Seed treatments registered for SOYBEAN diseases

Trade name	Common name	Rhizoc	Pyth	Phytop	Phomop	commercial or on farm use, C or F	Rate /100 lb. seed or as noted	REI hrs.	Comments
Acquire	metalaxyl		X	X		C	0.25-1.5 fl oz	24	Labeled for early season *Phytophthora* control.
Allegiance FL	metalaxyl		X	X		C	0.75-1.5 fl oz	24	Labeled for early season *Phytophthora* control.
Apron-XL-LS	mefanoxam		X	X		C	0.16-0.64 fl oz	48	Labeled for suppression of downy mildew at higher rate
ApronMaxx RFC	fludioxonil + mefanoxam	X	X	X	X	C, F	1.5 oz.	48	Also labeled for *Fusarium*, and suppression of seed borne *Sclerotinia.*
ApronMaxx RTA	fludioxonil + mefanoxam	X	X	X	X	F	5.0 fl oz	48	Also labeled for *Fusarium*, and suppression of seed borne *Sclerotinia.*
ApronMaxx RTA + Moly	fludioxonil + mefanoxam	X	X	X	X	F	5.0 fl oz	48	Also labeled for *Fusarium*, and suppression of seed borne *Sclerotinia.* Contains molybdenum.
Bean Guard Allegiance	captan + carboxin + metalaxyl	X	X			F	2 oz./ 60 lb	24	Contains molybdenum. Also labeled for *Fusarium* .
Captan 400	captan	X	X		X	C	1.5-2.5 fl oz	96	
Captan Moly	captan	X	X		X	F	3.5 oz	4	Contains molybdenum.
Cruiser MAXX Pak	fludioxonil + mefanoxam + thiamethoxam (insecticide)	X	X	X	X		see product labels	48	Also labeled for *Fusarium*, and suppression of seed borne *Sclerotinia;* insecticide for seed corn maggot.
Dynasty	axozystrobin	X	X				0.153-0.459 fl oz	4	
Enhance	captan + carboxin	X	C			F	5 oz	12	
Hi Moly Captan-D	captan	X	X		X	F	2 oz./bu	12	Contains molybdenum.
Kernel Guard Supreme	carboxin + permethrin (insecticide)	X	X		X	F	1.5 oz/50 lb	12	insecticide for seed corn maggot
Kickstart VP	carboxin + permethrin (insecticide)	X	X		X	F	1.5 oz/50 lb	12	insecticide for seed corn maggot
Kodiak Concentrate	*Bacillus subtilis*	X				C	0.125 oz	4	Biological fungicide. *Fusarium* also listed on label.

DISEASE MANAGEMENT IN FIELD CROPS

The disease management section of the Michigan field crops bulletin includes sections on management for some of the most important diseases of alfalfa, corn, small grains, dry beans, soybeans, and sugar beets. In some cases, there are not any fungicides labeled for control of a particular disease. We have provided information on the cause of the disease, symptoms, disease cycle, conditions favoring development of the disease, and management techniques, included fungicides registered for use in Michigan. There are tables for seed treatments registered for soybeans, corn, small grains, and dry beans. We hope you find this information helpful and easy to use. We welcome your comments and suggestions for improvements and additions.

FUNGICIDE RESISTANCE MANAGEMENT

WHAT IS FUNGICIDE RESISTANCE?

- Resistance is an inherited change in a plant pathogen's susceptibility to a fungicide.
- Resistance usually develops due to a change by the fungal pathogen at the site where the fungicide is active (mode of action).
- Strains of pathogens develop reduced sensitivity to fungicides causing complete or partial loss of fungicide efficacy.
- Intensive use, overuse or misuse of certain fungicides can result in the development of resistance.

RECOGNIZING RESISTANCE

- Resistance may gradually increase over time resulting in partial loss of control.
- Resistance may appear suddenly with significant loss of control.

STRATEGIES FOR MANAGING RESISTANCE

The risk of resistance varies within chemical classes. Pathogens may become cross resistant to fungicides with the same mode of action even though they are in different chemical classes. It is important to rotate fungicides based on different modes of action, instead of rotating based on chemical classes. An international organization, the Fungicide Resistance Action Committee (FRAC), has grouped fungicides by mode of action and given each mode of action a code number. You can select fungicides for rotation by looking at the group code and choosing a registered fungicide with a different code than the one used previously. The fungicide group code will soon be added to all fungicide labels.

Avoid resistance:

- Use disease predictive models for effective timing of fungicide applications.
- Scout fields frequently for the appearance of disease symptoms.
- Increase crop rotation intervals to avoid the buildup of soil-borne pathogens.
- Use varieties that are less susceptible to disease.
- Use formulated mixtures or tank-mixes of effective fungicides having different modes of action. For effective resistance management, both mixing partners must be active against the target pathogen.
- Use effective multi-site fungicides, less prone to fungicide resistance, as mixing partners (group code begins with M).
- Watch for and report control failures and difficulties so that the possibility of resistance can be monitored and evaluated.
- Read fungicide labels carefully for additional resistance management recommendations.