



SEED TREATMENTS FOR FIELD CROPS

Fungicide seed treatment is inexpensive insurance against a number of diseases that impair stands, reduce yields, and lower grain quality. Seed treatment is especially valuable during cold, wet weather or very dry weather in protecting germinating seed and young seedlings against seed- and soilborne fungi that cause seed decay and seedling blights (damping-off). For example, proper seed treatment controls certain smut fungi that infect the seed and young seedlings of cereals and forage grasses (Figure 1). Fungicide seed treatment also is effective in controlling seedborne fungi that cause the seedling stage of scab on small grains and grasses (Figure 2), anthracnose, seedborne root and crown (foot) rots, "Helminthosporium" stripe and net blotch of barley, spot blotch of small grains, and various seedborne fungi that cause leaf spots and blotches (Figure 3). Seed treatments also reduce losses from soilborne fungi which infect germinating seeds and young seedlings of soybeans. Several fungi, including *Pythium*, *Phytophthora* and *Rhizoctonia*, can significantly reduce seedling stands and vigor when weather conditions do not favor rapid germination and emergence. Fungicide seed treatments are also effective in controlling seedborne pathogens that can reduce germination to unacceptable levels.



Figure 1. Smuts of small grains. (L-R) Covered and loose smuts of wheat, oats, and barley. All are controlled by proper seed treatment.

Seed should always be cleaned before applying seed treatments. Thorough cleaning removes weed seeds, smut "balls" and particles, bits of chaff and straw, and lightweight kernels or seeds that may be infected, as well as other undesirable impurities. Although seed can be treated on the farm at the time of planting, it is best to have treatments applied by elevators, seed and feed houses, or processing plants to insure thorough coverage.

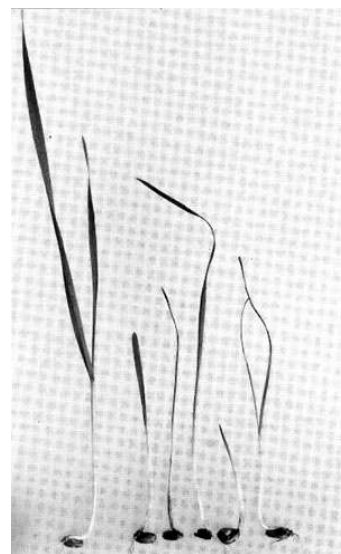


Figure 2. The increased vigor of the seedling on the left was due to seed treatment controlling scab infection. Stunted seedlings came from infected nontreated seed.

Seeds are treated by fungicides formulated as dusts, wettable powders, dry or liquid flowables, or liquids. The fungicide may be applied to seed on the farm as dusts or liquids (slurries) by using a revolving barrel or oil-drum treater or by adding it to the drill or planter box. Manual mixing with the seed in the drill box immediately before sowing reduces the possibility of treated grain being used for animal feed or human consumption. To ensure

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thorough mixing, apply half the required amount of fungicide to the half-filled drill box, stir the grain well with a paddle, (do not use your hands!), then add the remaining seed and fungicide and stir again.

Wettable powders and dry flowables are usually applied to seed in a commercial slurry machine. Liquids and liquid flowables are commonly applied in various commercial, ready-mix, mist-type, or slurry-type treaters. Fungicides should be applied to seed as close to the time of planting as possible.

The full benefits from seed treatment are not obtained unless combined with additional disease-control measures including: (1) planting disease-free seed, (2) rotation with nonrelated crops, (3) clean and deep plowdown of crop residue about every third year or when disease losses have been serious, **if** this is compatible with controlling soil erosion, and (4) planting at the proper time, depth, and spacing using locally adapted and resistant varieties and hybrids whenever possible.

Before treating, **read and follow all the manufacturer's directions on the container label. Do NOT use treated seed for food, feed, or oil purposes, even after it has been stored for months or years.**

Fungicides registered by the federal EPA for seed treatment on field crops are listed in University of Illinois Agricultural Pest Management Handbook, which is revised annually. This circular is available at your nearest Extension office or ITCS, P345 University of Illinois, 1917 S. Wright St., Champaign, IL 61820.



Figure 3. Effect of seed treatment on stand of seedling wheat plants. Untreated (L) and treated (R).