

Seed Quality Issues

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When I was asked, about a year ago, to address the issue of seed quality, the organizers that asked me must have had a premonition about what was going to happen to our seed supply this year. For the first time in recent history we will be going into the spring using seed that will be for the most part less than ideal. Germination and vigor are far below the long term averages, and finding good seed will be a real challenge this year. To give you a better understanding of what is happening out there this year I have taken the averages of this past year's crop as compared to the long term averages.

The germination averages are all down and diseases are up. The end result is that there will not be an abundance of high quality seed available this year.

Over the past 20 years or so, we have seen a dramatic change in the way in which we farm and the way we view our farming practices. We have gone from conventional tillage to minimum tillage or no till systems. Where we were used to seeding 1-2 bushels and that was close enough, we can now use precision seeding methods to be more exact. Precision Seeding has the ability to optimize the seed that we need and in some cases, save the costs associated with over-planting.

Precision Seeding

When planning on using "Precision Seeding Methods" there are several pieces of information that we need to have.

1000 Kernel Weight

- TKW gives us the actual weight of 1000 kernels. Because different varieties and/or different lots have different seed sizes, you could be over or under seeding your crop.
- This test can be done at home if you have the appropriate balance that weighs to the nearest gram.

Germination Results

- Have your seed tested by an accredited seed lab, some of the results from non-accredited testing may not be accurate, due primarily to non-replicated testing. Standard testing rules in Canada ask for 4 replicates of either 50 or 100 seeds depending upon the crop under inspection.

Optimum Plant Densities

- In order to use the TKW properly we need to know the optimum plants per square foot that we want in our fields. There is good information on plant densities for Saskatchewan pulse crops that is published by the Saskatchewan Pulse Growers Association. For almost all other crops, the Alberta Ag Department has them listed on their web-site. You can access their site at www.agric.gov.ab.ca.

Example of Precision Seed Testing

We have two samples of yellow peas, sample 1 has a TKW of 260 grams with a germ of 95% and sample 2 has a TKW of 300 with a germ of 95%. We have determined that the optimum plants per square foot is 9. Sample 1 would require about 245 lbs per acre of seed, and sample 2 would require 285 lbs per square acre. If this was the same variety there is a seeding difference of 40 lbs per acre. The bushel weight would remain the same at 60 lbs, but the number of seeds in a bushel of sample 1 is greater than the number of seeds in sample 2. Over-seeding by 40 lbs per acre doesn't sound like much, but spread over 160 acres it amounts to 6,400 lbs. At a seed price of \$12.00 per bushel, it would cost you about \$1280 more if you were to plant sample 1 at the same seeding rate as sample 2. Conversely if you were to plant sample two at the same rate as sample 1 you would be seeding at a rate of about 7.6 plants per square foot (16% less than recommended).

Disease testing

Even though diseases do not fall into the equation for precision seeding, it is extremely important to understand the diseases that could affect your crop. Zero or min till has the ability to create a more perfect environment for the development or proliferation of some species of fungi. Know your disease levels and which seed treatment or combination of treatments will work best for you, assuming that you need one at all.

Some seed lots that are infected with disease can be treated in the lab with seed treatments that are designed for use on that seed, however the results can be misleading. If you were to treat a lot of seed that has a high level of disease infection with the appropriate seed treatment and were to test it in the lab to see how much disease was there, it would likely come back with a result of 0%, even though that is not what could happen in the field. There are other factors that can come into play such as adsorption of the chemical by clay particles in the soil. Always test for disease on an untreated sample first to determine the disease levels, and then determine whether or not a seed treatment will help.

1000 Kernel Weight Methodology

- 1) weigh 2 separate samples of 250 kernels to the nearest 1/10 of a gram
- 2) multiply each replicate by 4 to obtain an average
- 3) average the two results to obtain the true average
- 4) multiply the average by 5% to obtain a tolerance
- 5) if each of the averages is within the tolerance of the true average, then the result is valid

Example

1st 250 seeds = 9.5 grams x 4=38

2nd 250 seeds = 9.3 grams x 4= 37.2

Average = (38 + 37.2)/2= 37.6

37.6 x 5% = 1.88

each of the averages must fall within 37.6 ± 1.88 to be considered accurate

Seeding Rates Methodology

Seeding rate (lb/ac)=[(population/sq.ft. x 1000 kernel weight in grams)/% germ] x 10