



The North Dakota Seed Journal

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Newsletter of the North Dakota State Seed Department

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Dome Test Results: What Do They Mean?

Jeff Prischmann

The dome test is currently the method used by the seed department to detect bacterial blight in edible bean. Developed by researchers at North Dakota State University the dome test was designed to detect bacterial blight pathogens of edible bean that cause common blight, halo blight, and bacterial brown spot. Collectively, these three diseases are known as bacterial blight. The dome test is capable of detecting these pathogens at relatively low levels in bean seed and thus is able to provide a means of comparing the blight potential of different seed lots.

The dome test actually measures symptoms of bacterial blight. These symptoms are typically water lesion spots located on the bottom of bean leaves during a dome test. Bean seedlings from a sample are inoculated with bacteria extracted from the same sample. This re-inoculation step produces an enhanced or concentrated effect and allows the test to detect low levels of blight bacteria.

The results of a dome test are reported as the average number of water lesion spots observed on 7-10 day old bean plants. The average number of lesions is the same as the percentage of leaf area covered by water lesion spots. The average number of lesions falls into a range that corresponds to a dome test score or rating number. The chart on the right shows the rating scale used for dome tests.

The pass/fail level has been set at 18.9. For example, a bean sample with a dome score of 4 or less will pass the



Diagnostic lab technician scoring a dome test.

Dome Test Rating Scale

Dome value	Lesion Range
0	0.0-0.9
1	1.0-1.9
2	2.0-4.0
3	4.1-9.0
4	9.1-18.9
5	19.0-37.0
6	37.1-75.0
7	75.1-100

test. Any sample receiving a test score of 5 or greater will fail the test.

What do these results mean? Typically, test results can be affected by the type of bean and when the test is conducted. For example, pinto beans typically receive dome test scores of 3 or 4 on

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From the Commissioner's Desk

I noticed recently that my tendency is to over-explain things. Actually I was reviewing Seed Journal articles and was once again reminded, visually, that I could be more concise. Our staff is fairly kind on this one; they patiently listen to the verbal explanations.

I know why this problem exists; it's the producer/educator/lobbyist background I am blessed/cursed with. Stubborn (the farmer), overdoing (educator), convincing (lobbyist); a terrible combination for one seeking brevity.

I am breaking the mold in this column. Here is today's topic: If you plant a field of Foundation or Registered seed, PLEASE APPLY FOR CERTIFICATION.

Every year, the Seed Department gets requests from producers for us to certify a seed lot that has not been field inspected. It may be on eligible ground, from eligible seed sources and otherwise meets the criteria, but has not been field inspected. We cannot, except under the most extreme circumstances, do this. Our programs are built primarily on the visual inspection criteria for seed purity that can be accomplished

Ken Bertsch State Seed Commissioner
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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

through a field inspection process; thereby guaranteeing the entire seed lot meets standards. The only opportunity our trained staff has to examine the entire seed lot is in the field; a lab purity (final certification) only applies to the representative sample. Neither part of the process can stand alone.

Each year, someone has a seed lot of a variety in demand that was not field inspected. They may have forgotten to apply, they may not think it's worth the cost or effort, "this variety won't sell anyway," "the dog ate my application," we hear it all. We hate to do it, but we must deny the request since we cannot provide the purchaser enough assurance that the seed lot is of high quality. Supply management cannot interfere with the main goal of quality assurance. A good rule of thumb: when in doubt get it certified, it's inexpensive insurance for profit potential.

I hope this is concise, I hope it makes sense; mostly I hope you'll call one of our staff or me if you have questions or comments. We'll be happy to visit with you about the value of certifying.

Accelerated Aging Test

Mark Hafdahl

Accelerated aging was initially developed as a test to estimate longevity of seed in warehouse storage. In the early 1970s this test was shown to be a good predictor of stand establishment in soybean. In recent years the accelerated aging test has been a popular and useful seed vigor test for many kinds of seed.

According to the Association of Official Seed Analysts seed vigor "comprises those seed properties which determine the potential for rapid, uniform emergence and development of normal seedlings under a wide range of field conditions."

The accelerated aging test is conducted by placing seed on a screen, which is suspended over water in a small plastic box. The lid is sealed and placed in an incubator set at 41C. for 48 to 72 hours depending on kind. At the end of the aging process the seed is planted under conditions used for the standard germination test. At the end of the germination period, those seeds producing normal seedlings are considered vigorous.

To be useful, accelerated aging results should be compared to the results of the standard germination test of the same sample. In general the accelerated aging results should be within about 15% of the standard germination results for high vigor seed lots. Medium vigor lots would be within 16 to 30% of the germination.

It is important to note that the accelerated aging test is not a standardized test. There are many more variables involved in this test than in the standard germination test. This means that the results are not as reproducible as the standard germination test, either within or between labs.

Medium and low vigor seeds will perform similar to the standard germination if planted in favorable conditions such as warmer soil, moist but not wet soil, etc.

Managing Fields to Prevent Contamination by Other Crops

Steve Sebesta

To no ones surprise, a number of seed samples fail final certification every year due to contamination by “other crop” seeds. So far this year, roughly seven percent of the samples that have come through the lab have failed. Most often the cause is due to excessive “other crop.”

Typically, “other varieties” are identified during the field inspection by a qualified field inspector. Inspectors are trained annually to identify other varieties, however, even a veteran inspector may not find every “other variety” in a field. Identifying other varieties in an identical crop, e.g. wheat in wheat, is obviously more difficult than finding oats in wheat. Detecting “other crops” is usually easier. However, finding wheat in durum and oats in naked oats is always a challenge.

The sampling method is another factor. During an inspection inspectors will look for off type plants in a specific number of heads or plants at ten sample sites within a field. The results of what they find at these sites are used to calculate the percentage of “other varieties” and “other crops.” Off-types found between sample sites are also noted but are not part of the percentage calculation. This information is used to determine whether a field passes or fails the inspection. Assuming a field passes, the percentage and kind of “other crop” contaminants found in the inspection will help the conditioner properly adjust machines to separate the contaminants from the seed.

Seed growers have the greatest ability to control contamination in their fields.

Start with clean seed. Even Foundation or Registered classes of seed can have different levels of “other crops” yet still meet standards. Ask for the best seed possible and check the purity analysis. All seed is not equal!

Select the right field. Pay attention to rotations. Each crop has specific land requirements meant to help growers

avoid problems. In the worst case, a field application may be rejected immediately if the crop history is not allowed. No-till farming and dry conditions contribute to the problem of volunteers also. No-till farming does not adequately bury seed lost during harvest and that seed can remain a source of contamination for several years. Inspectors have found seeds and even intact wheat heads on the soil surface several years after that crop was harvested. Conventional tillage practices do not ensure a clean field if adequate moisture has not been available to germinate seed. We have found volunteer plants that could be traced to production fields from three years previous.

Rogue. Growers are encouraged to rogue seed fields to remove any off-type plants. Make sure the entire plant is pulled and completely removed from the field. Don't leave the plants in the field or they could get harvested.

Isolation. Growers are required to isolate seed fields from nearby inseparable crops. For most crops an isolation

strip of five feet is adequate to avoid mechanical mixtures. Some crops require greater isolation from the same kind of crop if cross-pollination is a potential source of contamination, e.g., 660 feet for rye. Isolation strips may be left uncropped, mowed, or sprayed. Isolation strips must be in place before the inspector arrives. Examples of inseparable crops are listed below. Consult the North Dakota Seed Certification Standards for details.

Producing a quality seed product is achievable through proper planning and a little diligence. Eliminating potential sources of “other crop” contamination will increase the probability your seed will pass final certification and add value to your business.

Examples of Common Inseparable Crops

Contaminant	Crop
Barley	Wheat, oats
Wheat	Barley, durum, oats
Rye	Wheat, barley, oats
Corn and sunflower	Soybeans

Dome Test continued from page 1

average while kidney beans usually score higher, in the 4 or 5 range. Navy beans typically score in the 2 to 4 range and tend to be somewhat lower than pinto beans. It should be noted that the level of live bacteria may decline over time. Thus, a seed lot tested today may have a higher score than the same sample tested 2 months later.

So far this season, most dome test results have been below the normal levels expected. Primarily due to favorable growing conditions in 2003, most dome test results have been in the 2 or 3 range this year.

The dome test is a requirement for edible bean certification in North Dakota. In addition, many growers who

are interested in checking the quality of their own seed will use this test as an indicator of an acceptable seed lot. This test usually requires 2-3 weeks to complete and typically requires about 3 pounds of seed depending upon the type of bean.



Edible bean seedlings growing in dome.

Seed Labeling: Who Must Label and Exemptions from Labeling

Jim Swanson

With spring planting just around the corner, we will soon see a much higher level of activity in the promotion and marketing of seed. It is important that anyone who is labeling and selling seed be familiar with the rules and requirements that must be met when involved in seed business.

The North Dakota State Seed Law states that any seed publicly offered for sale must be properly labeled and identified. This requirement applies to all seed, from the smallest flower or vegetable seed packet, to the large seed lots that are held for sale by large volume seed dealers. Each seed lot should be homogeneous and the label should accurately represent the lot.

What constitutes a public offer for sale?

Any notice, whether it is a newspaper ad, a pamphlet or mailing, a notice posted on a bulletin board of a local elevator or café, or any other type of public notice would be categorized as a public offer, and thereby would require that a label be provided to the buyer of that seed.

How does a person obtain a seed label?

A seed label must contain specific information, such as, purity, germination, test date, state or country of origin, lot #, etc. Any certified seed will automatically have that information attached to it through the final certification process. Seed that is not certified must have a purity and germination test completed on a representative sample of the seed lot to provide accurate information for labeling.

The State Seed Department can conduct these tests in our seed laboratory and can also provide assistance in creating or obtaining a label.

How about seed offered for sale “in the dirt”?

Technically, this is not seed until it is conditioned. However, some grain/seed is sold and purchased in this manner. The seller is responsible for the integrity of the seed in respect to the presence of restricted and prohibited weeds and other factors that may be limited by labeling laws. The seller is also responsible for providing a label that represents the seed lot. Seed of protected varieties may not be sold in this manner except to an approved conditioner or bulk retail outlet who must complete final certification.

What seed is exempt from labeling requirements?

The State Seed Law provides an exemption from labeling for seed that is sold by a farmer who grows only his own seed and sells only his own seed directly to another farmer for his own use. The exemption does not apply if a third party, an agent, a broker, or any type of public notice is used to facilitate the transaction. **The exemption also does not apply if the variety offered is patented or a Plant Variety Protected variety.**

Field Inspection Fee Increase Proposed

Ken Bertsch

For approximately twenty years the seed department has been successful in holding field inspection costs at a stable level. In light of increased costs of doing business, the Seed Commission has discussed and given preliminary approval for a fee increase in Field Seed and Potato field inspection programs.

Financial and service program reviews, including fee increases, have been studied for several months and department-wide program reviews are continuing. Field Seed field inspection fees are proposed to increase effective this year to \$2.00 per acre for most crops requiring a single inspection. Crops that require two inspections will cost \$3.00 per acre and those that require three inspections will cost \$4.00 per acre. Meanwhile, Potato field inspection fees are slated to increase from the current \$18 per acre to \$20 per acre.

In terms of Field Seed programs, fee related information was discussed at the North Dakota Crop Improvement and Seed Association district meetings in early December. At that time, comparisons with our neighbor states were presented. Following those meetings we examined past field inspection statistics and developed several different pricing scenarios, and evaluated the pros and cons of each before presenting fee proposals to the commission. Our goal remains balancing agency fiscal health with impact on growers.

In spite of a fee increase, seed certification in North Dakota remains a good value for seed producers. Compared to surrounding states, North Dakota's field inspection program is still very economical. Two states require association fees; two charge an extra fee for additional varieties or additional classes; one state has an additional fee for each field. No additional fees are charged in North Dakota.

Additional fee changes proposed include the following:

- Raising the minimum inspection charge to \$20 for all fields less than 10 acres.
- Increasing the late fee to \$3.00 per acre for one-inspection crops.
- Raising the price on edible bean field inspections to \$3.00 per acre (two inspections required). \$4.00 per acre late fee.
- Raising the price on sunflower field inspections to \$4.00 per acre (three inspections required). \$5.00 per acre late fee.
- Retaining \$20 of the application fee on eligible cancelled applications.

It is anticipated that the proposed fee changes will simplify the application process and provide additional incentive for growers to meet deadlines, which in turn will improve department efficiencies. Final Seed Commission action on fees is expected in March.

Advancing Potato Selections

*Dr. Susie Thompson
NDSU Potato Breeder*

North Dakota certified seed growers are currently increasing and evaluating three new potato selections from the NDSU breeding program. Grower experience and interest so far has been positive for all.

ND3196-1R is an early maturing, red-skinned selection suitable for the tablestock market. It produces medium yields of round, smooth, white-fleshed tubers with shallow eyes that store well. Vine size is small to medium and vine maturity is medium-late. Strengths include production of a high percentage of marketable tubers, maintenance of red skin color in storage, and strong dormancy. The strong dormancy may contribute to erratic emergence if tubers are not properly prepared.

ND2470-27 is a cold chipping selection also suitable for tablestock and has very high yield potential. The vine is medium sized with white flowers and has medium maturity. Tubers are round, smooth, shallow eyed and have white skin and flesh. Specific gravity is medium. Strengths include low sugar accumulation in storage and acceptable chips from 42F storage. A weakness may be the medium specific gravity in most production environments.

ND5822C-7 is an exceptionally high yielding, dual-purpose, cold chipping selection most suited for use during the mid to late storage season. It has a large vigorous vine, with white flowers and medium late to late maturity. Tubers are round, smooth, and shallow eyed, with bright white skin and white flesh. Strengths include attractive appearance, low sugar accumulation in storage, and preferential avoidance by Colorado Potato Beetle. Weaknesses include noted hollow heart in large tubers over 10 ounces, and subtle expression of PVY at low titer, particularly.

2004 NDCISA Award Winners Announced

Premier Seed Grower Award

Richard Tweeten, Washburn, ND was awarded the Premier Seed Grower Award at the North Dakota Crop Improvement and Seed Association annual meeting in Bismarck February 18.

Richard has been producing certified seed for over 30 years and in the past ten years he has marketed over 130,000 bushels of certified seed. Richard is an active member of the McLean County Crop/Ag Improvement Association and increases new NDSU varieties of wheat, durum, pinto beans and flax. Richard and his son Rick own and operate an approved seed cleaning plant.

Richard is active in many organizations and has served on advisory committees for FFA, South-Central ND Extension and the North Central Research Extension Center. He also assisted in the development of the Mercer County Crop Improvement Association.



Rick, Kitty and Richard Tweeten

Distinguished Service Award

This year's Distinguished Service Award was presented to John H. Fisher and sons Neil and Jay Fisher.

John H. Fisher was born near Tappen, ND in 1916. He ran an elevator during the dirty 30's and then attended NDAC (now NDSU). In 1947 he was elected president of the North Dakota Crop Improvement Association and was instrumental in the development of the concept for a seedstock increase farm near Casselton. The plan received unanimous support from college administrators and NDCIA board of directors. Mr. Fisher's foresight has flourished to become the present-day NDSU Agronomy Seed Farm.

Neil Fisher is administrator of the North Dakota Wheat Commission. Neil joined the commission in 1978 as a marketing specialist and was named deputy administrator five years later. He became the administrator in 1998. Fisher is responsible for implementing producer-funded programs designed to increase the economic well-being of North Dakota wheat producers by developing, promoting and servicing domestic and international markets. Fisher travels the world promoting North Dakota spring wheat and durum. He also serves on the State Board of Agricultural Research and Education. Neil is a graduate of NDSU with BS and MS degrees in Ag Economics.

Jay Fisher is Director of the North Central Research Extension Center in Minot and Northwest District Director for NDSU Extension. He was hired as an area agronomist by the NDSU Extension Service in June 1978. He held that position until 1988 when he also became assistant to the district director of the NDSU Extension Service in Minot. He was named Northwest District Director in 1990 and REC director in 1994. Jay holds BS and MS degrees in Agronomy from NDSU.



Jay Fisher, Neil Fisher and Del Gates

Congratulations to this year's award winners.

North Dakota State Seed Department

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NDSSD Calendar

June 15

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

July 1

Bulk certificates due

July 15

Field inspection applications due for soybeans, buckwheat and millet

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. 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.