

Quality Assurance & Regulations Overview with Chris Siladi & Angus Mellish
Saturday November 24th, 2012

Workshop Summary

This workshop will cover the specifics involved in seed testing, including: germination rates, laboratory testing versus seeding into field, seed vigour, and weed seed contamination. In addition, the workshop will cover essential quality assurance information, including: government requirements and regulations, CFIA web-site, off-types and rouging of open-pollinated crops, and genetic markers on hybrid crops. The breadth of this workshop is impressive, you don't want to miss this if you're considering seed production on your farm!

Workshop Notes

Seed Testing

Germination rates (not all seed types have high rates) -

- Many seeds of certain types of crops do not have high germination rates. This is most notable in herb seeds.
- Rosemary has a minimum germination rate of 30%, Thyme has a minimum germination rate of 50%. Most vegetable seeds do have minimum germination rates in the high 80's to the 90's. Just because the germination rate is low does not mean the seed is 'no good'.
- Germination rates are one way to measure a seeds quality and a low germination rate may not relate to bad seed. Many times seed is dormant but will germinate either under better conditions or the seed may be waiting for a few years to 'pop' as a survival strategy.
- The minimum germination rates are enforced by the CFIA and are listed on their web-site. These minimums are in place to protect the purchaser of the seed so that they know the time and labor expended readying the ground and sowing the seed will not be for naught.

Laboratory testing versus seeding into field -

- When seed is tested in a laboratory setting it may be tested on blotter paper, ready earth (a soilless growing medium), sand or paper towels.
- Certain types of seeds use certain types of methods but when a seed has a bad result another method may be employed.
- Sometimes because of the micro-nutrients or other substances such as acids and trace metals being present in the soil the germination rate can be much higher in the field than in the laboratory. There are times however when the opposite is true, for some reason the seed has a much lower germination rate in the soil than was obtained under laboratory conditions.
- Sometimes the reason the seed has performed worse in the field than the laboratory just cannot be figured out. It could be something as small as a dry period just after the seed has germinated and could even be that birds or other animals ate the planted seed.

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- Many labs will use acids and other methods such as vernalization to see if the germination rate of the seed is affected.

Seed vigor (what does this mean) –

- Seed vigor is a way of measuring the seeds force or power.
- A seed may germinate but not grow with a strong energy or to its optimum potential.
- Testing of the vigor of seed is not regulated by the CFIA and is not listed on a Canadian Seed Analysis.
- Older seed may be losing the genetics of itself along with the stored nutrients for the seeds first growth.
- This can be seen in small seedlings and sometimes with crops such as corn a period of cold stress may be exposed to the seedlings to see if they have a high vigor.
- Vigor is usually listed as a 1, 2 or 3 with 3 being the seed with the highest vigor.

Weed seed contamination (noxious versus prohibitive) –

- The other information listed on a Canadian Seed Analysis is the number of weed seeds that are present mixed in with the seed that you are purchasing.
- This is a very important fact for a grower to know. There can be noxious weeds present in the seed you are planting and could cause a weed infestation that would be difficult to get rid of.
- If a prohibitive weed seed is mixed in with the seed a grower is planting they may be starting a infestation of invasive weeds that will never be able to be eradicated.

Quality Assurance -

Government requirements and regulations (they are put in place for you) –

- Many growers fear the CFIA and will do anything to not have to work with them. This way of thinking is totally the opposite of what they should be thinking. The CFIA is there to help growers and make sure they are doing things correctly.
- Chris Siladi with over 15 years of working with agricultural departments throughout the world felt that the CFIA is the one of the most respectful, logical and easy to work with.
- On the CFIA web-site there are many things for growers to utilize to learn more about the CFIA and what its responsibilities are.

CFIA web-site (overview of ABC's of Seed Importation & AIRS)

- The 'abc's of seed importation' is a great section of their web-site for information pertaining to the importation of seeds into Canada. The 'airs' section is also very helpful and will give the total requirements for importation of seed. The urls for these sections are pasted below.

<http://www.inspection.gc.ca/plants/seeds/imports/abcs-of-importation/eng/1347740952226/1347741389113>

http://airs-sari.inspection.gc.ca/Airs_External/Decisions.aspx?lang=1

Off types and rouging of OP crops –

- All open pollinated (OP) plants varieties will naturally mutate and when a plant that exhibits different characteristics from the plant the seed came from it is called an 'off type'.

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- During seed multiplication productions of OP crops the plants that do not conform in all characteristics to the parent plant (off types) are isolated or totally removed. This action is named 'rouging'.
- Sometimes a natural mutation will exhibit a trait that is more desirable than the parent plant. This is when isolation is done and the plant is allowed to mature and produce seed but is not allowed to cross pollinate with any of the other plants. When the mutation has no apparent desirable trait that is when the plant is removed.

Genetic markers on hybrid crops –

- A hybrid is a seed that was produced from two known parent lines, one male the other female.
- The two parent lines are grown together and pollination is done by hand or in total isolation from other crops.
- When a seed multiplication production is done on a hybrid variety the way it is checked to make sure all pollination was done correctly is by a genetic marker. This is a test that looks at the genes of the original hybrid seed and matches the geneatics to the seed from the seed multiplication production.

Get to know your Seed Sales Representative and local CFIA person –

- It is good to build a relationship with your seed company sales representative and your local CFIA officer.
- Both of these resources are there to help a grower and it is beneficial to the grower to work closely with these people. Many times a call to either of these people can save a grower time, money and frustration.
- Having knowledge of the seed industry and government regulations is paramount to a grower. Attending conferences, seminars and visiting of seed company trials is a good way to learn and stay current with the industry.

How do you know the seeds are not GMO –

- At this time other than testing of the seed, the only way for a grower to know if a seed is GMO is by the seed company being a member of the Safe Seed Pledge.
- This pledge states that a seed company not knowingly sells GNO seed. It requests all of its suppliers not to send this type of seed to them.
- A copy of the Safe Seed Pledge is pasted below.

The Safe Seed Pledge

GMO - Agriculture and seeds provide the basis upon which our lives depend. We must protect this foundation as a safe and genetically stable source for future generations. For the benefit of all farmers, gardeners, and consumers who want an alternative, we pledge that we do not knowingly buy or sell genetically engineered seeds or plants. The mechanical transfer of genetic material outside of natural reproductive methods and between genera, families, or kingdoms, poses great biological risks as well as economic, political, and cultural threats. We feel that genetically engineered varieties have been insufficiently tested prior to public release. More research and testing is necessary to further assess the potential risks of genetically engineered seeds. Further, we wish to support agricultural

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progress that leads to healthier soils, genetically diverse agricultural ecosystems and, ultimately, people and communities.

Johnny's invites organizations, governments, businesses, and individuals to join us in our support of the Safe Seed Initiative.

Treated/Untreated Seeds

A small percentage of seeds marketed by Johnny's Selected Seeds are available treated with fungicides. Those that are treated *always* include a "T" immediately after the JSS part number. Untreated seeds purchased from Johnny's Selected Seeds *never* have a "T" following the part number. Customers are reminded to check carefully for the presence - or absence of - the "T" on their orders or packets. The absence of that indicator ensures the purchase of untreated seeds. Johnny's Selected Seeds will not substitute a treated for an untreated variety without prior authorization by the customer.

Organic Certified/Non-Organic

Johnny's Selected Seeds does offer a number of certified organic seeds for its customers. When available as organically grown seed, varieties are listed with "OG" immediately after the variety name. If there is no "OG", the seed is from a conventional source and not available organically from our inventory at this time.