



The North Dakota Seed Journal

MARCH 2012

Newsletter of the North Dakota State Seed Department

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The Value of Variety ID Testing in Certification

Steve Sebesta, Deputy Commissioner

The North Dakota State Seed Department is well into the second year of testing seed for variety identity as a condition for certification. From our perspective, the program has been extremely effective in ensuring that the process of certification not only ensures high quality seed, but also ensures proper identity of the product at labeling.

In 2010, the Seed Department implemented variety ID testing on all lots of certified hard red spring wheat, barley and field peas. Protein electrophoresis is used for spring wheat, and PCR DNA analysis is used for barley and field peas. The testing was implemented to ensure that the seed lots certified by the Seed Department were in fact the variety stated on the Sampler's Report submitted with the conditioned sample for final certification.

The program proved successful immediately in 2010. Jeff Prischmann, Diagnostic Lab Manager, identified eight lots of wheat that, without genetic testing, would have been labeled improperly. Those eight lots represented approximately 30,000 bushels of seed. In all cases we were able to resolve the problems with the labelers.

So far this year, we have found several lots of barley and spring wheat that were identified improperly. One sample in particular, though, stands out as the most significant of all the lots tested so far and underscores the importance of variety ID testing as a tool in certification.

In November, a seed grower submitted a sample of Choteau hard red spring wheat for final certification. The quality of the sample was excellent; however the variety ID test came up false for Choteau. If you are not familiar with this variety, it was developed and released by the Montana Agricultural Experiment Station in 2003 because it exhibited a high level of resistance to the wheat stem sawfly due to its semi-solid stem. Due to the prevalence of the pest in Montana, use of this variety increased each year following release, and in 2010 Choteau was planted on more acres than any other spring wheat variety.

Meanwhile, back in North Dakota, the wheat stem sawfly has been increasingly more important, and in the last several years has spread eastward into central North Dakota. In 2009 some fields experienced 100% loss; the financial impact statewide was estimated between \$25-70 million. The next year the acreage planted to Choteau more than doubled and would have likely been higher if adequate seed supplies had been available. Last year Choteau was grown on about 650,000 acres in both states.

This situation demonstrates the importance of variety id testing as a component of certification. Successful farmers usually have reasons for selecting certain varieties for their farm. Whether its performance traits such as high yield or high protein, or defensive traits such as lodging resistance or disease resistance, varieties offer different packages that are preferred because of their performance on the farm. When a farmer (or seed grower) selects a variety such as Choteau, they do so because it offers a specific trait. It just so happens in this case that the trait singularly defines this variety. Consequently, it is critical to the farmer that the seed he is purchasing is correctly labeled. Seed certification and variety ID testing are the best ways to ensure that the traits desired by the customer are delivered in the seed he purchases. It is critical that varieties are identified properly.

North Dakota State

NDSSD

Seed Department

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

I'm asked periodically when crossing paths with colleagues "what's the hot topic over at State Seed?" Usually this time of year, there is plenty happening but nothing that generates controversy...which is a good thing. There is one issue that falls under the "food for thought" theme.

We are blessed with broad responsibilities at the Seed Department. Field crop certification, potato seed certification, seed testing and seed regulatory work in all crops. All make life interesting. The most interesting area is often potato certification. Because they differ so much from all other crops we deal with in both field and laboratory terms, vegetative crops are a much different sort of challenge.

Potato production has a serious challenge to face, in both seed and commercial sectors: necrotic strains of the virus PVY. PVY has been around for decades, and is one of the foremost problems certification agencies deal with. It masks itself, depending on variety, it's tough to detect, and it changes in form and strain like other viruses. Emerging strains of PVY virus such as PVYntn (and other recombinant strains) often lead to tuber necrosis, or discoloration of the tuber flesh.

PVYntn isn't prevalent in ND, but it has been found in numerous potato production areas of the U.S. If it ever gains a foothold, anywhere, watch out. Many different bacterial or fungal diseases cause tuber problems in potato, but seldom are they caused by virus like PVYntn. Virus diseases can be transferred by insect vectors from field to field, area to area. The planting of seed with (even) low levels of virus leads to an exponential increase in virus inoculum. Imagine the potential negative effect on tuber quality if fields

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Mark Hafdahl Seed Laboratory Manager
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are planted with high levels of PVYntn infected seed.

The point? Certification can help minimize (not eliminate) the spread of viruses. Virus tolerances are strict in ND, leading to high quality seed production. This means it's difficult for seed to pass certification. There is only one way to make it easier: ease standards or tolerances. What happens when tolerances are eased? More virus. See the problem?

Back to the issue of high virus-load; the boogeyman in all of this is the presence of virus in the field. The only seed stock checked for the presence and/or amount of virus, is certified seed, and it is the only point of control in the entire system. Under ND seed law, replant or carryover potato seed (think, bin-run seed in cereal crops) is allowed for one year after the purchase and planting of certified class. That "seed" is not inspected or tested for the presence of virus or other diseases.

Remember, virus is transferred uncontrolled between potato fields by insect vectors, and commercial fields are intermingled with certified seed fields in the same local areas. The use of the term uncontrolled is intentional, since it is nearly impossible to limit the spread of viral infection by chemical or mechanical means. The inoculum load problem is profound, due in great degree to the replant exemption in seed law.

Scientists have warned for years that necrotic strains of PVY could change the entire potato production industry. Europe has already felt the impact of this problem. Necrotic strains of PVY have invaded,

expanded and affected the quality of commercially produced potatoes, leading to the abandonment of susceptible varieties.

If easing tolerances and/or replanting infected seed both contribute to the risk of spreading PVYntn, what is the answer? Do we need to inspect and/or test commercial lots destined for replant? Do we need to maintain strict certified seed tolerances, and eliminate the replant provision from seed law? Could it be that some combination of each might actually be the only way to combat the problem?

Can the industry afford to wait until commercial potatoes are rejected due to tuber necrosis and commercial growers get hit in the pocketbook before paying attention to this problem? Can seed growers survive increasing virus levels that surround them, or will the trend of declining numbers of seed operations continue? What would be the impact on commercial potato production in this state with a limited local supply of planting seed?

Based on what has happened in Europe, and is beginning to emerge here, it seems inevitable that the PVYntn problem is one of those defining moments in the potato industry. There are moments when proactive measures are in order and this may be one of those moments.

Food for thought.

Oh, and back to hot topics: did I mention that our own NDSU Bison won the National Championship in Division I FCS football? I couldn't resist throwing that in.

Best wishes for a safe and profitable spring planting season.



Planting Decisions Impacted by Seed Quality

Mark Hafdahl, Seed Lab Manager

Last year's weather really threw a wrench into the works as far as seed goes. The spring moisture situation led to prevented planting and therefore shortages of some seed. Even those fields that did get planted were, in many cases planted late, which left them vulnerable to disease problems as well as maturity issues. The end result is, in many cases, mediocre seed quality and not enough to go around.

In the Seed Lab we have seen germination scores in samples of small grains ranging from the 50's to the 90's. I don't know this for a fact but I assume that some people have seed that has been stored for a couple of years or more. I suspect that some of this low quality seed will find its way into the ground this year.

I don't condone the use of low quality seed but I realize it may happen this year. Older seed may retain a fairly good germination but may be very low in vigor. If it is necessary to use older seed, I recommend a seed treatment and planting into good soil conditions (warm and not wet). Some may need to plant low germinating seed. At germinations below about 70%, one should expect bare spots in the field, even with an increased planting rate. Again, I recommend seed treatment and don't be too anxious to get the seed in the ground early. As soil temperatures increase, seedling emergence rates approach germination test scores.

News from the NDCISA Annual Meeting

The annual meeting of the ND Crop Improvement and Seed Association concluded successfully February 8. Dr. Neal Foster, SD Crop Improvement Association made a presentation to the board of directors about the structure and function of their organization and the interaction they have with the university and agriculture stakeholders in South Dakota. Paulette Neva, retired secretary of the NDCISA was recognized for her service to the association. The following awards were presented at the meeting.

Distinguished Service Award

The Distinguished Service Award recognizes individuals for their outstanding contributions to the North Dakota agriculture community and to their local community. The 2012 Distinguished Service Award was presented to **Raymond Klindworth**.

Ray was born in Hamburg township in Wells County. He first served on the Wells County Crop Improvement Association in the mid 50's and provided leadership on the board for 40 years. Ray has raised, processed, and sold certified seed for six decades. He was one of the very earliest users of ammonium nitrate fertilizer in the area and he began production of edible beans in Wells County on a continuous basis.

Ray has served countless years as a church board member, township supervisor, Fessenden school board member, and an early director on the Lutheran Home of the Good Shepherd Nursing Home in New Rockford. He served on the Agronomy Seed Farm Board of Directors, Advisory Board of the North Central and the Carrington Research Extension Centers.

Premier Seed Grower Award

The Premier Seed Grower Award recognizes individuals who have significantly contributed to the certified seed industry. The recipient of this year's Premier Seed Grower Award is **Gerald Klindworth**.

Gerald is from Fessenden and has produced Registered and Certified seed for approximately 30 years. In the last 16 years, his seed production business has included 26 different varieties of barley, edible beans, field peas, durum and spring wheat. He has averaged about 2,400 acres of seed production each of the last ten years. In the last five years he has sold between 150,000 and 200,000 bushels of certified seed. He has also served on the Wells County Crop Improvement Association. Gerald is partner in Klindworth Seed and Bean Company, a well-respected family owned business.



(L to R)
Rosella,
Ray,
Gerald
and Lynne
Klindworth.

Opportunities for Seed Producers in 2012

Steve Sebesta, Deputy Commissioner

It's no secret 2011 was a challenging year for farmers and seed producers. The northwest half of the state experienced roughly a 30% decrease in acres planted. Because of that, there are opportunities for seed producers to rebound this year.

Anyone who had barley seed this year (new crop or carryover) knows that the demand has been extraordinarily strong. Barley seed production in 2011 plummeted 76% from the previous five-year average of approximately 42,000 acres. Without a significant increase in barley seed production this year, we expect that the situation could even be worse in 2013 for at least a couple reasons. First, the high demand in 2012 gobbled up all of the eligible 2011 production. Second, a significant amount (perhaps all) of the carryover production that has been in storage from previous years has probably also been sold. We believe that most, if not all, of the eligible seed will be planted this spring and that there will not be a significant amount of barley seed left in the state to tap into for 2013 without a significant increase

in seed production this year. Busch Agricultural Resources remains committed to their requirement for certified seed for malt contracts because of the value certified seed brings to their program. This is extremely positive for certified seed producers and thus creates opportunities for seed growers for the next year.

Spring wheat production dropped about 20% last year. Although final certification has been strong so far this year we expect that there may be shortages of locally favored varieties, resulting in some last minute switches to different varieties for those who make late decisions.

Of course, seed producers are not the only ones that market certified seed. A significant amount of certified seed is sold through approved conditioners and bulk retail facilities. We encourage all three groups to communicate this spring to ensure there is an adequate supply of certified seed for 2013. Don't operate in a vacuum. There are opportunities if one pays attention.

Reminder...

Unfortunately, some seed producers missed out on opportunities for sales this year because they failed to have some of their fields inspected last summer. Please, make sure you plant seed on eligible ground and that you apply for field inspection. Don't miss out!

Variety ID Testing Is an Important Quality Assurance Tool

Jeff Prischmann, Diagnostic Lab Manager

Variety ID testing is now a certification requirement for spring wheat, field pea, and all barley. 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. 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.

It is important to remember that compared to protein electrophoresis, PCR tests require additional time due to the extra steps involved which include: DNA isolation from the seed sample, a PCR step that involves testing with multiple, specific markers for the crop, and a gel electrophoresis step. 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.

Variety ID tests provide an additional level of quality assurance for 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 discovered and these can be identified utilizing this test. The most likely causes include incorrectly labeled bins or seed lots and a seed mixture of two or more varieties in the same bin or seed lot.

Variety ID testing is also conducted on spring wheat, oat, barley, and field pea as a service test for a fee that growers can utilize. Please contact the department with any questions regarding variety identification testing.



2012 Approved Plant Inspections

Kyle Bednar, Seed Inspector I

The 2012 facility inspection season is behind us. Managers should have received the current Approved Plant Permit in the mail along with a copy of this year's inspection report. Please display the permit and retain your copy of the 2012 plant inspection report. Managers need to review the inspection report. Even if the facility was approved, there may have been areas noted in the comment section that need attention. If your facility was placed on probationary approval, this will require attention to one or more areas within the facility. Managers of facilities on probation will receive a follow-up letter in June addressing those deficiencies. Once repairs have been addressed and or completed you will need to initial and return the letter to the Seed Department. The majority of deficiencies noted this year are quite simple to correct, such as, labeling a bin, updating bin maps or correctly labeling certified samples. If you have any questions, please don't hesitate to call.



Grafton Named VP for Agriculture

Dr. Ken Grafton has been named Vice President for Agriculture following reorganization to streamline agriculture administration at North Dakota State University. He will continue as director of the North Dakota Agricultural Experiment Station and dean of the College of Agriculture, Food Systems, and Natural Resources.

The decision was announced after extensive consideration of best practices nationally and in consultation with an advisory group composed of agricultural leaders inside and outside the university. The group unanimously recommended merging the duties of the vice president with those of the dean and director, a model similar to the structure at many other land-grant universities and is similar to past organizational structure. The group suggested this structure to more efficiently and cost-effectively lead the contributions to agriculture in North Dakota.

Grafton has been with NDSU since 1980, on the faculty of the Department of Plant Sciences, and also has served as associate dean of the Graduate School. He became director of the Experiment Station in 2002 and dean of the college in 2005. He has directed agriculture to a number of successes, including improvements to infrastructure, as well as development and implementation of state-wide strategic initiatives. Grafton is also member of the North Dakota State Seed Commission.

Source: NDSU Agriculture Communications

Bednar, Sauter Complete GHP/GAP Training

Kyle Bednar, Seed Inspector I

In December, Kyle Bednar and Robert Sauter successfully completed auditor training in Fredericksburg, Virginia for the USDA Good Agricultural Practices and Good Handling Practices (GAP/GHP) Audit Verification Program.

The United States has one of the safest food systems in the world, but according to the USDA, each year there are 76 million food borne illnesses, 323,000 hospitalizations, 5,200 deaths, and \$152 billion associated with health care costs.

In October 1998, the USDA and the US Food and Drug Administration issued guidelines for reducing the possibility of contamination of fresh produce by microbial organisms. These guidelines addressed food safety hazards along with good agricultural and management practices common to the production and handling of most fruits and vegetables sold to consumers in an unprocessed or minimally processed (raw) form.

The Good Agricultural/Good Handling Practices (GAP/GHP) audit program is a voluntary, audit-based program that verifies conformance to generally recognized good agricultural practices and good handling practices as outlined in the FDA's guide. Because the program is voluntary, an audit is only performed at the request of the auditee and is valid for one year.

All auditors must meet minimum USDA-AMS auditor standards that include specialized training in performing audits, food safety, and ethical standards. All auditors must meet program requirements and attend specialized auditor training based on the ISO 19011 standard. Auditors must also go through yearly refresher training, be evaluated annually by a USDA-approved evaluator and complete 80 hours of continual professional development every three years in order to maintain auditor status.

Bednar is a Seed Inspector I and has been employed full-time with the Seed Department since May 2008. Sauter is a Potato Seed Inspector I and has been employed full-time with the Seed Department since November 2010, working out of the Grafton office. Feel free to call either of us to discuss the GAP/GHP program.

Research Fees

Joe Magnusson, Director of Field Seed Programs

The NDSSD has an agreement to collect research fees on varieties owned by Busch Agricultural Resources, Montana State University, NDSU Research Foundation, South Dakota State University and the University of Minnesota. These varieties are protected by the Plant Variety Protection Act and must be cleaned, final certified and bulk certificates issued by the NDSSD before they can be sold as seed.

There is a misconception that if a field has been inspected, that the seed can be sold to another producer without completing final certification, even if the royalties are paid. Not only is that a misconception, it is illegal.

All seed must be labeled by the applicant for field inspection, an approved conditioner or bulk retailer before it can be sold. Unconditioned, field-inspected seed cannot be sold to another producer. Unconditioned seed may only be sold to an approved seed conditioner or bulk retailer for final certification and labeling in their name.

The initial labeler is always responsible for the payment of research fees, regardless of any side agreements they may have with other parties (seed producer or approved retailer). The initial labeler is the person listed on the Sampler's Report when seed is submitted for final certification. The initial labeler will be billed by the Seed Department in July for the research fees owed. Any side agreements related to the payment of research fees are solely between those two parties, but the initial labeler is still responsible for remitting payment to the Seed Department.

Labelers are only required to pay fees for what is sold as planting seed. Carryover seed, seed sold as market grain or seed planted on the labeler's farm should be subtracted from the total amount of seed certified and billed.

Cebulski Joins Department



Linda Cebulski joined the Seed Department December 1 as a Seed Analyst. Linda is a graduate of NDSU and has extensive experience in horticulture and agriculture. She has worked in research programs for local seed companies and as an extension educator in Clay County, MN. In addition to her lab responsibilities, Linda will also inspect seed fields. Linda is eager to use her experience to assist seed growers in North Dakota.



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

Dunn County Farmer Fined for Illegal Seed Sale

Steve Sebesta, Deputy Commissioner

The North Dakota State Seed Department recently settled a case concerning state and federal seed law violations against a Dunn County man for an illegal seed sale of a protected variety.

Les Schneider, Manning, ND agreed to pay the Seed Department \$11,500 in fines for illegally selling Glenn spring wheat. Glenn, an NDSU release, is protected under the Plant Variety Protection Act and Title V of the Federal Seed Act. The 1994 amendments to the PVPA prohibit the sale of any farmer-saved seed without permission from the variety owner. Title V requires that the seed is certified by an official seed certification agency. In addition to the federal violations, the sale violated several North Dakota seed laws, principally labeling requirements. Schneider paid \$5,500 upon execution of the settlement agreement. The remaining \$6,000 was conditionally suspended.

In a separate settlement, Schneider agreed to pay the NDSU Research Foundation, which owns Glenn, the sum of \$18,000 for infringement of NDSU's intellectual property rights. Total fines for this illegal sale of 396 bushels were \$29,500.

Additionally, the USDA Seed Regulatory and Testing Branch has been notified of the violation. In addition to issuing a warning letter the SRTB maintains a registry of violators for three years and will take further action if additional violations occur within that time frame.

State and federal seed laws were established to protect consumers and provide for standardization of testing and labeling requirements. Research fees generated by legal sales of seed help fund development of new cultivars that benefit the entire state. In addition, illegal seed sales are detrimental to the state's seed industry and the hundreds of legitimate seed producers, conditioners and retailers engaged in legal seed trade.

North Dakota State Seed Department

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NDSSD Calendar

May 1 Field inspection applications due for grasses

June 15 Field inspection applications due for all crops except conventional soybeans, buckwheat and millet

July 1 Bulk certificates due

July 15 Field inspection applications due for buckwheat and millet

July 31 Labeling Fee Report due

August 1 Field inspection applications due for soybeans requiring single inspections

Sept. 15 Research fees due