

Seed Treatment Fungicides for Wheat Disease Management

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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 fungi.
4. Seed lots from fields with *Fusarium* head blight (scab).
5. 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.

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Table 1. 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 result in poor emergence, as well as seedborne pathogens that cause 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.

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

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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 ¹			General seed rot	Fall leaf disease	Grazing restriction ²
			Common bunt	Flag smut	Loose smut	Seed-borne Fusarium	Pythium damping-off	Rhizoctonia damping-off	Common root rot	Fusarium root rot	Take all			
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	C	S	S	S	C	S ³	--
Dividend Extreme	Difenoconazole 7.73% Mefenoxam 1.93%	2.0 – 4.0	C	C	C	C	C	C	S	S ³	S ³	C	S	--
First Defense	Difenoconazole 3.55% Mefenoxam 1.48% Thiabendazole 1.89% Tebuconazole 0.60%	5.0	C	C	C	C	C	C	S	S	S	C	S	55 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
Raxil Pro Shield	Imidacloprid 8.59% Prothioconazole 1.47% Metalaxyl 0.57% Tebuconazole 0.29%	5.0	C	C	C	C	C	C	S	S	--	C	S	45 days
Sativa IMF Sembolite Max	Tebuconazole 0.45% Metalaxyl 0.60% Fludioxonil 0.36% Imidacloprid 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% Imidacloprid 5.57%	5.0 – 7.5	C	C	C	C	C	C	S	S	--	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	S	S	--	C	--	--
Vibrance Extreme	Sedaxane 1.22% Difenoconazole 5.86% Mefenoxam 1.46%	2.8 – 5.6	C	C	C	C	C	C	S	S	S	C	S ³	--
Warden Cereals WRII	Thiamethoxam 5.75% Difenoconazole 3.45% Mefenoxam 0.86% Fludioxonil 0.72% Sedazane 1.44%	5.0	C	C	C	C	C	C	S	S	S	C	S	45 days

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 Several products will provide early season control of common root rot and Fusarium root rot but will not provide full-season protection. Here we designate those products as providing suppression.² Days after planting.³ Suppression only at high application rate specified on label.