

## **Evaluate Winter Wheat Seed Quality Prior to Planting**

Fusarium head blight or scab was widespread, and in some fields severe, this season. The fungus which causes this disease may infect kernels and can affect stands if infected seed is planted. Bacterial streak (leaf symptom) and black chaff (head symptom) were also a problem in scattered fields throughout the state. The bacterium which causes this disease is seedborne. If wheat is going to be saved for seed, this is certainly a year to pay careful attention to the quality of seed being saved.

Bacterial streak and black chaff are names for the same bacterial disease which produces symptoms on both leaves and heads. Water-soaked lesions may develop on young leaves. These develop into reddish brown to brownish black streaks on the leaves. Glumes and awns show brown-black blotches or streaks. Black chaff may be confused with glume blotch. Symptoms may not be evident on individual kernels but the bacterial pathogen can be seedborne. Since seed treatment fungicides are not effective against this bacterial pathogen, seed from fields which had bacterial streak and black chaff should not be used for planting.

Fusarium head blight or scab infection may result in shriveled and shrunken kernels, lightweight bleached or tombstone kernels or kernels that have a pinkish cast or discoloration. Lots with high levels of scab may have lower germination rates. The fungus that causes scab can also cause a seedling blight of wheat. If scab infected seed is used for planting, seedling blights and stand establishment problems may occur. Management of Fusarium seedling blight is through the planting of disease-free seed or a combination of thoroughly cleaning the seed lot, having a germination test run, adjusting the seeding rate to compensate for germination rate and using a fungicide seed treatment effective against seed-borne Fusarium or scab (see accompanying table of wheat seed treatment fungicides).

Because scab can decrease germination, a germination test may be especially useful in determining if a particular lot should be used for seed. The minimum germination rate for certified seed is 85% germination. It is possible that lower germination rates might be successfully used for seed if the seeding rate is adjusted to compensate for the low germination rate. But this can be risky, especially if weather conditions at and after planting are not favorable for germination and emergence. Fungicide seed treatments can provide some benefit but they cannot resurrect dead seed.

If seed from a field that had Fusarium head blight or scab is being considered for use as seed this fall, it is important to get an accurate germination test and use this information in deciding whether or not to use the lot for seed, whether the seeding rate will need to be increased and whether or not to apply a seed treatment fungicide.

Before submitting a sample for a germination test it is important to thoroughly clean the seed. The wheat seed should be cleaned to remove small and damaged seed and to eliminate weed seeds. With the amount of scab in some lots this year, thoroughly cleaning a lot may clean out 25-30% of the seed in the lot. But a thorough cleaning will give more

reliable germination test results and removing small and damaged seed will not only aid in crop establishment it will also provide a more uniform wheat seedling stand. Removing small and damaged seed will also increase the thousand-kernel weight (TKW), which serves as a measure of seed quality. Wheat seed lots with TKW values greater than 30 grams tend to have increased fall tiller number and seedling vigor.

The next step is to perform a germination test. Germination tests can either be completed at home or by sending a sample to the Missouri Seed Improvement Association or the Missouri Department of Agriculture.

A home test can be performed by counting out 100 seeds and placing them in a damp paper towel. Place the paper towel into a plastic bag to conserve moisture and store in a warm location out of direct sunlight. After five days, count the number of germinated seeds that have both an intact root and shoot. This will give the grower an estimate of % germination. It is important to choose random seeds throughout the entire seed lot and conduct at least five 100 seed counts.

The Missouri Seed Improvement Association performs germination tests. The test requires one pound of seed and costs \$14.25. For details email [MOSEED@AOL.com](mailto:MOSEED@AOL.com) or check the Missouri Seed Improvement Association web site at <http://www.moseed.org/> (see lab services then fees and forms for details on submitting samples).

The State Seed Control Laboratory at the Missouri Department of Agriculture also performs germination tests. The test requires one pint to one quart of seed. From June 1 through August 31 tests are free but between September 1 and November 1 there is a \$12.00 fee per sample and a limit of four samples per farmer. Information and a submission form can be obtained on the Missouri Department of Agriculture web site, <http://mda.mo.gov/plants/seed/> and then clicking on Submitting Seed Service Samples.

If germination is below 85% it is important to increase the seeding rate to compensate; however seeding any wheat with a germination test below 80% would not be recommended.

The next step is to decide whether a fungicide seed treatment is necessary. A number of fungicides are labeled for use as seed treatment fungicides on winter wheat. These seed treatment fungicides protect germinating seed and young seedlings from seedborne and soilborne pathogens. Seed treatment fungicides will not improve germination of seed that has been injured by environmental factors and will not resurrect dead seed. A correct assessment of the cause of poor seed quality or poor germination rates is the first step in deciding if a seed treatment fungicide is necessary.

Fungicide seed treatments for winter wheat are included in the 2013 Pest Management Guide: Corn, Grain Sorghum, Soybean and Winter Wheat, Extension Publication M171. Printed copies of this bulletin are available from the Extension Publications Distribution Center, 2800 Maguire Blvd., Columbia, MO, 573-882-7216.