

Date:
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Why Do We Care About Seed Quality?

“There is a lot of valuable information in the certificate of analysis, and as producers, we should be using this information when we buy seed.”
~Bill Wilson

Seed Testing Labs

Seed Check Technologies Inc.
http://www.seedcheck.net/seedcheck_contact.htm

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For more Forage Facts
visit:

www.peaceforage.bc.ca

Introduction and Objectives

Your seed tag and a certificate of analysis have a great deal of information. You just need to know where to look. With a seed tag and a certificate of analysis you can ensure that the seed you are paying for is of high quality.

The objectives of this Forage Fact are:

- ◇ To learn about terms and indicators to describe seed quality.
- ◇ To understand why we care about seed analysis and seed tags.
- ◇ To know how and where to send seed for analysis.

Seed Quality

Germination is the % of seeds that will develop into healthy, viable seedlings under ideal seeding conditions.

Vigour on the other hand, tests how well a seed will perform under stress and poor seeding conditions. This represents the lowest performance we would expect to see under stressful seeding conditions.

Both germination and vigour will decline as the seed ages. They will also decline with any seed deterioration, which can start as soon as the seed is mature. Seeds need to be handled carefully during harvest, storage and processing to prevent any damage. Seed damage and deterioration is common with larger seeds, especially pulses. Other causes of damage include (see photos to the right):

- ◇ Mechanical damage
 - ◇ Herbicide damage
 - ◇ Respiration during harvest/ storage
 - ◇ Temperature stress/ frost damage
 - ◇ Insect damage/pathogen infections.
- Seed vigour and germination are so linked, tests often only include germ.

Seed Tags & Seed Analysis

The seed tags and seed analysis are tools that give you what you need to know about the seed you are buying. If there is problem with the seed, the seed tag can be used to track the seed lot back to the grower, the field, and the inspector. The certificate of analysis can tell you about weed seeds, inert matter, germination, and grade. The next 2 pages explain the terms used on a certificate of analysis.



Mechanically damaged seeds



Dead barley (left) & live barley seed (right).

Peace River Forage Association
of British Columbia





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CANADA
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PH: (222) 555-1212
FAX: (222) 555-1313
EMAIL: Genericseedtesting.com

Cert. No./ N° de certificate
XXXX-XX

Accredited by CFIA to conduct tests in accordance with the laboratory's scope of accreditation (Genericseedtesting.com) and the Canadian Methods and Procedures for Testing Seed. CFIA Accreditation number XXXX.

REPORT OF ANALYSIS/ LE CERTIFICAT D' ANALYSE

THIS CERTIFIES that a sample of
JE CERTIFIE par les presentes qu'un echantillon de semence de PEA LENCA

designated
designe Certified XX-8030001-402 LOT 12 - 854

was received from LEGUMES INC.
a ete recu de SOMEPLACE, SOMEWHERE

and was tested with the following results/ et a ete eprouve avec les resultats ci-dessous:

No. Per/N° par:	KG		
Prohibited noxious/ Nuisibles interdites	0	Other weed seeds/ Graines d'autres mauvaises herbes	Seeds of other crops/ Graines d'autres plantes cultivees:
Primary noxious/ Nuisibles principales			0
Total (Primary/ principales)			
Secondary noxious/ Nuisibles secondaires			
	0		
Total (Primary plus secondary noxious/ Nuisibles principales et nuisibles secondaires)	0	Total weed seeds of all kinds/ Total de graines de mauvaises herbes de toutes especes:	
		0	
Pure Seed/ Semence pure	%	Other crop Seeds/ Graines d'autres plantes cultivee	%
Germination	85 %	Hard seeds % Graines dures	%
		Germination, incl. hard seeds % Y compris les graines dures)	%
			Inert Matter/ Matiere inerte
			Pure living seed % Semence pur vivante

Date Tests Completed: February 4, 2012

OTHER DETERMINATIONS/ REMARKS/ OBSERVATIONS:

*Advisory Test: Achochyta .05 %

CSAAC Seal

June Doe

Supervising Analyst/Lab Manager

*Advisory test – method not as prescribed in the Canadian Methods and Procedures or accredited by CFIA.

1

This number is assigned by the lab for each unique sample and the test results. If contacting the lab be sure to have your unique number ready, so they can look it up in the system. It is important that the number on the seed matches the lot number on the certificate.

2

Seed labs accredited by the Canadian Food Inspection Agency (CFIA) will have this statement or a similar statement providing some information about what tests they are accredited to conduct and their accreditation number.

3

For most commercial agricultural crop kinds in Canada (i.e., crop kinds listed in Schedule II to the *Seeds Regulations*) the variety name may only be stated on a report of analysis if proof of pedigree (e.g., the crop certificate number) is provided with the submitted sample.

4

The numeric results are reported as per the quantity stated in the regulatory standards. In addition, the actual quantity analysed may also be stated on the report.

5

Prohibited noxious weeds (Class I) are weeds that federal government has defined as prohibited to sell or import under the Seeds Act. Primary and Secondary noxious weeds are not considered invasive and are allowed in very minimal quantities. Since these are federal lists, some important regional noxious weed priorities can be missed.

6

All the results required to assign a seed grade will be provided on a Report of Analysis from an Accredited Seed Lab. If you require more information about your test results (e.g., length of the germination test) you can contact the lab as there is additional test information is recorded at the lab.

7

Germination is the percent seed that will grow within the test period, usually 21 days. The test gives a % germ plus % hard seeds (or dormant seeds). In addition to sprouting, the germinating seed needs to have roots and shoots free of deformities and disease. % germ is used to calculate pure live seed (PLS).

8

The date that the test was completed is stated on the report. If the date is longer than six months ago a re-test is recommended for checking germination rates.

9

Is the CSAAC seal (i.e. member of the Commercial Seed Analysts Association of Canada) present? Many Accredited Seed Analysts in Canada are members of the CSAAC.

10

The report is signed by the person at the Accredited Seed Lab who has conducted the test or is taking responsibility for the test results (e.g. Lab Manager or Accredited Seed Analyst).

11

Reports of Analysis from Accredited Seed Labs may include a statement that a test method was used other than described in the Canadian Methods and Procedures for Testing Seed (M&P) e.g. AOSA Rules from U.S. Test methods:

- ◆ may not follow the M&P or Canadian rules
- ◆ may be outside the lab's scope of accreditation
- ◆ there may not be an accreditation program
- ◆ these tests must be distinguished on the report (e.g., 'Advisory Test' or 'Non-Accredited Test').
- ◆ Buyer needs to be aware that weed seeds of concern in Canada may not be identified in U.S. tests or by AOSA Rules.

Dormant Seed

Viable seeds that do not germinate under favorable conditions during the test period.

Hard Seeds

Seeds that have impermeable coats that prevent the absorption of water. They do not germinate during the test period.

Dead Seed

Seeds that do not produce seedlings, but are not hard or dormant.

Fresh Seed

Seeds that do not germinate with moisture. They may be dormant.

Normal Seed

This is seed that has all of the essential structures that indicate the seeds ability to mature under favorable conditions.

Pedigreed Seed

Pedigreed seed is genetically pure seed, that can give assurances of variety, purity, and vigor. It can be traced back to the certified seed grower and all the way back to the plant breeder.

Common Seed

Common seed is seed that does not meet one or more of the qualifications of Pedigreed seed.

PRRD Strategic Noxious Weeds Plan

Every year the PRRD puts out a Strategic Plan for noxious weeds, where it identifies regionally noxious weeds to watch for at: <http://prrd.bc.ca/wp-content/uploads/page/invasive-plants/2015IPCPRRD-Strategic-Plan-and-Profile.pdf>



Night-flowering catchfly

Fun Seed Facts

- ◇ The longest recorded seed dormancy was 2000 years.
- ◇ The coco de mer palm tree grows seed that can weigh up to 17 kg. These seeds take 6 to 7 year to mature and another 2 years to germinate!
- ◇ The smallest seed in the world is the epiphytic orchid seed, with roughly a billion seeds is one gram.

Noxious Weeds

Noxious weed problems on privately owned land are the responsibility of the land owner. So, when buying seed it is good to know if there are any noxious weeds in the seed. This can be done by reading the certificate that comes with your seed and not accepting seed with high amounts of weed seed. Preventing the weed seed from being seeded on your land is much less expensive than having to treat the weed problem.

Getting Seed Quality Info

Seed suppliers normally have the original germination tests, and need to be asked for the current germ test. For record keeping and tracking info it is a good idea to provide the following info: species, variety, lot number, seed count, desired test, your name, email, phone number, and the company name. Seed sent in for testing must be clean and not treated with fungicides. If the seeds are treated, then there may be extra cost, for cleaning .

Key Points to Consider in Seed Quality & Purchase

- ◇ Work with the seed suppliers to get all the information you can about your seed for seeding success. Always ask them for the certificate of analysis & seed tags.
- ◇ Ask for the certificate of analysis for each individual seed variety or seed lot used to in your seed mix.
- ◇ After seed has been stored over winter, ensure it is viable by getting the seed tested for germination in the spring.
- ◇ Keep in mind that if the seed is coated, there is a higher likelihood of a large drop in germination.
- ◇ Determine appropriate seeding rates using germination & plant vigor tests. Compensating for poor germination by higher seeding rates is not as effective as using good quality seed.
- ◇ Discuss noxious weed concerns and read the analysis. Know your regional high priority weeds and try to avoid buying seed when they are present. These weeds are often highly competitive and able to spread rapidly.
- ◇ Have a close look at the weed seeds and other crop seeds found in the certificate of analysis. For example, night flowering catchfly is a noxious weed in BC, that happens to be common in Ontario. Watch for this weed seed if purchasing alfalfa from Ontario.

Ultimately communicating effectively with your seed supplier or provider is critical for getting high quality seed and for successful seeding.

Thank You To Morgan Webb

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