



Extension FactSheet

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Common Bunt or Stinking Smut of Wheat

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Losses from common bunt or stinking smut have been essentially eliminated due to the widespread use of seed treatment fungicides. Historically, bunt has been a very destructive disease in Ohio. In the period from 1931 to 1935 losses due to bunt ranged from 517,000 to 818,000 bushels. This loss was greater than that caused by any other wheat disease. The introduction of organomercury seed treatments in the 1940's was the first major step in controlling this seed-borne disease. More recently, the carboxin fungicides (Vitavax) have provided adequate control of seed-borne bunt for many years. New systemic fungicides are being marketed with excellent activity against common bunt.

In 1980, bunt was common in certain areas of northwest Ohio. Several thousand acres were affected. Farmers in the area were docked from 30 cents to over \$2.00 per bushel for smutty grain. These losses could have been avoided if they had treated their seed prior to planting with a fungicide that controlled bunt. This was the first serious outbreak of common bunt in Ohio in 30 years. Common bunt has not been a serious problem in the state since this time, but only because growers have used effective seed treatment fungicides as a routine production practice.

Common bunt causes losses by reducing yield and by imparting a foul, fishy odor to the grain. Grain with bunt is usually unfit for milling. Dockage for smutty grain is based on the number of "smut balls" or smutty kernels in a 250 g (about 1/2 lb) sample of grain. The amount docked for smutty grain may differ among elevators. However, dockage may be as follows:

- 0 to 4 bunt balls in 250 g grain sample = no dockage**
- 5 to 25 bunt balls = \$0.50 per bushel**
- 26 to 60 bunt balls = \$1.00 per bushel**
- over 62 bunt balls = \$2.00 dockage per bushel**

Some elevators refuse to take wheat that is obviously "smutty" or has a strong, fishy smell.

An alternate use for smutty grain is to feed it. Smut infected wheat may be fed to all classes of livestock, including poultry, without ill effects. Breathing high concentrations of smut spores may be hazardous especially to humans suffering from asthma. The bunt fungus does not produce chemicals toxic to animals.

Symptoms

Common bunt is not easily identified until the time wheat is in head. Infected plants generally produce fewer and smaller heads than normal plants. Heads of diseased plants generally are darker green and retain their green color longer than healthy heads. The diseased heads have a more loose or open appearance due to the expanding of the smutted kernels causing spreading of the glumes or chaff. When the wheat is in the "dough" stage the presence of smut can be detected by pinching the grains between the thumb and forefinger. Smutted kernels will be filled with a soft, black, pasty mass of smut spores. In mature grain



Figure 1. Common bunt infected kernels known as 'bunt balls' and healthy kernels contaminated with bunt spores. The fungus produces a foul, fishy odor to contaminated grain.

the pasty interior of smutted kernels will have changed to an oily, black powder. Diseased kernels (bunt balls) are a dull gray-brown color, short and plump.

Common bunt differs from loose smut in that only the kernel tissues within the seed coat are replaced by smut spores, rather than the whole head. Bunted plants are weaker than healthy plants, and are often susceptible to seedling blights and winter injury.

Disease Cycle

In Ohio, common bunt is a seed-borne disease. Wheat seed becomes contaminated with bunt spores when a diseased field is harvested. The combine breaks open the bunt balls, releasing the smut spores that adhere to the surfaces of healthy kernels. When the contaminated seed is planted in the fall, the smut spores germinate at the same time the wheat seed germinates. The fungus invades the coleoptile of the developing seedling prior to emergence. The fungus then invades deeper into the young tissues and establishes itself in the tissues that eventually develop into the head. The fungus inhabits the developing kernels as the plant grows and displaces the tissues within the kernels, eventually converting into spores by the time the plant is mature. When the field is combined, the disease cycle is repeated.

Control

1. All wheat varieties grown in Ohio are susceptible to common bunt. Thus, all varieties need to be protected with a seed treatment fungicide.
2. The only effective and economic control of bunt is through seed treatment fungicides. If all growers treated their seed each year with the proper fungicide, bunt could be eliminated as a disease problem in Ohio. It is highly recommended that all seed be treated to control bunt and seedling blight diseases. Some fungicides that control bunt do not necessarily control seedling blights and those that control seedling blights may not control bunt. The best seed treatments are combinations of fungicides that are active against bunt and seedling blight diseases. It is best to have the seed treated commercially using modern seed treatment equipment or to buy certified seed that has been treated by the seed processor. If this is not possible, several formulations are available that can be used on the farm in the drill box of the planter. Thorough coverage of the seed is essential, especially when treating seed in the drill box. For more information on seed treatments and recommendations to control seed-borne diseases of wheat consult OSU Extension Bulletin 639, "Seed Treatment for Agronomic Crops" available at all county OSUE offices.

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