

But What About Smut

By: Jeremiah Vardiman

Agriculture Extension Educator

University of Wyoming

Are you protecting grain crops from smut?

Smuts are seed-borne, common fungal diseases that affect specific grass species, such as oats, barley, and wheat. These diseases are transmitted by seed, so smut is preventable by planting high-quality, certified seed, planting resistant varieties, and treating the seed with surface-active or systemic fungicides prior to planting.

Even though our arid climate is usually a good fungal control option, smuts can still be a problem. Smuts are host-specific because they are caused by different fungal species. The fungus *Ustilago tritici* infects wheat, triticale, and rye, while *Ustilago nuda* only infects barely. *Ustilago nigra* infects barley and oat causing false loose smut and loose smut respectively. Other grass species, such as sugar cane and corn, can also be subject to host-specific smut diseases.

Prevention and/or control efforts are aided by understanding the biological lifecycle of smuts. Smut attacks the floral tissue; however, it infects the plant between germination and seedling emergence. The fungus grows internally within the plant until the boot stage (developmental stage of the plant where the inflorescence swells inside the sheath of the plant). It then invades the new embryos during flowering and converts the floral tissue into

dark-brown smut spores. Cool, 60°F to 70°F, wet weather during the flowering stage heavily favors this infection.

Once the inflorescence heads out (pushes out of the sheath), the spores are spread by wind to healthy neighboring plants where the spores infect the seeds. The pathogen then survives in the contaminated seed between crops, and the entire cycle starts again when the contaminated seeds germinate. Unfortunately, this pathogen goes undetected until the dark-brown smut head emerges from the sheath, which at this point is too late to prevent yield loss, and most times spread, of this disease. Yield loss is approximately equal to the percentage of smut heads found within the field.

Since this is a seed-borne disease, management focuses on preventing the infection of plants between germination and seedling emergence. As with all pest management, utilizing multiple control options provides the best control; cultural and chemical control options are available for smut.

The cultural option is planting clean seed that has not been contaminated with the fungal pathogen; however, this is easier said than done, although using certified seed provides a relatively smut-free source of seed. Identifying smut resistant varieties also provides excellent control, especially if it is certified seed.

Fungicide seed treatments are another viable control option. Surface-active and systemic fungicide seed treatments give excellent disease control. There are also many fungicide options used in the seed treatment, and it is highly recommended seed treatments be done by a commercial seed treater.

There is no biological or mechanical control for smut; the best control option is combining certified seed with seed treatment.

Some simple management practices within an operation's control can mean the difference in normal yields and poor yields, which every bushel will matter this year with low crop prices.

Remember, once the wheat, barley, and oat crop is planted, there is no option for preventing yield loss to smut.