oct. 1** Applications due for Approved Seed Conditioners and Bulk Retailers
- Nov. 11** Holiday, Veterans Day (office closed)
- Nov. 24** Holiday, Thanksgiving (office closed)
- Nov. 29** Seed Commission meeting (Fargo, tentative)
- Nov. 29-30** ND Ag Association Northern Ag Expo — FargoDome
- Nov. 30** SW District Crop Improvement Association, Mandan
- Dec. 1** NW District Crop Improvement Association, Minot
- Dec. 2** NE District Crop Improvement Association, Devils Lake
- Dec. 5** SE District Crop Improvement Association, Casselton
- Dec. 26** Holiday, Christmas Day observed (office closed)