

Fusarium Head Blight and Small Grain Seed Quality

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This spring saw a much greater than normal infection of Fusarium head blight (FHB) or scab in the Virginia small grain crop. Fusarium head blight occurs when fungus attacks the developing grain kernel. It results in small, shrunken kernels and the fungus can produce vomitoxins. Another problem that can result from high levels of FHB is reduced seed germination when this infected seed is replanted (Figure 1).

Table 1 demonstrates the results of some early wheat germination tests performed by the VDACS State Seed Laboratory to date. What is immediately obvious is that a number of the samples tested exhibit good germination, but also that a number are going to be below the levels that would normally be acceptable.

Table 1. Wheat germination rates, 7/1/09 to 8/1/09, VDACS State Seed Lab.

Germ %	Wheat
100-95	27
94-90	20
89-85	13
84-80	7
79-75	7
<75	26

Virginia Tech and Virginia Cooperative Extension recommend planting certified seed when possible. Certified seed is guaranteed to meet minimum germination (85%) and purity standards. Certified seed also typically receives a fungicide seed treatment. Fungicide seed treatment can increase seed germination by over 20% compared to untreated seed when FHB is present and thus represents a good investment and insurance for the farmer. Various fungicides are effective at reducing the impact of seed-borne Fusarium on seed germination. Products containing tebuconazole (Raxil), difenconazole (Dividend), and thiabendazole (various manufacturers) provide the best control. Seed treatments are generally most effective when applied commercially since good coverage of all seeds is essential. However, fungicide seed treatments do not resurrect the dead. Producers should have seed lots cleaned to remove the small "tombstone" seeds and then use a seed treatment. This will result in higher cleanout and greater loss than in a normal year but remember, these seeds are not viable anyway. The most important thing is to remove any seed that are colonized with Fusarium. This is likely to improve germination rates considerably.

Major commercial wheat seed companies report no concerns regarding availability of good quality, high germination seed for this fall. These companies have access to seed grown in areas not impacted by FHB and/or seed that has been determined to have low FHB infection. Locally grown, farmer-saved seed is of concern, though. Low germination small grain seed may not be immediately identifiable. It can be fairly good looking with high test weight if FHB infection occurs late in the season. This late infection can result in fairly high toxin levels but very few visible symptoms in the grain. So it is especially important to have a germination test performed on **all lots** that are to be planted this fall, even those intended just for cover crop since some samples with less than 50% germination are being processed.

When germination is lower than desired, one solution is to increase seeding rate. This will work if germination is slightly lower than normal, but is generally not effective at very low germination rates. Often, when this approach is used, the irregular or random planting of good and bad seed results in a non-uniform stand which can negatively impact yield. Again fungicidal seed treatments are a good remedy, and they help in most instances. But, it should be noted that with very high levels of infection, even this may not bring germination of some lots to acceptable levels.

Figure 1. Sound and FHB-damaged kernels (pink, in the center of the photo) following germination testing.

