

# The North Dakota Seed Journal

OCTOBER 2019

#### Newsletter of the North Dakota State Seed Department

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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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# **Seed Quality Questions**

Joe Magnusson, Field Seed Program Manager

We have received many calls from growers concerned about low falling numbers, sprouting and the effect they have on seed germination.

We are not aware of any empirical data showing a direct relationship between falling numbers scores and germination percentage. The HFN test is a grain marketing tool, not a seed quality measurement. However, since the falling numbers test measures alpha-amylase enzyme activity, and since this enzyme breaks down starch in the kernel that is used during germination, it is logical to make that connection.

Elevated alpha-amylase levels (low FN) can also result from late maturity alphaamylase (LMA) that can occur after a temperature shock (cold or hot) during kernel development. In this case, preharvest sprouting may not be evident.

Seed that has begun sprouting as a result of repeated wetting and drying after maturity, may deteriorate over time in storage. In some cases, sprouted seed may still germinate and produce a normal seedling, but during conditioning the sprouts may be broken off resulting in lower germination scores.

Although we permit the use of preliminary germination results for small grains, this year we strongly recommend a new germ test after conditioning, and especially if the first test was done this fall. Conditioning should remove most of the scabby kernels which also reduce germination scores. We would still recommend a new germination prior to sales in the spring to ensure the seed has not gone out of condition in the bin.

Even though we pre-chill seed to break post-harvest dormancy prior to the germination test, we still see some samples with dormant seeds. These seeds are still viable and should produce normal seedlings after a period of storage so before you consider discarding a seed lot due to a low germination score, make sure the seed lot is not dormant by retesting after a few months of storage.

So far this year, germination percentages in spring wheat samples range between 33 and 98, although the minimum is still above the minimums the last two years. The mean germination score is slightly lower than the previous two years, but overall, the averages for dead, abnormal, hard and dormant seeds are about the same as 2017 and 2018.

It has been a challenging year and one that demonstrates the value of professional seed testing to properly evaluate the quality of seed lots.

# We need your help!

The Seed Department is in the process of redesigning our website. As part of the initial design process we will be seeking user input to identify areas where we fall short of our goals to improve functionality. In the coming weeks we will be sending a short survey by email to a subset of our customers. The survey will help us identify how you navigate the site and what we need to change while we are still in the design process. If you receive a survey, we hope that you will take a few minutes to respond. Your input will be valuable to our goal of providing the best access to the resources you need.

# From the **Commissioner's** Desk

Before reading this, do yourself and me the favor of first reading Steve Sebesta's great article on the origins and evolution of AOSCA and the ND State Seed Department.

Now that you're back, let me visit a bit about another piece of the department puzzle, one that is often overlooked when viewing our agency. I've discussed in previous columns how certification authority in North Dakota differs from most states, in that everything (field crop and potato certification, seed regulatory) occurs in one place, and by an agency of the state. We're similar in that guidance and oversight comes via a board of directors, in our case the State Seed Commission.

The Seed Commission was not a part of the original 1931 legislation that established the Seed Department. The commission wasn't enabled until passage of legislation in the 1975 session, as a seven-member board. It has changed over time to reflect the following makeup:

#### NDCC Chapter 4.1-52-03. Seed commission membership.

The seed commission is the governing board of the seed department. The seed commission consists of the following members:

- 1. An individual appointed by the North Dakota crop improvement association;
- 2. An individual appointed by the North Dakota certified seed potato growers association;
- 3. An individual appointed by the North Dakota dry edible bean seed growers association;
- 4. An individual appointed by the North Dakota agricultural association;
- 5. An individual appointed by the North Dakota potato council;

6. A resident of this state appointed by the northern plains potato growers association;

- 7. An individual who operates a seed-conditioning plant approved by the seed
- department, appointed by the North Dakota grain dealers association;

8. The director of the agricultural experiment station or the director's designee; and

9. The agriculture commissioner or the agriculture commissioner's designee.

You can see that commission membership was originally intended to represent a combination of services provided by the department, crops grown in the state and to provide oversight for activities of the department.

Potato certification was a much-higher profile program in the 1930's and 40's, hence the commission makeup in it's infancy. However, the Potato Program remains the largest of the four core programming areas of the department budget-wise.

Regardless of how cropping patterns or certification acres have evolved over time, the commission's makeup has remained relatively stable. I'm asked periodically whether this makes sense, or should change. My answer in every case is this; having been here for twenty years I can safely say that every single member I've worked with has represented their appointing body well, while thoughtfully directing the budget and administration activities of the department. The code is littered with 'subject to approval of the seed commission' references,

Ken Bertsch	State Seed Commissioner
Steve Sebesta	Deputy Seed Commissioner
Kent Sather	Director, Potato Program
Jason Goltz	Field Seed Program Manager
Joe Magnusson	Field Seed Program Manager
Jeanna Mueller	Seed Laboratory Manager
Starr Thies	Business Manager
Mike Oosterwijk	Potato Program Supervisor

and the group takes its job seriously. Every member of the commission is well-versed in the entire agency and the needs of its constituents.

Additionally, commission members bring a wealth of knowledge and experience from many sectors of the industry. They serve in leadership roles in their state associations and nationally. This experience provides exceptional guidance to administration and staff in the operation of the department programs serving the seed industry and consumers of seed products.

Best wishes for a safe harvest and mild fall season.



Agriculture Commissioner Doug Goehring (Seed Commission chair) assuming the chair of NASDA



Kim Alberty (back, right) member of ASTA Board of Directors, meeting with Secretary of Agriculture Sonny Perdue

#### SEED COMMISSION MEMBERS

Doug Goehring Agriculture Commissioner, Chairman, Bismarck, ND Dan Mostad ND Grain Dealers Association, Berthold, ND David Fedje North Dakota Potato Council, Hoople, ND Luke Anderson North Dakota Crop Improvement Association, Forman, ND Brad Nilson Northern Plains Potato Growers Association, Hoople, ND Kim Alberty North Dakota Agricultural Association, West Fargo, ND Lance Fugleberg ND Dry Edible Bean Seed Growers' Association, Portland, ND Johnny Thiele North Dakota Certified Seed Potato Growers Assn, St Thomas, ND Dr. Gregory Lardy NDSU Associate VP for Agriculture, Fargo, ND Ken Bertsch North Dakota State Seed Commissioner, Fargo, ND

# Seed Quality Mattered Then...Still Does

#### Steve Sebesta, Deputy Commissioner

This year marks the 100th anniversary of the Association of Official Seed Certifying Agencies, an important milestone that was celebrated at the annual meeting in July. The association has evolved in many ways; in membership, the services it offers the seed industry and the wide variety of crops that are certified by member agencies. While not quite that old officially, the origins of North Dakota State Seed Department predate our national organization.

I am not a historian, but occasionally I find some historical accounts of interest because they provide perspective about our business as well as a means for measuring change. Fortunately, our department still possesses these records. I can safely state that a lot has changed in the North Dakota seed industry and agriculture in general, due to the foresight of some early agriculturalists.



In 1890, the North Dakota Agricultural Experiment Station was established as a result of the Hatch Act. A year later the Agriculture College was founded. One of the early scientists at the AES, H. L. Bolley, a botanist and plant pathologist, recognized the importance of seed purity to improving agriculture, stating "if we can certify and list the seed, there will be a market". Thus, the origin of the Seed Directory, which folks have relied on, evidently, for more than 120 years to find quality seed.

In 1909 the legislature passed the Pure Seed Law which authorized crop inspections,

seed standardization and the publication of a grower list. It also defined labeling laws and seed testing requirements by the experiment station but stopped short of setting standards for viability and purity, other than noxious weed seeds. Bolley recognized that admixtures of other varieties and crops diminished the value of newly released varieties. In an article published by the Journal of the American Society of Agronomy in 1919, Bolley stated that "many valuable varieties are so intermixed and jumbled as to merit disapproval." In fact, past records showed durum wheat on the spring 1920 list had nearly 4% other wheat admixtures. He further believed there was a "good excuse for official supervision of seed production and distribution".

Significant progress was made over the next decade regarding issues of seed quality. The 1931 Seed Act codified all seed laws and established the North Dakota State Seed Department to be located on the campus of NDAC in Fargo, and to be managed by the state seed commissioner. The act also gave the commissioner authority to establish a seed certification program and promulgate rules and regulations for the proper production, handling and sale of registered and certified seed.

As for measuring change – in 1919 eleven varieties and some unidentified lots of 14 crops were inspected by the AES. One hundred years later we inspected 314 varieties for certification and an additional 74 under the quality assurance program. Bolley's vision has been realized.

Our robust seed industry is indebted to wise people who had the foresight many years ago to push for legislation that enabled an organized method for the production and analysis of high quality seed under standardized quality parameters. The Seed Department's mission today still upholds the vision of these early agricultural leaders ..."to assure integrity of the seed industry through commitment to client service and product quality".

# The Label is the Law

Jason Goltz, Field Seed Program Manager

We have all heard the phrase "The label is the law", usually as it pertains to pesticides. Many things we buy have labels which are mandated and regulated. This is also true and equally important for seed. The customer has the right to know what they have purchased.

It is both a federal and state requirement that all seed sold for planting purposes must be labeled and a label must physically accompany the seed. It does not matter for what purpose the seed is to be planted. Whether for grain production, grazing, cover-crop or pollinator habitat, if it is offered for sale or sold for planting purposes it must be labeled.

One of the more common regulatory complaints I receive are from people who have purchased seed but haven't received a label. Promising to mail, e-mail or text a label at a later date is a violation of both Federal Seed Act and ND State Seed Law and could lead to a fine of up to \$1,000 per violation. In cases where the seed is required to be certified, there is the risk of a PVP violation if the seed had not completed certification prior to sale.

Bagged seed must have a tag sewn, adhered to, or printed on the bag. Totes, or mini-bulks, must have a tag or label in the pocket on the tote. In cases where multiple totes from the same lot are sold together, they must all be identified so as to be matched with the accompanying tag or label. Bulk seed must have the label with the truck. The label would be considered to be part of the truck's manifest and would be included with any other required documents.

It is important to remember the importance of providing the proper documentation with the seed. It isn't just the law, it's good customer service. The customer paid for that information along with the seed.

# Potential Seed Quality Issues

#### Jeanna Mueller, Seed Lab Manager

Many areas of the state are struggling to get crops harvested this year. Diseases, weathering and sprouted seed could be potential problems leading to low vigor. Under poor storage conditions or just the time lapse between harvest and planting next spring, vigor can continue to degrade. Sprouts can get knocked off when the seed is conditioned further damaging the seed. The best way to be sure you have quality seed is to test the seed close to planting time. We have a vigor test for soybeans, field beans and field peas available but there is no vigor test for small grains. Scab is a problem this year. With 937 samples that have come in since July 1st we have already seen the effects of scab in samples. The seed does not always show the telltale characteristics of scab, such as the white chalky kernels or a slight pink coloring. Those characteristics are evident in the end stage of scab. It is best to get your seed tested to know for sure.

*Figure 1* shows scabby and black point kernels that were pulled from a sample before testing. Germination on this sample was in the mid 70's.



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Figure 1.
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*Figure 2* shows normal and scabby kernels pulled from a sample of spring wheat.



Figure 2.

*Figure 3* illustrates what scabby seeds look like in a germ test. When scabby seed is obvious in a sample, we plant in 50 seed replicates to spread out the seed to prevent secondary infection. The seeds pictured are closer than what they would be in a regular test. The two growing seedlings are affected by a secondary infection and would be considered normal.



Figure 3.

*Figures 4 and 5* show the effects black point can have on germination. As you can see the black point infection causes more abnormal seedlings.



Black point kernels



Fiaure 5.

Far left seedling is normal. The last four seedlings on the right would be considered abnormal.

#### Reminders...

We always have a number of samples that do not have adequate seed for all the tests requested, resulting in delays. This information is available on our website or you can give us a call with any questions. We can get the samples done quicker if we have the correct amount of seed. Send your samples in as soon as possible to assure timely processing.

### **Planning for Production**

#### Kent Sather, Director, Potato Programs

A total of 13,236 acres of certified seed potatoes were entered by North Dakota certified seed potato growers in 2019. A majority of this seed potato crop is contracted for sale to commercial growers whose subsequent crop is destined for the packaging house or processing plant. To make this possible, seed growers began planning for this sale five or six years ago. As an example of the effort involved, the following is an abbreviated trace-back history for a hypothetical seed lot grown in 2019 for sale to a commercial potato grower for planting 2020.

**2019** - Field Year 4: final year of certification. The seed lot was eligible for recertification, an application was submitted to the Seed Department and it passed all three summer inspections. If required, leaf testing from field plants, and tuber testing from harvested tubers will be completed. A winter test sample may be required prior to final certification.

**2018** - Field Year 3: increase year. This year the seed lot may be grown on a farm in eastern ND with better isolation from surrounding potato acreage. Isolation is key to managing disease vectored from other potato fields. Eligibility was established, application was made, and inspections were performed. Serological laboratory testing of leaves and/or tubers was completed. The required winter test established eligibility for 2019.

**2017** - Field Year 2: increase year. This year, the seed lot may be grown on a farm in western ND, far away from any surrounding potato acreage. Otherwise, same as above. The winter test established eligibility for 2018.

**2016** - Field Year 1: This year, the seed lot is likely grown on a farm in western ND, far away from any surrounding potatoes. This operation has special equipment to handle the minitubers being planted, and the small lots being harvested. Otherwise, same as above. The winter test established eligibility for 2017.

**2015** - Greenhouse production. Disease free minitubers are produced from growing potato plantlets in a protected greenhouse environment. Plantlets are inspected and lab-tested for all potato viruses and bacterial pathogens.

**2014** - Grower orders tissue culture plantlets from a certified lab to produce minitubers in 2015. Tissue culture plantlets have been fully tested against all potato pathogens.

A certified seed potato grower needs to plan five years prior to an anticipated final sale. The seed lots are continuously under the scrutiny of the certification agency through field production, storage, winter testing, and shipping. Every step is documented. Any diseases exceeding established tolerances could disqualify the lot at any stage of increase. Any environmental issue could cause reduction in volume and quality. Certified seed growers face long-term risk, need long- term planning, and deal with annual disease management issues as they work to supply the needs of the commercial industry each year.

### 2020 Approved Facility Applications and Inspections

#### Kyle Bednar, Field Seed Inspector II

2019 permits for operating approved seed facilities will expire December 31. Applications for 2020 were mailed out in early August and if you haven't done so already, please return the signed agreement with your payment. Retain a copy of the agreement for your records and review the information with your staff.

Facility inspections will begin in October. This year we are focusing on issuing bulk certificates, labeling bins and retaining samples. Prior to inspection, make time to check a few critical areas, making sure that:

- a two-pound sample for each seed lot is properly labeled with kind, variety, class, lot number. Samples should be organized and retained for one year from the last date of sale. A copy of the bulk certificate works well as a label.
- unused 2019 bulk certificates and log sheets have been returned unless you are doing online bulk certificates
- approved seed bins are labeled (numbered) and variety is identified
- seed storage and loading areas are clean and well-maintained
- prior to conditioning a seed lot, approved conditioners need to request and review the field inspection report from producers in order to:
  - determine if there was any other crop found in the field inspection
  - $\circ\;$  ascertain what common or prohibited weeds were found
  - note if the field was conditionally passed, which requires a five-pound sample for final certification.

As always, we appreciate your cooperation with the inspectors. Please feel free to call if you have any questions.

#### North Dakota State Seed Department

PO Box 5257 Fargo, ND 58105-5257

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# NDSSD Calendar

Nov 11 Veteran's Day (office closed)	
Nov 28 Thanksgiving (office closed)	
Dec 2 SE District Crop Improvement Association meeting, Casselton	
Dec 3-4 ND Ag Association Northern Ag Expo, FARGODOME	
Dec 3 SW District Crop Improvement Association meeting, Mandan	
Dec 4NW District Crop Improvement Association meeting, Minot	
Dec 5 NE District Crop Improvement Association meeting, Devils Lake	
Dec 25 Christmas (office closed)	
Dec 30 Non-resident seed dealer applications due	
Jan 1 New Year's Day (office closed)	
Jan 7-8 Lake Region Roundup, Devils Lake	