



CEREAL Newsletter

Vol. MMXV No. 2

www.cerealcentral.com

August 2015

Wheat Seed Quality in a Drought Year

Over this crop season, drought and other stresses strongly affected the winter wheat crop. As a result, in many places in Oregon and Washington, the 2015 crop yield was below average, had low test weight, small kernel size and higher protein content. These factors affect the quality of grain to be marketed in the region. Recently, someone asked the question, "How will seed size and protein content affect seed wheat?" Here are some thoughts to consider:

Seed size and Protein Content

Seed certification does not look at seed size or protein. They are responsible for making sure that the variety they are certifying is pure, weed free, and meets minimum standards (germ, color etc.). Seed grown in dryland conditions generally is smaller in size than irrigated grown seed. This may be especially true this year, but would hold true for even in normal years. The difference is much less or non-existent in better years.

Is larger seed better?

Larger seed has more food reserves (starch) thus higher energy content and thus has potential to be more vigorous in harsh conditions. This is most helpful in cooler weather or deep plantings. Under cooler conditions, germination and emergence take place more slowly; having a larger seed energy supply is an advantage. The same is true for deeper planting. More energy is needed to emerge from a thicker layer of soil over

the seed.

How does protein content affect seed performance?

Protein level alone affects seed performance very little. However, protein content and seed size are generally inversely related. High protein content generally indicates small seed size and low protein content means larger seed size. Protein is in the bran layer (outer layer) and thus is diluted as the seed fills. A plump seed has higher starch content and lower protein content. Protein content indirectly affects seed size.

Does seed size affect winter survival?

Once the plants are established, around the 2-3 leaves stage, there is no difference in survivability between large and small seed. Larger seed does not survive a severe temperature change any better than small seed. There is no difference in winter hardiness based on seed size; this is determined genetically.

Considerations for Fall Planting

Variety selection is the most important consideration for planting. Choose a variety or a variety mix that is most suited to the conditions of the field. If you have a choice of smaller or larger seed within



the variety or varieties you are planting, consider the larger seed (lower seed count) if you plant early and deep. If you are going to dust in, then large seed size will make less of a difference. In recent years, the issue has been more about reliably hitting moisture so that the seeds will germinate and be able to sustain growth.

You should plant seeds per ft² not lb/acre. Pay attention to the seed count and adjust your planting rate to achieve the optimum plant population for your seeding date and yield potential. Adjust for the germination. We can lead you through that calculation, if needed. Make sure to have a good seed treatment package on your seed. Have a successful fall planting.

~Mike Flowers and Don Wysocki

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2015 Hales Winter Wheat Variety Trials

Variety	Plot Length ft	Yield bu/acre	Pertain NIR Data			Traditional Method
			Moisture %	Protein %	lb/bu	lb/bu
Artdeco	464	57.8	7.5	13.9	54.4	54.7
Ovation	471	55.3	8.4	13.7	55.7	55.6
Mary	458	51.1	7.8	14.9	55.0	55.4
Rosalyn	465	44.1	7.7	13.7	52.6	52.4
ORCF-102	479	44.0	7.5	15.6	54.2	54.2
Bobtail	469	42.4	8.0	14.3	51.8	51.4
ORCF-101	462	41.8	8.3	15.9	52.6	52.6

Trials planted 10-27-2015 following peas. Trials harvested 7-31-2015. Bushel weight was measured by two methods to confirm the performance of the Pertain NIR. Trials were planted and harvested with assistance of Hales Farms and Alan Wernsing, OSU Technician.

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