

Soybean

Fungicide Efficacy for Control of Soybean Seedling Diseases

The members of the Identification and Biology of Seedling Pathogens of Soybean project funded by the North Central Soybean Research Program and plant pathologists across the United States have developed the following ratings for how well fungicide seed treatments control seedling diseases of soybeans in the United States. Efficacy ratings for each fungicide active ingredient listed in the table were determined by field-testing the materials over multiple years and locations by the members of this group, and include ratings summarized from national fungicide trials published in Plant Disease Management Reports (and formerly Fungicide and Nematicide Tests) by the American Phytopathological Society at <http://www.apsnet.org>. Each rating is based on the fungicide's level of disease control, and does not necessarily reflect efficacy of fungicide active ingredient combinations and/or yield increases obtained from applying the active ingredient.

The list includes the most widely marketed products available. It is not intended to be a list of all labeled active ingredients and products. Additional active ingredients may be available, but have not been evaluated in a manner allowing a rating. Products listed are the most common products available as of the release date of the table; all available products may not be listed. Additional active ingredients may be included in some products for insect and nematode control, however; only active ingredients for pathogen control are listed and rated.

Many active ingredients and their products have specific use restrictions. Read and follow all use restrictions before applying any fungicide to seed, or before handling any fungicide-treated seed. This information is provided only as a guide. It is the applicator's and users legal responsibility to read and follow all current label directions. Reference in this publication to any specific commercial product, process, or service, or the use of any trade, firm, or corporation name is for general informational purposes only and does not constitute an endorsement, recommendation, or certification of any kind by members of the group, or by the North Central Soybean Research Program. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer. Efficacy categories: E = Excellent; VG = Very Good; G = Good; F = Fair; P = Poor; NR = Not Recommended; NS = Not Specified on product label; U = Unknown efficacy or insufficient data to rank product. Please note: Efficacy ratings may be dependent on the rate of the fungicide product on seed.

Fungicides ¹						
Class	Active Ingredient	<i>Phytophthora</i> Root Rot	<i>Rhizoctonia</i> spp.	<i>Fusarium</i> spp. ³	Sudden Death Syndrome (SDS) (<i>F. virguliforme</i>)	<i>Phomopsis</i> spp.
MBC Benzimidazoles (Group 1)	Thiabendazole	NR	NR	NS	P	U
DMI Triazoles (Group 3)	Ipconazole	NR	F-G	F-E	NR	G
	Prothioconazole	NR	G	G	NR	G
PA Acylalanines (Group 4)	Mefenoxam	E	NR	NR	NR	NR
	Metalaxyl	E	NR	NR	NR	NR
SDHI Carboxamides (Group 7)	Carboxin	U	G	U	NR	U
	Fluopyram	NR	NR	NR	VG	NR
	Fluxapyroxad	U	E	G	NR	G
	Penflufen	NR	G	G	NR	G
	Sedaxane	NR	E	NS	NR	G
QoI Strobilurins (Group 11)	Azoxystrobin	NS	NR	G	NR	P
	Pyraclostrobin	NR	F	F	NR	G
	Trifloxystrobin	P-G	F-E	F-G	NR	P-F
Phenylpyrroles (Group 12)	Fludioxonil	NR	G	F-VG	NR	G
Aromatic Hydrocarbons (Group 14)	Chloroneb	P	E	P	NR	P
	PCNB	NR	G	U	NR	G
Thiazole Carboxamides (Group 22)	Ethaboxam	E	U	U	U	U
Multi Site Action (Group M3)	Thiram	P	G	F	U	F
Multi Site Action (Group M4)	Captan	P	G	F	U	F

¹Table includes seed treatment fungicides available that have been tested over multiple years and locations. Efficacy categories: NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; NS=Not Specified on label for use against this disease; U=Unknown efficacy or insufficient data.

²Products may vary in efficacy against different *Fusarium* and *Pythium* species.

³Ratings listed for *Fusarium* species are not efficacy ratings for *F. virguliforme*, the causal agent of sudden death syndrome (SDS)

This section was excerpted from the 2019 *Guide for Weed, Disease, and Insect Management in Nebraska*, pages 255-257, a publication of Nebraska Extension. To order your copy of the 346-page guide, go to <https://Marketplace.unl.edu> and click on *Nebraska Extension* and then *Publications*.

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Seed Treatment Fungicide Product Information

Fungicides		Rate (oz per 100 lbs) ¹	Application	Comments	
Class	Trade Name Active Ingredients (%)				
MBC Benzimidazoles (Group 1)	Mertect 340-F Thiabendazole 42.3%	0.08-0.16	Commercially applied, slurry		
PA Acylalanines (Group 4)	Acceleron DX-309 Metalaxyl 28.35%	0.75-1.5	Commercially applied, slurry	Insecticide and additional treatments can be added to base fungicide	
	Acquire Metalaxyl 29.99%	0.75-1.5	Commercially applied, slurry	Acquire comes with Charter seed treatment	
	Allegiance Dry Metalaxyl 12.5%	1.5-2.0	On farm application, planter box		
	Allegiance FL Metalaxyl 28.35%	0.75-1.5	Commercially applied, slurry		
	Allegiance LS Metalaxyl 17.7%	1.2-2.4	Commercially applied, slurry	Use higher rate for Phytophthora control	
	Apron XL Mefenoxam 33.3%	0.16-0.64	Commercially applied, slurry	Use higher rate for Phytophthora control	
SDHI Carboxamides (Group 7)	Acceleron DX-612 Fluxapyroxad 28.7%	0.24-0.47	Commercially applied, slurry	Insecticide and additional treatments can be added to base fungicide	
	Kickstart VP Carboxin 14.0% + <i>Permethrin</i> 10.42% (I) ²	3.0	On farm application, planter box	Contains insecticide (Group 3A)	
	ILeVO Fluopyram 48.4%	1.18-1.97 oz per 140,000 seed	Commercially applied, slurry	Specific seed treatment for Sudden Death Syndrome and nematodes	
	Vibrance Sedaxane 43.7%	0.075-0.16	Commercially applied, slurry	Add Apron XL to improve Phytophthora control	
QoI Strobilurins (Group 11)	Acceleron DX-109 Pyraclostrobin 18.4%	0.4-1.5	Applied commercially or on farm, slurry	Insecticide and additional treatments can be added to base fungicide	
	Dynasty Azoxystrobin 9.6%	0.153-0.459	Commercially applied, slurry		
Phenylpyrroles (Group 12)	Maxim 4FS Fludioxonil	0.08-0.16	Commercially applied, slurry		
Aromatic Hydrocarbons (Group 14)	Rizolex Tolclofos-methyl 42.0%	0.3	Commercially applied		
OSBPI Oxysterol binding protein homologue inhibition (Group 49)	Lumisena Oxathiapiprolin 18.7%	0.0074-0.0148	Commercially applied, slurry	Specific seed treatment for Phytophthora control	
Mixed Modes of Action	3+4	Inovate Ipconazole 0.72% + Metalaxyl 1.153% + <i>Clothianidin</i> 14.34% (I)	4.74	Commercially applied	Add additional metalaxyl or mefenoxam in high Phytophthora pressure areas. Contains insecticide (Group 4A).
		Inovate Pro Ipconazole 1.203% + Metalaxyl 0.965% + <i>Clothianidin</i> 24.03% (I)	2.81	Commercially applied, slurry	Contains insecticide (Group 4A).
	4+M3	Protector-L-Allegiance Metalaxyl 1.61% + Thiram 14.29%	6.7	Application in hopper box or on farm application seed treatment equipment	
	4+12	ApronMaxx RFC Fludioxonil 2.31% + Mefenoxam 3.46%	1.5	Applied commercially or on farm, slurry	Add Apron XL to improve Phytophthora control
		ApronMaxx RTA Fludioxonil 0.73% + Mefenoxam 1.1%	5.0	On farm application, slurry	Add Apron XL to improve Phytophthora control
		ApronMaxx RTA + Moly Fludioxonil 0.68% + Mefenoxam 1.02%	5.0	On farm application, slurry	

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Seed Treatment Fungicide Product Information *(continued)*

Fungicides		Rate (oz per 100 lbs) ¹	Application	Comments	
Class	Trade Name Active Ingredients (%)				
Mixed Modes of Action	4+12	Warden RTA Fludioxonil 0.72% + Mefenoxam 2.21%	5.0	On farm application, slurry	
		Trilex 2000 Metalaxyl 5.69% + Trifloxystrobin 7.12%	1.0	Commercially applied, slurry	Specific seed treatment for Phytophthora control
		CruiserMaxx Fludioxonil 1.12% + Mefenoxam 1.7% + <i>Thiamethoxam 22.61% (I)</i> ²	3.0	Commercially applied, slurry	Add Apron XL to improve Phytophthora control. Contains insecticide (Group 4A).
		CruiserMaxx Advanced Fludioxonil 1.07% + Mefenoxam 3.21% + Thiamethoxam 21.5% (I)	3.2	Commercially applied, slurry	Add Apron XL to improve Phytophthora control. Contains insecticide (Group 4A).
		CruiserMaxx EZ Fludioxonil 1.15% + Mefenoxam 3.46% + <i>Thiamethoxam 23.1% (I)</i>	3.15	Commercially applied, slurry	Add Apron XL to improve Phytophthora control. Contains insecticide (Group 4A).
		CruiserMaxx Plus Fludioxonil 1.07% + Mefenoxam 3.21% + <i>Thiamethoxam 21.5% (I)</i>	3.2	Commercially applied, slurry	Add Apron XL to improve Phytophthora control. Contains insecticide (Group 4A).
		UpShot Soybean Seed Treatment Fludioxonil 1.15% + Mefenoxam 3.46% + <i>Thiamethoxam 23.1% (I)</i>	2.94	Commercially applied, slurry	Add Apron XL to improve Phytophthora control. Contains insecticide (Group 4A).
	4+14	Catapult XL Chloroneb 30.0% + Mefenoxam 1.95%	5.5-7.0	On farm application, RTA	
	3+4+7	EverGol Energy SB Metalaxyl 5.74% + Penflufen 3.59% + Prothioconazole 7.18%	1.0	Commercially applied	Add Allegiance FL in high Phytophthora pressure areas
	3+4+22	Intego Suite Soybeans Ethaboxam 2.97% + Ipconazole 0.99% + Metalaxyl 0.79% + <i>Clothianidin 20.0% (I)</i>	3.37	Commercially applied	Contains insecticide (Group 4A).
	4+7+M4	Bean Guard / Allegiance Captan 24.45% + Carboxin 12.5% + Metalaxyl 3.75%	3.3	On farm application, planter box	
	4+7+12	CruiserMaxx Vibrance Fludioxonil 1.04% + Mefenoxam 3.13% + Sedaxane 1.04% + <i>Thiamethoxam 21.5% (I)</i>	3.22	Commercially applied, slurry	Add Apron XL to improve Phytophthora control. Contains insecticide (Group 4A).
		Warden CX Fludioxonil 1.0% + Mefenoxam 5.99% + Sedaxane 1.0% + <i>Thiamethoxam 20.0% (I)</i>	3.38	Commercially applied, slurry	Contains insecticide (Group 4A).
4+7+14	Prevail Carboxin 15.0% + PCNB 15.0% + Metalaxyl 3.12%	2.0-4.0 oz per bushel	Applied commercially or on farm		

¹Rate is fluid ounces per 100 pounds of seed unless otherwise noted

² Insecticide components are italicized with (I) for designation.