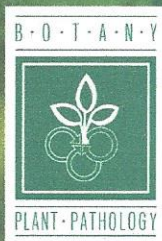


DISEASES OF SOYBEANS

Fungicide Efficacy for Control of Soybean Foliar Diseases

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The North Central Regional Committee on Soybean Diseases (NCERA-137) developed this information about foliar fungicide efficacy for control of major foliar soybean diseases in the United States.

The efficacy rating for each fungicide was determined by field-testing the materials over multiple years and locations by the members of the committee. Efficacy ratings are based on the level of disease control the product achieved. Ratings do not necessarily reflect yield increases from applying the product.

A product's efficacy depends on proper application timing, rate, and application method as determined by the product label and overall level of disease in the field. Members of the committee determined differences in efficacy among each fungicide product by directly comparing products in field tests using a single application of the labeled rate (unless otherwise noted).

The table includes systemic fungicides that have been tested over multiple years and locations — it is not intended to be a list of all labeled products.

Multiple fungicides are labeled for only for soybean rust, powdery mildew, and Alternaria leaf spot, including tebuconazole (multiple products) and myclobutanil (Laredo®). Contact fungicides (such as chlorothalonil) may also be labeled for use. Many products have specific use restrictions about the amount of active ingredient that can be applied within a period of time or the amount of sequential applications that can occur. Read and follow all specific use restrictions before application.

This information is provided only as a guide. It is the applicator's 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 Purdue Extension, or NCERA-137. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer.

Find Out More

For control of seedling diseases, see *Diseases of Soybean: Fungicide Efficacy for Control of Soybean Seedling Diseases* (Purdue Extension publication BP-163-W). This and other publications in the *Diseases of Soybean* series are available from the Purdue Extension Education Store:

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Fungicide Efficacy for Control of Soybean Foliar Diseases¹

BP-161-W

Class	Fungicide(s)		Aerial Web Blight	Anthracnose	Brown Spot	Cercospora Leaf Blight ²	Frogeye Leaf Spot ³	Phomopsis/ Diaporthe (Pod and Stem Blight)	Soybean Rust	White Mold ⁴	Harvest Restriction ⁵
	Active Ingredient (%)	Trade Name									
QoI Strobilurins Group 11	azoxystrobin 22.9%	Quadris 2.08 SC [®]	VG	VG	G	F	P	U	G-VG	P	14 days
	fluoxastrobin 40.3%	Aftershock 480 SC [®] Evito 480 SC [®]	VG	G	G	F	P	U	U	NL	RS (beginning seed) 30 days
	picoxystrobin 22.5%	Aproach 2.08 SC [®]	VG	G	G	F	P	U	G	G ⁶	14 days
	pyradlostrobin 23.6%	Headline 2.09 EC/SC [®]	VG	VG	G	F	P	U	VG	NL	21 days
	cyproconazole 8.9%	Alto 100SL [®]	U	U	VG	F	F	U	VG	NL	30 days
DMI Triazoles Group 3	flutriafol 11.8%	Topguard 1.04 SC [®]	U	VG	VG	F	VG	U	VG-E	F	21 days
	propiconazole 41.8%	Tilt 3.6 EC [®] multiple generics ⁷	P	VG	G	NL	F	NL	VG	NL	RS (beginning seed)
	prothioconazole 41.0%	Proline 480 SC ^{®8}	NL	NL	NL	NL	G-VG	NL	VG	F	21 days
	tetraconazole 20.5%	Domark 230 ME [®] multiple generics	NL	VG	VG	F	G	U	VG-E	F	RS (beginning seed)
MBC Thiophanates Group 1	thiophanate-methyl	multiple generics	U	U	U	F	VG	U	G	F	21 days
SDHI Carboximides Group 7	boscalid 70%	Endura 0.7 DF [®]	U	NL	VG	U	P	NL	NL	VG	21 days

Fungicide Efficacy for Control of Soybean Foliar Diseases¹ (continued)

BP-161-W

Class	Fungicide(s)		Aerial Web Blight	Anthracnose	Brown Spot	Cercospora Leaf Blight ²	Frogeye Leaf Spot ³	Phomopsis/Diaporthe (Pod and Stem Blight)	Soybean Rust	White Mold ⁴	Harvest Restriction ⁵
	Active Ingredient (%)	Trade Name Rate/A (fl oz)									
Mixed Modes of Action	azoxystrobin 18.2%	Quadris Top 2.72 SC ⁶	U	U	U	U	VG	U	VG	NL	14 days
	difenoconazole 11.4%										
	azoxystrobin 7.0%	Avaris 1.66 SC ⁶	U	U	G	U	F	U	VG	NL	21 days
	propiconazole 11.7%	Quilt 1.66 SC ⁶ HM-0812 1.66 SC ⁶	U	U							
	azoxystrobin 13.5%	Quilt Xcel 2.2 SE ⁶	E	VG	G	F	F	U	VG	NL	R6
	propiconazole 11.7%										
	cyproconazole 7.17%	Approach Prima 2.34 SC ⁶	U	U	U	U	G	U	U	NL	14 days
	picoxystrobin 17.94%										
	fluoxastrobin 18.0%	Evito T 3.99 F ⁶	U	F	VG	P-F	F	U	U	NL	30 days
	tebuconazole 25.0%										
	flutriafol 19.3%	Fortix ⁶	U	U	U	U	G	U	U	U	R5 (beginning seed)
	fluoxastrobin 14.84%										
	pyraclostrobin 28.58%	Priaxor 4.17 SC ⁶	E	VG	E	F	F	U	VG	P	21 days
	fluxapyroxad 14.33%										
	pyraclostrobin 28.58%	Priaxor D ⁶									
fluxapyroxad 14.33%	4.17 SC	U	U	U	U	G	U	U	U	21 days	
tetraconazole 20.50%	1.9 SC										
trifloxystrobin 32.3%	Stratego YLD 4.18 SC ^{6,9}	VG	VG	VG	F	F	U	VG	NL	21 days	
prothioconazole 10.8%											

¹ Efficacy ratings: P=poor, F=fair, G=good, VG=very good, E=excellent, NL=not labeled for use against this disease, U=unknown efficacy or insufficient data to rank product.

² Cercospora leaf blight efficacy relies on accurate application timing. Standard R3 application timings may not provide adequate disease control. Fungicide efficacy may improve with later applications. Fungicides with a solo or mixed QoI or MBC mode of action may not be effective in areas where QoI or MBC resistance has been detected in the fungal population that causes Cercospora leaf blight.

³ In areas where QoI fungicide-resistant isolates of the frogeye leaf spot pathogen are not present, QoI fungicides may be more effective than indicated in this table.

⁴ White mold efficacy is based on R1-R2 application timing. Lower efficacy is obtained with R3 or later application timings, or if disease symptoms are already present at the time of application.

⁵ Harvest restrictions are listed for soybean harvested for grain. Restrictions may vary for other types of soybean (edamame, etc.) or soybean for other uses (such as forage or fodder).

⁶ Rating is based on two applications of Approach[®] at 9 fl oz/A at R1 and R3.

⁷ Multiple generic products containing this mode of action may also be labeled in some states.

⁸ Proline[®] has a supplemental label (2ec) for soybean that is only for use on white mold in Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

⁹ Stratego YLD[®] has a supplemental label (2ec) for white mold on soybean only in Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

Soybean

Foliar Fungicide Efficacy for Control of Foliar Soybean Diseases

The North Central Regional Committee on Soybean Diseases (NCERA-137) has developed the following information on foliar fungicide efficacy for control of major foliar soybean diseases in the United States. Efficacy ratings for each fungicide listed in the table were determined by field-testing the materials over multiple years and locations by the members of the committee. Efficacy ratings are based upon level of disease control achieved by product, and are not necessarily reflective of yield increases obtained from product application. Efficacy depends upon proper application timing, rate, and application method to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table, unless otherwise noted. Table includes systemic fungicides available that have been tested over multiple years and locations. The table is not intended to be a list of all labeled products¹. Efficacy categories: NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; NL = Not Labeled for use against this disease; U = Unknown efficacy or insufficient data to rank product efficacy.

Class	Fungicide(s)			Aerial web blight	Anthracnose	Brown Spot	Cercospora Leaf Blight ²	Frogeye Leaf Spot ³	Phomopsis/ Diaporthe (Pod and Stem Blight)	Soybean Rust	White Mold ⁴	Harvest restriction ⁵
	Active Ingredient (%)	Product/Trade Name	Rate/A (fl oz)									
QoI Strobilurins Group 11	Azoxystrobin 22.9%	Quadris 2.08 SC	6.0 – 15.5	VG	VG	G	F	P	U	G-VG	P	14 days
	Fluoxastrobin 40.3%	Aftershock 480 SC Evito 480 SC	2.0 – 5.7	VG	G	G	F	P	U	U	NL	R5 (beginning seed) 30 days
	Picoxystrobin	Approach 2.08 SC	6.0 – 12.0	VG	G	G	F	P	U	G	G ⁹	14 days
	Pyraclostrobin 23.6%	Headline 2.09 EC/SC	6.0 – 12.0	VG	VG	G	F	P	U	VG	NL	21 days
DMI Triazoles Group 3	Cyproconazole 8.9%	Alto 100SL	2.75 – 5.5	U	U	VG	F	F	U	VG	NL	30 days
	Flutriafol 11.8%	Topguard 1.04 SC	7.0 – 14.0	U	VG	VG	F	VG	U	VG-E	F	21 days
	Propiconazole 41.8%	Tilt 3.6 EC Multiple Generics ⁶	2.0 – 4.0	P	VG	G	NL	F	NL	VG	NL	R5 (beginning seed)
	Prothioconazole 41.0%	Proline 480 SC ⁷	5.0 – 5.7	NL	NL	NL	NL	G-VG	NL	VG	F	21 days
	Tetraconazole 20.5%	Domark 230 ME Multiple Generics	4.0 – 5.0	NL	VG	VG	F	G	U	VG-E	F	R5 (beginning seed)
MBC Thiophanates Group 1	Thiophanate-methyl	Topsin-M Multiple Generics	10.0 – 20.0	U	U	U	F	VG	U	G	F	21 days
SDHI Carboximides Group 7	Boscalid 70%	Endura 0.7 DF	3.5 – 11.0	U	NL	VG	U	P	NL	NL	VG	21 days
Mixed Modes of Action	Azoxystrobin 18.2% Difencconazole 11.4%	Quadris Top 2.72 SC	8.0 – 14.0	U	U	U	U	VG	U	VG	NL	14 days
	Azoxystrobin 7.0% Propiconazole 11.7%	Avaris 1.66 SC Quilt 1.66 SC HM-0812 1.66 SC	14.0 – 20.5	U	U	G	U	F	U	VG	NL	21 days
	Azoxystrobin 13.5% Propiconazole 11.7%	Quilt Xcel 2.2 SE	10.5 – 21.0	E	VG	G	F	F	U	VG	NL	R6
	Cyproconazole 7.17% Picoxystrobin 17.94%	Approach Prima 2.34 SC	5.0 – 6.8	U	U	U	U	G	U	U	NL	14 days
	Fluoxastrobin 18.0% Tebuconazole 25.0%	Evito T 3.99 F	4.0 – 6.0	U	F	VG	P-F	F	U	U	NL	30 days
	Flutriafol 19.3% Fluoxastrobin 14.84%	Fortix	4.0 – 6.0	U	U	U	U	G	U	U	U	R5 (beginning seed)
	Pyraclostrobin 28.58% Fluxapyroxad 14.33%	Priaxor 4.17 SC	4.0 – 8.0	E	VG	E	F	F	U	VG	P	21 days
	Pyraclostrobin 28.58% Fluxapyroxad 14.33% Tetraconazole 20.50%	Priaxor D 4.17 SC 1.9 SC	4.0 (each component)	U	U	U	U	G	U	U	U	21 days R5 (beginning seed)
	Trifloxystrobin 32.3% Prothioconazole 10.8%	Stratego YLD 4.18 SC ⁸	4.0 – 4.65	VG	VG	VG	F	F	U	VG	NL	21 days

¹Multiple fungicides are labeled for soybean rust only, powdery mildew, and Alternaria leaf spot, including tebuconazole (multiple products) and Laredo (myclobutanil). Contact fungicides such as chlorothalonil may also be labeled for use.

²Cercospora leaf blight efficacy relies on accurate application timing, and standard R3 application timings may not provide adequate disease control. Fungicide efficacy may improve with earlier or later applications. Fungicides with a solo or mixed QoI or MBC mode of action may not be effective in areas where QoI or MBC resistance has been detected in the fungal population that causes Cercospora leaf blight.

³In areas where QoI-fungicide resistant isolates of the frogeye leaf spot pathogen are not present, QoI fungicides may be more effective than indicated in this table.

⁴White mold efficacy is based on R1-R2 application timing, and lower efficacy is obtained at R3 or later application timings, or if disease symptoms are already present at the time of application.

⁵Harvest restrictions are listed for soybean harvested for grain. Restrictions may vary for other types of soybean (edamame, etc.) and soybean for other uses such as forage or fodder.

⁶Multiple generic products containing this mode of action may also be labeled in some states.

⁷Proline has a supplemental label (2ee) for soybean, only for use on white mold in IL, IN, IA, MI, MN, NE, ND, OH, SD, WI. A separate 2ee for NY exists for white mold.

⁸Stratego YLD has a supplemental label (2ee) for white mold on soybean only in IL, IN, IA, MI, MN, NE, ND, OH, SD, WI.

⁹Rating is based on two applications of a 9 fl oz/A rate of Approach at R1 and R3.

Many products have specific use restrictions about the amount of active ingredient that can be applied within a period of time or the amount of sequential applications that can occur. Please read and follow all specific use restrictions prior to fungicide use. This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. Reference to products in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturer. Members or participants in the NCERA-212 or NCERA-208 group assume no liability resulting from the use of these products.