



The North Dakota Seed Journal

JANUARY 2004

Newsletter of the North Dakota State Seed Department

Inside

- 1 Genetic Purity and Identification Testing Services
- 2 From the Commissioner's Desk
- 3 Apply Past Experiences to Improve Your Processes
- 3 Check Out the State Seed Website
- 3 Thank You
- 4 Seed Directory Addendum
- 4 Handle Seeds Gently
- 4 Potato Post-Harvest Test
- 5 Variety Selection: The First Step Toward Success as a Seed Grower
- 5 Seed Transactions, Seed Sales Agreements, Prepaid Seed Contracts: What is Required of the Buyer and Seller?
- 6 Calendar

Genetic Purity and Identification Testing Services

Jeff Prischmann

Since 1994, the department has offered genetic purity/identification testing on several cereal crops including barley, durum, oat and wheat. Many customers know this test as an 'Electrophoresis' test. There are several reasons why a test of this nature is performed. One reason is that a grower or an elevator may need to verify their own records as to which bin a particular lot of seed was stored in. Another reason would be that seed of two or more varieties may have been commingled during handling. This test is useful as a quality control measure for seed certification programs. The department also uses this test during the regulatory inspection process to verify that seed labels match what is in the bag on foundation, registered and certified seed.

Genetic purity testing involves the analysis of seed proteins utilizing a technique known as 'electrophoresis'. Electrophoresis involves the separation of a mixture of chemical components present in seed, in this case, proteins, using a gelatinous support medium or gel. A small amount of sample is applied to the gel and an electrical current is applied. The electrical current allows charged molecules such as seed proteins to separate and migrate through the gel. Proteins of different size and electrical charge migrate different distances, which results in characteristic banding patterns. A special stain is used to visually enhance the banding pattern or 'fingerprint' for a particular variety. Known control samples are run with unknowns

for positive identification. For most cereal crops such as wheat and durum, the department uses a method known as polyacrylamide gel electrophoresis.

Samples tested by electrophoresis can be run as individual seed or as a bulk sample. Bulk samples are tested using 100 seed as a single sample. Samples suspected of being mixtures may be tested using single-seed analysis. To determine an exact percentage of a mixture or the number of off-types present, it is necessary to test individual seeds from a sample.

The department also tests corn, field peas and soybeans using isoelectric focusing electrophoresis (IEF) of seed proteins. This test offers greater flexibility in genetic purity testing as several enzyme stain systems are available to identify selfs, outcrosses or variants.

The current minimum price for this test is \$45 per one sample tested against one control sample using bulk seed analysis. Additional samples or controls are \$10 each. Prices for corn, soybean and field pea electrophoresis testing start at \$100. Samples should be submitted for testing with as much information as possible including the name of the suspected variety or varieties to be tested against. Call the department for prices on single seed analysis testing or other questions regarding mixtures and how to test them.

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.

Steve Sebesta, Editor
N.D. State Seed Department
(701) 231-5400 Fax (701) 231-5401
ndseed@state-seed.ndsu.nodak.edu
www.ndseed.com



From the Commissioner's Desk

The first calendar quarter of the year often presents an opportunity to reflect on the past year, regroup in program areas coming off of fast-paced field inspection seasons and look toward gearing up for another cycle. While Lab Service areas of the Seed Department are in the "harvest" mode in terms of workload, January through March is a time for assessing the past year's operations and mapping the coming year for Certification and Regulatory program areas.

Likewise, the agency follows a similar-but-different path... one that follows a biennial clock that corresponds with the North Dakota legislative calendar. Much of the administrative planning for the agency begins a year early with development of budgets. For example, our 2005-2007 budget proposal will be submitted by August 2004, well in advance of the next legislative session and over eighteen months before its implementation date of July 2005. Imagine your business settling in on a budget that ends nearly three and one-half years after you begin estimating and planning.

There is a point to this topic. It is difficult enough to predict an organization's budget needs three to four years out;

- Ken Bertsch State Seed Commissioner
- Steve Sebesta Director, Field Seed Program
- Steve Marquardt Director, Potato Program
- James Swanson Seed Regulatory Manager
- Joe Magnusson Seed Certification Manager
- Mark Hafdahl Seed Laboratory Manager
- Jeff Prischmann Diagnostic Laboratory Manager
- Kris Nicklay Administrative Officer
- Galen Briese Field Seed Specialist
- Mike Oostewijk Potato Program Supervisor

budgeting for program changes in this industry is what many would fondly refer to as a "crapshoot." Please excuse the vernacular, but the process of predicting, estimating and then explaining the many what-ifs in the seed industry to the legislature in budget terms is a bit of a challenge.

The Seed Commission is completing a long-range planning (LRP) process designed to assist our agency in focusing the budget and program development processes on more clearly defined goals. The LRP process was launched in November 2002, went through an industry input and commission review phase in 2003, and is nearing final review and approval this month. While valuable for budgeting, the real impact will be visible as programs and services of the Seed Department evolve over the next five years.

As with most planning processes, development of organizational vision and mission statements are important in focusing thought and discussion. I think our vision is ambitious but realistic; our mission statement is right on the mark:

Vision

The North Dakota State Seed Department is an internationally recognized leader in services for the seed industry.

Mission

To assure integrity of the seed industry through a commitment to client service and product quality

Interestingly, we found during the planning process that one goal kept

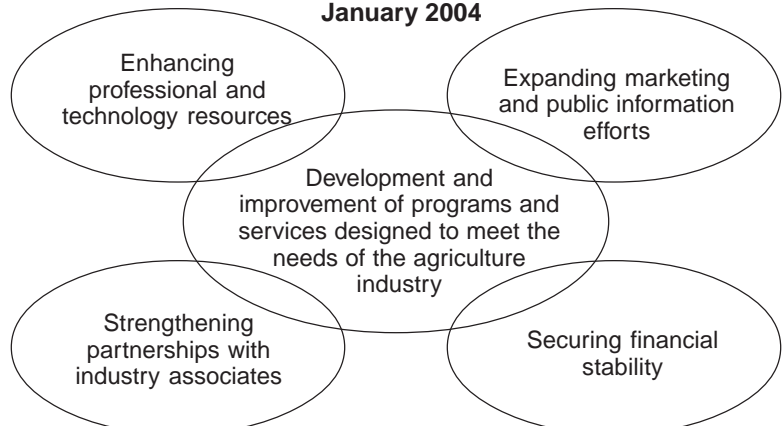
surfacing during discussion; **developing and providing services that meet industry needs** was the central point around which all other organizational goals revolved. In the State Seed LRP, the surrounding goals are internal in nature, intended to provide the agency with a focus to promote achievement of our basic and central goal. The diagram below gives a visual look at the five major goals.

Each organizational goal is complimented by numerous objectives that have been developed in the planning process. Similarly, our staff, through development of program strategies, will pursue the objectives. The goals will remain constant over time, the objectives may change according to new industry needs, and the strategies will evolve or change on a yearly basis.

We will post the final version of the Seed Department LRP on our website after final approval by the Commission. Certainly, the entire LRP document will provide better insight than this brief review. I hope that readers will take a look at the "pathway" we intend to traverse in the next few years and see if the direction we intend to pursue matches your service needs. At the very least, I hope you see the effort by your commission and staff to pursue a future for the Seed Department that is based on intense review and discussion, and with input from the industry.

Best wishes for a safe and profitable new year.

NDSSD Long Range Plan: Draft January 2004



Apply Past Experiences to Improve Your Processes

Steve Sebesta

On the cusp of a new year, I once again realize that old habits are hard to break. Poring over data is a habit for me. Twenty years as a plant breeder has conditioned me to collect as much data as possible and scrutinize it closely, for knowledge is found in the numbers. Without data we cannot possibly measure our progress nor make logical plans for the future. Data gives us a rear view of where we have been, a snapshot of where we are at the moment and a roadmap of where we are going. Hopefully that roadmap is guiding us to where we want to be at the end of the journey.

Looking back at our numbers for 2003 provides some insight into how successful we were as an agency, and more broadly, as an industry. In 2003 the department provided field inspection and certification services for nearly 900 growers. We inspected a record number of acres, greater than 380,000. What impressed me the most, being relatively new to this side of the seed industry, is that greater than 95% of the acres passed inspection. This astounding success rate indicates that the seed growers are extremely quality-conscious and know what measures to take to produce a quality product.

While we should all be impressed with the success and strive to continue that excellent performance, I also look at the numbers and understand that almost 20,000 acres didn't pass inspection. These acres don't necessarily mean failure as much as opportunities for improvement.

Nonetheless, an examination of the most common reasons fields failed inspection may assist all growers, even the most experienced, to improve their processes. Descriptions of specific causes, all of which are controllable, follow.

■ **Planting on an ineligible field.** Several applications were rejected because seed was planted on ground that produced the same kind of crop

the previous year. An example is spring wheat following spring wheat. The only situation in which this scenario would be acceptable is if the previous crop was the same variety and the field had been inspected by NDSSD. Growers need to be aware of problems caused by volunteer crops. We have noticed volunteer small grains from three years previous. This problem is exacerbated by dry weather in which seed remains dormant for long periods.

- **Planting ineligible seed.** Several applications were rejected because the class of seed was ineligible. In some cases the Certified class was planted, which of course, may not be re-certified. In other cases the supporting documentation, i.e., seed tags, contradicted either the seed planted or the seed lot listed on the application.
- **Lack of isolation.** Perhaps the most common reason for rejection last year was the absence of required isolation strips. Isolation strips are required to prevent physical contamination of seed at harvest. Whether left blank at planting or mowed, sprayed or disked after emergence, isolation strips **must** be in place **before** the inspector arrives.
- **Weed infestation.** If the inspector determines that the amount of weeds in a field will present significant problems for conditioning, the entire field or portions of the field may be rejected. Small areas may need to be spot sprayed with a product such as glyphosate. Hand roguing may be warranted to remove prohibited weeds such as nightshade.
- **Harvesting prior to inspection.** Unfortunately, a few fields were lost because they were harvested before the inspector was able to inspect the field. In other situations, combines were in the field when inspectors arrived. Since the foundation of seed certification is the field inspection,

harvesting prior to inspection will certainly lead to a rejection. In crops such as edible beans where diseases such as blight and anthracnose and weeds such as nightshade are potential problems, harvesting before inspection means certain failure **without exception.**

Growers are urged to review last year's results to determine whether changes are necessary. For information on field inspection standards go to the Field Seed Program section of our website, www.ndseed.com

Check Out the State Seed Website

Looking for more information about seed certification or seed laws? How about field or lot-specific information on seed you produced? Direct your mouse to the State Seed Department website, www.ndseed.com. Perhaps the most important tool on the site is the ability to access field inspection and test sample data online. Over the last month our staff has been busy upgrading the website to make it more informative for our customers. Upgrades will be added over the next several weeks so check back often.

Thank You

Thanks to all the seed growers, conditioners and retail facilities for another great year. Obviously, the region's farmers recognize the value of planting high quality certified seed and that awareness correlated with increased acres in 2003. NDSSD inspected more than 380,000 acres last year.

Handle Seeds Gently

Mark Hafdahl

Last year the weather at harvest time was excellent in terms of getting the job done. The main problem that was encountered was that seed moisture was very low in many cases. Ideally, large-seeded legumes should be harvested at 14 to 16% moisture. What actually occurred was that seed moisture was, in many cases, 8 to 10% moisture. This situation often causes damage to the seed during harvest and all the subsequent steps through cleaning. The reason large-seeded legumes are so susceptible to damage is the embryonic axis of the seed lies on the outside of the seed and is very thin. If the seed is very dry or frozen the embryonic axis is brittle and cannot withstand much abuse. While it is impractical to adjust the moisture of the seed there are some things that can be done to minimize damage after harvest.

Handle Gently

The use of augers to move seed probably does the most damage to seed even if the moisture levels are high. Conveyers are probably the best replacement for augers. There are other replacements for augers that are also gentler on seed.

Dropping large-seeded legumes can also cause damage. Seed dropped from five feet will have a speed of 12 miles per hour at impact, from 15 feet the speed will be 21 MPH and from 30 feet the seed will be traveling at over 29 MPH. We all know what these speeds would do to a car and they will do the same to your seed. The solution to this is a let-down ladder. A let-down ladder will break the distance into a series of steps and thus reduce the velocity at the bottom.

Handle Less

When the moisture content of large-seeded legumes is low, the fewer times they are handled the better. Some producers condition their seed right off

Seed Directory Addendum

The following two fields passed field inspection.

Omega Flax

County	Name, City	Phone	Class	Acres	Numbers
Mountrail	Johnson, Tim	701-628-2409	R	140	S0311577

Drummond Barley

County	Name, City	Phone	Class	Acres	Numbers
McHenry	Lee, Jim	701-722-3667	C	83	S0314158

The following individual is an Approved Conditioner for 2004.

Gefroh Farms, 1970 85th St SE, Hague, ND 58542.....701-336-7631

The following varieties are protected under the 1994 amendments of the Plant Variety Protection Act.

PLANT VARIETY PROTECTED - PVPA 1994 Title V Option

Can only be sold by variety name as a Class of Certified Seed

DURUM - Pierce

WHEAT - Briggs

the combine to reduce the number of times the seed is handled.

A situation that we see every year is that samples are taken right off the combine for a pre-germ test. The seed is then put in a bin for storage and taken out of the bin for conditioning and returned to the bin. After all of these additional steps the germ sometimes drops to unacceptable levels and the owner is not very happy.

Understanding the physical characteristics of seed, along with harvesting, handling and storage precautions will help ensure a better seed product.



Potato Post-Harvest Test

Steve Marquardt

(January 4, 2004: Homestead, FL)

The planting and growing of the winter test plot has gone smoothly so far this year. Tom Weippert and Graham Smith planted this year and reported that the plot is in better shape than previous years. They were very optimistic upon returning home from planting. We were in regular contact with the plot cooperators and there haven't been any problems to date. We arrived for reading the plot yesterday and immediately inspected the plot and plots from other states as well as local commercial fields. North Dakota's plot is in fine shape. In general, all of the winter test plots look promising for yielding good results.

Reading of red varieties began immediately, with Burbanks, whites and miscellaneous varieties to follow. We expect all winter test evaluations will be complete prior to January 23. Results will be sent to growers and published upon completion.

North Dakota winter test plot as it appeared January 4, 2004.

Variety Selection: The First Step Toward Success as a Seed Grower

Steve Sebesta

What will be the hot variety next year? Will you have what your customers demand? These are two questions that seed growers should be asking themselves now in order to prepare for the upcoming production season.

Keeping up with all the new variety introductions can be a real challenge. And how do you know which older varieties to continue growing or which ones to drop from your lineup? Unless you possess a crystal ball, you may want to do some homework before ordering and purchasing seed for this season. One significant benefit from increased efficiencies in research programs is that product lifecycles continue to shrink. This can be a real challenge in managing your product inventory.

There are a number of things growers should consider when choosing a variety:

Performance: Carefully review the performance of the varieties in area trials. Multiple location data is useful, but local data is very important in determining adaptation to your soil types, climatic conditions and disease and insect pests. Select varieties with the genetic potential to perform well on your farm. Chances are it will perform on your customers' farms also.

Demand: Obviously, growers already know what varieties sold well last year. High performing varieties create their own demand. But a review of your production and sales records may help you fine-tune your plans for this year. Talk to your usual customers to find out what their plans are. Be proactive. All things being equal, i.e., price and quality, customers do business with suppliers who provide the best service. Communicating with your customers conveys the message that you want to earn their business and takes some of the guesswork out of variety selection.

Where to find information: There are a number of resources available to growers to help them choose the best varieties to produce.

Seed Directory: Published and distributed every fall, the directory lists all varieties that passed field inspection. Use it to determine what varieties are most prevalent and in demand.

Seed Guide: Published and distributed annually in December, the guide contains similar information found in the directory but also contains performance data from NDSU trials, interesting articles on timely topics and ads from seed industry suppliers.

State Seed Website: Lists all varieties in the certification program each year and links to variety descriptions and other useful sites.

University Websites: Tremendous resource for trial data, production information, etc.

Extension publications: Available in either print or electronic format.

Variety brochures: Printed and distributed when new varieties are released.

Crop Improvement and Seed Association: The CISA is responsible for the initial increase and promotion of new NDSU varieties. The association is responsible for the equitable distribution of Foundation class seed of new varieties and maintaining genetic and physical purity during increase. A primary goal of the association is to promote access to clean genetics at a reasonable price. I urge all seed producers to get more actively involved with their county association.

Seed Transactions, Seed Sales Agreements, Prepaid Seed Contracts: What Is Required of the Buyer And Seller?

Jim Swanson

The North Dakota Seed Law contains a section (4-25-02) which is very specific on what is required when a seed sales agreement or contract is written that involves a deposit or prepayment in part or in full, and provides for a delivery at a later date.

Typically, these requirements are in place when a producer orders seed through a seed company that distributes seed on a widespread basis. Quite possibly, small grain seed that is produced, processed and sold on a more localized basis may not have these requirements in place. It is important that both the buyer and seller be sure that these requirements are outlined specifically when the seed purchase is contracted.

Note: This section of the law applies only if a deposit or prepayment is made.

The following must be on the sales contract.

1. The date and place of the transaction.
2. Signature and address of the buyer and seller.
3. The number of units and price per unit.
4. The total value of the transaction.
5. The amount of the full or partial payment.
6. The kind and variety or kind of seed to be delivered.
7. The class of seed to be delivered. If not certified, minimum germs and purities must be stated.
8. The date of delivery, or latest date at which delivery is to be made.
9. The place of delivery.

Seed Journal Format Changes

It's been a number of years since the Seed Journal has seen a facelift. This issue is the first in the new format. Let us know what you think... positive or negative.

North Dakota State Seed Department

State University Station
P.O. Box 5257
Fargo, ND 58105-5257

Non-Profit Organization
U.S. Postage
PAID
Fargo, ND
Permit No. 229

NDSSD Calendar

February 5

Northern Soybean Expo – Ramada Plaza Suites, Fargo

February 10-11

National Hard Spring Wheat Show – Airport International Inn, Williston

February 16-18

KFYR Agri-International – Bismarck Civic Center, Bismarck

February 18-19

International Crop Expo – Alerus Center, Grand Forks

February 18

ND Certified Seed Potato Growers Annual Meeting – Alerus Center,
Grand Forks

March 2-7

North Dakota Winter Show – Valley City