K-STATE Research and Extension Plant Pathology

MF2955

Seed Treatment Fungicides for Wheat Disease Management 2020

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Fungicide seed treatments are an important part of wheat production in Kansas. Seed treatments can effectively manage seed-borne disease, such as common bunt, flag smut, and loose smut; generally improve stand establishment; suppress the development of root rot diseases; and inhibit the development of foliar diseases in the fall. Products containing insecticides also can reduce fall aphid populations and lower the risk of severe barley yellow dwarf.

Priorities for use of wheat seed treatment fungicides:

1. Seed lots from fields known to have low levels of loose smut, flag smut, or common bunt.
2. Wheat intended for seed production in following years.
3. Seed lots that have low germination caused by seed-borne Fusarium or other fungi.
4. When adverse weather delays planting and necessitates planting wheat into cool/wet soils.

Suggestions for seed treatment success:

1. Select a product with active ingredients that match the diseases or pests that you are trying to control, or that have been problematic in the past.
2. Start with well-cleaned seed. Chaff or excess dust reduces product adherence to the seed.
3. Make sure products have been mixed according to label instructions. Seed treatments that are an incorrect consistency may not successfully coat seed. Excess water may cause seed to clump, or flow poorly through planting equipment.
4. Ensure all seeds have uniform coverage. Spotty coverage on individual seeds, or treatment that has only treated a portion of seeds results in reduced efficacy.

Table 1. *Seed treatments may contain one or more active ingredients, which fall into different treatment types. Most seed treatments include more than one active ingredient to increase the spectrum of disease and pest control. While this is not a complete list of active ingredients labeled for use in Kansas, it reflects the products widely marked in the state.*

Fungicide[a]		
Tebuconazole	Fluxapyroxad	Pyraclostrobin
Difenoconazole	Penflufen	Fludioxonil
Triticonazole	Sedaxane	Ipconazole
Mefenoxam	Metalaxyl	Prothioconazole
Insecticide[b]		
Imidacloprid	Thiamethoxam	
Plant Growth Regulator[c]		
Cytokinin (kinetin)	Gibberellic Acid	Indole-3-butyric Acid (IBA)

a Fungicides labeled for a broad range of fungal pathogens that cause poor emergence, as well as seedborne pathogens that may lead to smuts/bunts. Some of these fungicides may control individual pathogens more effectively than others. For example, the active ingredient sedaxane is mainly effective against *Rhizoctonia* spp., while mefenoxam is effective against *Pythium* spp.

b Insecticides may suppress fall aphid populations, and reduce the risk of yield losses to barley yellow dwarf virus.

c Plant growth regulators promote stand establishment and emergence by influencing plant physiology. These products do not suppress pests and pathogens.

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Table 2. *Wheat seed treatments frequently used for wheat disease management in Kansas.*

Product	Active ingredients	Rate (fl oz/100 lbs seed)	Seed-borne Diseases				Seedling Diseases		Root Rots					
			Common bunt	Flag smut	Loose smut	Seed-borne Fusarium	Pythium damping-off	Rhizoctonia damping-off	Common root rot	Fusarium root rot	Take all	General seed rot	Fall leaf disease	Grazing restriction[1]
Cruiser Maxx Vibrance Cereals	Sedaxane 0.72% Difenoconazole 3.34% Mefenoxam 0.86% Thiamethoxam 2.78%	5.0 – 10.0	C	--	C	C	C	C	S	S	S	C	S[2]	--
Evergol Energy	Metalaxyl 5.74% Penflufen 3.95% Prothioconazole 7.18%	1.0	C	C	C	C	C	C	S	C	--	C	S	--
Gaucho XT	Tebuconazole 0.62% Metalaxyl 0.82% Imidacolprid 12.7%	3.4 – 4.5	C	C	C	S	C	C	S	S	--	--	S	45 days
Rancona Crest	Ipconazole 0.42% Metalaxyl 0.56% Imidacolprid 14.1%	5.0 – 8.3	C	C	C	C	C	C	S	S	--	C	--	45 days
Raxil Pro MD	Prothioconazole 1.47% Tebuconazole 0.29% Metalaxyl 0.59%	5.0 – 7.5	C	C	C	C	C	C	S	S	--	C	S	31 days
Sativa IMF Sembolite Max	Tebuconazole 0.45% Metalaxyl 0.60% Fludioxonil 0.36% Imidacolprid 11.16%	3.4 – 5.0	C	C	C	--	C	C	S	S	--	C	S	45 days
Salient TMI	Tebuconazole 0.38% Metalaxyl 1.78% Difenoconazole 3.46% Imidacolprid 5.57%	5.0 – 7.5	C	C	C	C	C	C	C	C	--	C	S	55 days
Stamina F4 Cereals	Pyraclostrobin 1.57% Triticonazole 1.57% Metalaxyl 0.94% Fluxapyroxad 0.78%	4.6	C	C	C	C	C	C	C	S	--	C	--	--
Vibrance Extreme[3]	Sedaxane 1.22% Difenoconazole 5.86% Mefenoxam 1.46%	2.8 – 5.6	C	C	C	C	C	C	S	S	S	C	S[2]	--
Warden Cereals 360	Mefenoxam 0.87% Difenoconazole 3.47% Thiamethoxam 5.79% Cytokinin 0.054% Gibberellic Acid 0.018% Indole-3-butyric Acid 0.027%	5.0	C	C	C	C	C	C	S	S	S	C	S	--

C = Product labeled for control or management of this disease problem.
S = Product labeled for suppression or partial control of this disease problem. The level of control provided may be insufficient when conditions are highly conducive for disease development.
-- = Product not labeled for this disease or information was not specified on label.
[1] Days after planting.
[2] Suppression only at high application rate specified on label.
[3] Multiple products containing the same active ingredients also may be available (e.g. Warden Cereals II).