

Minimizing Stand Establishment Diseases In 2011

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It is difficult at this point in the year to know what conditions will be like during the upcoming planting season. However, much of the state was unusually wet during much of the 2010 growing season and has received substantial amounts of snow this winter. If spring conditions are wet or the spring is a cool, wet one, the potential for seed decay, seedling blights and root rot problems in both corn and soybeans could be higher than normal.

Many of the seed decay, seedling blight and root rot problems on both corn and soybean are caused by fungi present in the soil. *Pythium* species can cause early-season diseases on both corn and soybean. Many of the *Pythium* species are favored by cool, wet conditions at planting. Seed decay and seedling blight tend to be more severe in low-lying areas in a field, and in soils that have been compacted or remain wet for an extended period of time. Low soil temperatures (below 50-55 degrees F) favor seed rot and seedling blight. Disease severity is also affected by planting depth, soil type, seed quality, mechanical injury to seed, crusting, herbicide injury or other factors which delay germination and emergence of seedlings. Planting under good seedbed conditions and using an appropriate fungicide seed treatment (products containing either metalaxyl or mefenoxam as an active ingredient are particularly effective against water mold fungi such as *Pythium* spp.) are important management options.

Phytophthora sojae is another soil-inhabiting fungus that causes seed decay, preemergence or postemergence damping-off and seedling blight of soybean but not of corn. *Phytophthora* root rot is more severe in areas that are low or poorly drained, in compacted areas or in clay or heavy soils, but the disease can appear on plants growing in lighter soils or higher ground if the soil remains wet after planting. When soils are flooded or saturated, the fungus releases spores which are attracted to the growing soybean root tip where infection occurs. Planting varieties with either race-specific resistance or tolerance or a combination of race-specific resistance and tolerance in fields with a history of *Phytophthora* is a critical management strategy. Planting under good seedbed conditions and using an appropriate fungicide seed treatment (products containing either metalaxyl or mefenoxam as an active ingredient are particularly effective against water mold fungi such as *Phytophthora sojae*) are also important management options.

Rhizoctonia solani and several *Fusarium* species may also cause seedling blights on corn

and soybean. *Rhizoctonia solani* can survive under a wide range of soil moistures and soil temperatures but may decline when soils are flooded or soil temperatures are unusually high. *Fusarium* root rots may be most severe when the soil is saturated and soil temperatures are around 57 degrees F. Crusting, hard pan layers, herbicide injury, deep planting, poor seed quality, insect damage, mechanical injuries, poor fertility or other factors which delay germination and emergence favor the development of these early-season diseases. Planting under good seedbed conditions and using an appropriate fungicide seed treatment (products containing active ingredients other than metalaxyl or mefenoxam such as captan, fludioxonil, azoxystrobin, carboxin, PCNB, thiram, trifloxystrobin, etc. are effective against *Rhizoctonia* and *Fusarium* spp.) are also important management options.

The bottom line is that 2011 may be a season to take precautions to minimize stand establishment problems caused by diseases in both corn and soybean. Planting high quality seed with a high germination rate is always recommended but may be especially important this season. Corn seed comes with fungicide seed treatments already applied. Be sure that the fungicides on the seed purchased are active ingredients and rates that will be effective against the early-season diseases described above. Seed treatment fungicides are not as standard on soybean seed but are becoming more common. If the soybean seed purchased is not treated, it may be wise to consider appropriate fungicide seed treatments applied prior to seed delivery or to use on-farm treatments.

The 2011 Missouri Pest Management Guide University of Missouri Extension Publication M171 contains tables of fungicides labeled for use as seed treatments on corn and on soybean.

Monitoring soil temperatures and soil moisture conditions as planting approaches will also be important. Ideally, corn and beans would be planted under the best possible seedbed conditions. Mother Nature doesn't always allow that luxury but following field conditions and weather forecasts may lead to planting under the best possible conditions for 2011. Finally, avoiding any other stresses which delay germination or emergence may reduce the incidence and severity of the early-season diseases.

Proper planting depth, avoiding conditions that would lead to crusting or herbicide injury, proper fertility and preventing insect damage can reduce the damage from early-season diseases. Δ

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