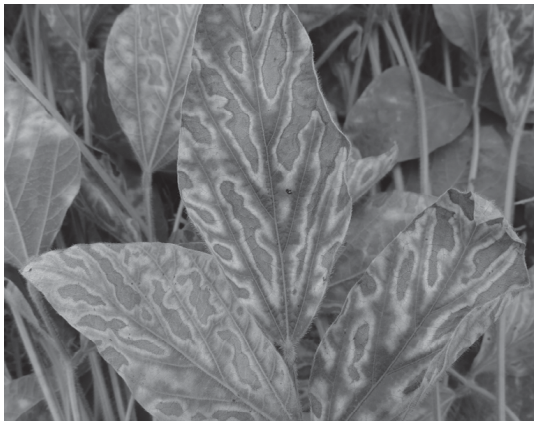
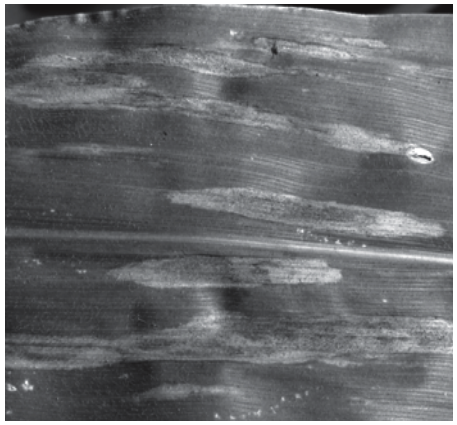
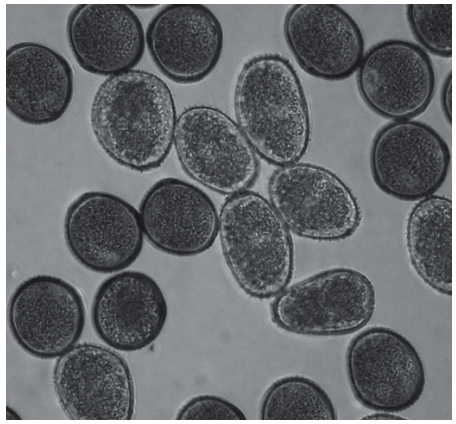
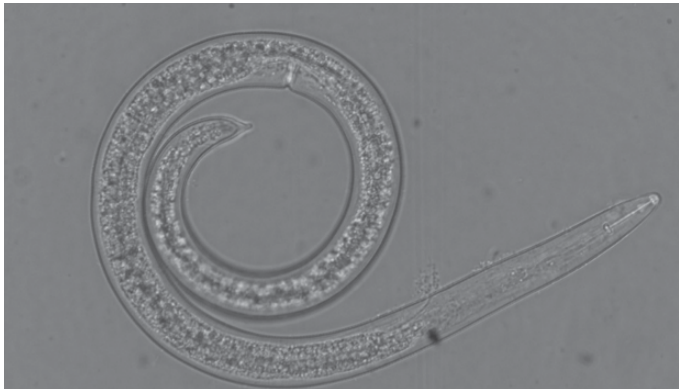
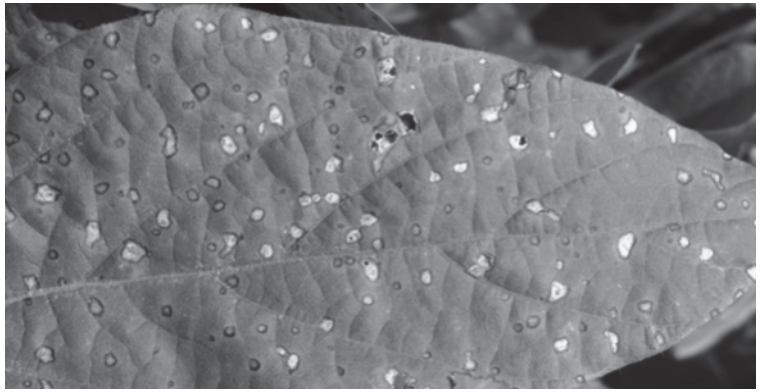
DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

MP154

2021 Arkansas Plant Disease Control Products Guide



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DISCLAIMER

The listing of any product in this publication does not imply endorsement of that product or discrimination against any other product by the University of Arkansas System Division of Agriculture.

The information in this publication was current as of October 1, 2020, and applies only to Arkansas. It may not be appropriate for other states or locations.

Every effort was made to ensure accuracy, but the user of any crop protection product must read and follow the most current label on the product – *The Label is the Law.* For further assistance, contact your local office of the University of Arkansas System Division of Agriculture, Cooperative Extension Service.

WARNING

Many crop protection products may be poisonous, especially in concentrated form. The United States Environmental Protection Agency has established a Poison Control System throughout the United States. Each Center can determine the toxic compounds in commercial products, respond to calls from physicians or individuals and provide supportive or antidotal treatment.

THE POISON CONTROL CENTER FOR ARKANSAS IS:

Arkansas Poison & Drug Information Center
College of Pharmacy, University of Arkansas for Medical Sciences
4301 W. Markham, Mail Slot 522-2
Little Rock, AR 72205

POISON CONTROL HOTLINE – TOLL-FREE PHONE NUMBER

1-800-376-4766

PESTICIDE SPILLS – OFFICE OF EMERGENCY SERVICES

1-800-322-4012

TABLE OF CONVERSIONS

TO CONVERT	TO	MULTIPLY BY
oz dry wt/100 gals	Tbs/gal	0.06
	tsp/gal	0.19
lb dry wt/100 gals	Tbs/gal	1.00
fl oz/100 gals	Tbs/gal	0.02
	tsp/gal	0.06
pints/100 gals	Tbs/gal	0.32
	tsp/gal	0.96
	fl oz/gal	0.16
quarts/100 gals	Tbs/gal	0.64
	tsp/gal	1.92
	fl oz/gal	0.32
fl oz	Tbs	2.00
	tsp	6.00

Dry Measure

28.35 grams = 1 ounce	16 oz = 1 lb = 453.6 grams	1 gal water = 8.34 lbs

Liquid Measure

80 drops = 1 tsp 8 fl oz = 16 Tbs = 1 cup = 237 ml 4 quarts = 256 Tbs = 1 gal = 3,785 ml	3 tsp = 1 Tbs = 14.8 ml 2 cups = 32 Tbs = 1 pint = 473 ml 128 fl oz = 1 gal = 3,785 ml	2 Tbs = 1 fl oz = 29.6 ml 2 pints = 64 Tbs = 1 qt = 946 ml

Land Measure

16.5 ft = 5.5 yds = 1 rod 4,256 sq ft = 16 sq rds = 1 sq chain 208.71 ft x 208.71 ft = 1 sq acre	66 ft = 4 rods = 1 chain 1 acre = 160 sq rds = 43,560 sq ft	1 sq rd = 30.25 sq yds = 272.25 sq ft 1 acre = 10 sq chains = 43,560 sq ft

Row Feet in 1 Acre at Various Row Spacings

6” rows = 87,120 ft 10” rows = 52,272 ft 19” rows = 27,512 ft 36” rows = 14,520 ft 42” rows = 12,446 ft	7” rows = 74,674 ft 12” rows = 43,560 ft 24” rows = 21,780 ft 38” rows = 13,756 ft 48” rows = 10,890 ft	8” rows = 65,340 ft 18” rows = 29,040 ft 30” rows = 17,424 ft 40” rows = 13,068 ft

Crop Standard Weights

Corn = 56 lbs/bu Grain Sorghum = 56 lbs/bu	Oats = 32 lbs/bu Soybean = 60 lbs/bu	Rice = 45 lbs/bu Wheat = 60 lbs/bu

MANAGING FUNGICIDE RESISTANCE

Fungicide resistance is the loss of efficacy of a particular type of fungicide against a target pathogen. Fungicide resistance is often recognized when the expectations of disease control are not met when the labeled rate of a fungicide is applied.

All fungicide products have a specific mode of action (MOA), which is the way in which the fungicide affects (kills) pathogens. All fungicides are classified by MOA, and **each MOA is assigned a group code called a FRAC number that will appear somewhere on the product label**. FRAC stands for the *Fungicide Resistance Action Committee*, which is a technical group of specialists that provides fungicide resistance management guidelines to prolong the effectiveness of "at risk" fungicides and to limit crop losses due to fungicide-resistant pathogens. See www.frac.info for the most up-to-date information on fungicide resistance and FRAC codes.

The following are some basic guidelines that should be considered in developing a fungicide program to avoid inadvertently selecting fungicide-resistant pathogens.

Fungicide Resistance Management Guidelines

1. Obtain an accurate disease diagnosis. This allows fungicide selection to be made correctly to minimize the chance of applying an ineffective fungicide.

2. DO NOT apply fungicides in the absence of disease.

3. Avoid the exclusive use of a fungicide product with a single MOA or FRAC Code.

4. Rotate different MOA or FRAC Code fungicide applications if more than one application is needed within a season.

5. Use the manufacturer's recommended rates as indicated on the label.

6. Utilize integrated disease management strategies (including host plant resistance, crop rotation, crop residue management, removal of diseased tissue on perennial crops, etc.).

CORN (FIELD) – FOLIAR DISEASES

Travis Faske and Terry Spurlock

NOTE: Fungicides should not be applied prior to 100% tassel and should not be applied later than 14 days after brown silk. We do not recommend the use of fungicides on field corn in Arkansas except under extraordinary circumstances. Preventative use will likely not result in an economic return on current hybrids grown in the state in most years. In rare cases where they might be needed – such as years favorable to southern rust, late-planted corn, or corn following corn in the same field – the following foliar fungicides are registered for use in Arkansas.

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Southern rust and northern corn leaf blight	Topguard 1.04 SC	flutriafol	3	7 - 14 fl oz	7	
	Tilt, Propimax 3.6 EC	propiconazole	3	4 fl oz	30	
	Proline 480 SC	prothioconazole	3	5.7 fl oz	14	
	tebuconazole (multiple generics 3.6 F)	tebuconazole	3	4 - 6 fl oz	36	
	Domark 230 ME	tetraconazole	3	4 - 6 fl oz	R3	
	Andiamo 230 ME	tetraconazole	3	4 - 6 fl oz	R3	
	Quadris 2.08 SC (multiple generics)	azoxystrobin	11	6 - 15.5 fl oz	7	
	Evito 480 SC, Aftershock 480 SC	fluoxastrobin	11	2 - 5.7 fl oz	30	
	Aproach 2.08 SC	picoxystrobin	11	3 - 12 fl oz	7	
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 fl oz	7	Rust and gray leaf spot: 6 - 9 fl oz; corn leaf blights: 9 - 12 fl oz.
	Prosaro 421 SC	prothioconazole + tebuconazole	3 + 3	6.5 fl oz	36	
	Luccento 4.17 SC	flutriafol + bixafen	3 + 7	3 - 5.5 fl oz	30	In university trials 5 oz/A was the most effective rate.
	Topguard EQ 4.29 SC	azoxystrobin + flutriafol	11 + 3	5 - 7 fl oz	7	
	Quilt Xcel 2.2 SE, Cover XL 2.2 SE	azoxystrobin + propiconazole	11 + 3	10.5 - 14 fl oz	30	
	Helmstar Plus 3.0 SC	azoxystrobin + tebuconazole	11 + 3	7.2 - 10.8 fl oz	36	
	Affiance 1.5 SC	azoxystrobin + tetraconazole	11 + 3	10 - 17 fl oz	7	
	Brixen 1.85 SC	azoxystrobin + tetraconazole	11 + 3	13 - 19 fl oz	R3	
	Fortix 3.22 SC, Preemptor 3.22 SC	fluoxastrobin + flutriafol	11 + 3	4 - 6 fl oz	30	
	Zolera FX 3.34 SC	fluoxastrobin + tetraconazole	11 + 3	4.4 - 6.8 fl oz	30	
	Aproach Prima 2.34 SC	picoxystrobin + cyproconazole	11 + 3	3.4 - 6.8 fl oz	21	In university trials 6.8 oz/A was the most effective rate.

(continued)

CORN (FIELD) – FOLIAR DISEASES – continued

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Southern rust *(cont.)* and northern corn leaf blight	Veltyma 3.34 SC	pyraclostrobin + mefentrifluconazole	11 + 3	7 - 10 fl oz	21	
	Dexter Max 0.75 DC	mancozeb + azoxystrobin	11 + 3	1.6 lbs	40	
	Stratego 2.08 SC	trifloxystrobin + propiconazole	11 + 3	12 fl oz	30	
	Stratego YLD 4.18 SC	trifloxystrobin + prothioconazole	11 + 3	4 - 5 fl oz	14	
	Headline AMP 1.68 SC	pyraclostrobin + metconazole	11 + 3	10 - 14.4 fl oz	20	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	21	Rusts: 6 - 8 fl oz; corn leaf blights and gray leaf spot: 4 fl oz.
	Revytek 3.33 SC	fluxapyroxad + pyraclostrobin + mefentrifluconazole	7 + 11 + 3	8 - 15 fl oz	21	
	Trivapro 2.21 SE	benzovindiflupyr + azoxystrobin + propiconazole	7 + 11 + 3	13.7 fl oz	30	

Management of Corn Diseases – Fungicide Efficacy for Control of Corn Diseases *(January 2020)*

The Corn Disease Working Group (CDWG) has developed the following information. Efficacy ratings for each fungicide listed in the table were determined by field testing the materials over multiple years and locations by 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. **The table includes systemic fungicides available that have been tested over multiple years and locations. This table is not intended to be a list of all labeled products[1].** 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.

NOTE: This guideline was a composite of several field trials from multiple states across the U.S. corn belt and may not always reflect fungicide efficacy observed in Arkansas.

Fungicide(s)				Anthracnose Leaf Blight	Eyespot	Gray Leaf Spot	Northern Leaf Blight	Southern Rust[A]	Harvest Restriction[2]
Class	Active Ingredient (%)	Product/Trade Name	Rate/A (fl oz)						
QoI Strobilurins Group 11	**Azoxystrobin 22.9%**	**Quadris 2.08 SC Multiple Generics**	**6 - 15.5**	VG	VG	E	G	VG	7 days
	Pyraclostrobin 23.6%	**Headline 2.09 EC/SC**	**6 - 12**	VG	E	E	VG	VG	7 days
	Picoxystrobin	**Aproach 2.08 SC**	**3 - 12**	VG	VG	F-VG	VG	G	7 days
DMI Triazoles Group 3	**Propiconazole 41.8%**	**Tilt 3.6 EC Multiple Generics**	**2 - 4**	NL	E	G	G	F	30 days
	Prothioconazole 41.0%	**Proline 480 SC**	**5.7**	U	E	U	VG	G	14 days
	Tebuconazole 38.7%	**Folicur 3.6 F Multiple Generics**	**4 - 6**	NL	NL	U	VG	F	36 days
	Tetraconazole 20.5%	**Domark 230 ME Multiple Generics**	**4 - 6**	U	U	E	VG	G	R3 (milk)

Management of Corn Diseases – Fungicide Efficacy for Control of Corn Diseases *(January 2020) (continued)*

Fungicide(s)				Anthracnose Leaf Blight	Eyespot	Gray Leaf Spot	Northern Leaf Blight	Southern Rust[A]	Harvest Restriction[2]
Class	Active Ingredient (%)	Product/Trade Name	Rate/A (fl oz)						
Mixed Modes of Action Group 11 + 3 or 7	**Azoxystrobin 13.5% Propiconazole 11.7%**	**Quilt Xcel 2.2 SE Aframe Plus 2.2 SE**	**10.5 - 14**	VG	VG-E	E	VG	VG	30 days
	Benzovindiflupyr 10.27% Azoxystrobin 13.5% Propiconazole 11.7%	**Trivapro 2.21 SE**	**13.7**	U	U	E	VG	E	30 days
	Cyproconazole 7.17% Picoxystrobin 17.94%	**Aproach Prima 2.34 SC**	**3.4 - 6.8**	U	U	E	VG	G	30 days
	Flutriafol 19.3% Fluoxastrobin 14.84%	**Fortix 3.22 SC Preemptor 3.22 SC**	**4 - 6**	U	U	E	VG	G-VG	R4 (dough)
	Flutriafol 26.47% Bixafen 15.55%	**Lucento 4.17 SC**	**3 - 5.5**	U	U	VG-E	VG	G	R4
	Prothioconazole 16.0% Trifloxystrobin 13.7%	**Delaro 325 SC**	**8 - 12**	VG	U	E	VG	G-VG	14 days
	Pydiflumetofen 7.0% Azoxystrobin 9.3% Propiconazole 11.6%	**Miravis Neo 2.5 SE**	**13.7**	U	U	E	VG-E	G	30 days
	Pyraclostrobin 13.6% Metconazole 5.1%	**Headline AMP 1.68 SC**	**10 - 14.4**	U	E	E	VG	G	20 days
	Pyraclostrobin 28.58% Fluxapyroxad 14.33%	**Priaxor 4.17 SC**	**4 - 8**	U	U	E	VG-E	G	21 days
	Trifloxystrobin 32.3% Prothioconazole 10.8%	**Stratego YLD 4.18 SC**	**4 - 5**	VG	E	E	VG	G	14 days
	Tetraconazole 7.48% Azoxystrobin 9.35%	**Affiance 1.5 SC**	**10 - 14**	U	U	U	G-VG	G	7 days
	Flutriafol 18.63% Azoxystrobin 25.30%	**TopGuard EQ**	**5 - 7**	U	U	VG	G	VG	45 days
	Mefentrifluconazole 17.56% Pyraclostrobin 17.56%	**Veltyma 3.34 SC**	**7 - 10**	U	U	VG-E	VG-E	G-VG	21 days
	Mefentrifluconazole 11.61% Pyraclostrobin 15.49% Fluxapyroxad 7.74%	**Revytek 3.33 SC**	**8 - 15**	U	U	VG-E	VG-E	G-VG	21 days

[1] Fungicide application timing is extremely important and needs to be made near the onset of the tar spot symptoms. Efficacy ratings based on limited site locations from 2018 and 2019.

[2] Harvest restrictions are listed for field corn harvested for grain. Restrictions may vary for other types of corn (sweet, seed or popcorn, etc.), and corn for other uses such as forage or fodder.

[3] A 2ee label is available for several fungicides for control of tar spot, however efficacy data are limited. Check 2ee labels carefully, as not all products have 2ee labels in all states.

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 is for general information only, and does not constitute an endorsement or recommendation by the CDWG. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer. Members or participants in the CDWG assume no liability resulting from the use of these products.

CORN (FIELD) – AFLATOXIN

Travis Faske

Contamination	Product	Rate/A	Comment
Aflatoxin	Afla-Guard (atoxigenic strain of *Aspergillus flavus*)	10 - 20 lb	To suppress aflatoxin contamination in low to moderate risk fields, apply at V10 to VT.

CORN (FIELD) – NEMATODES

Travis Faske

Nematode[1]	Nematicide[2]	Formulation	Active Ingredient	FRAC Code	Rate/ Acre	Comments
Root-knot, Lesion and Stubby-root Nematodes (+ early season insects)	Counter 20 G Lock'n Load	20% granules	terbufos	---	6.5 lb	Apply in seed furrow at planting according to the label. Do not exceed 6.5 lb/acre total.
	Telone II 9.85 L[3]	Liquid	1,3-dichloropropene	---	3 - 6 gal	Inject 12 inches below planting depth and seal immediately with appropriate bedding equipment. Wait 7 - 14 days before planting.
	Avicta Complete Corn 500/1250 with Vibrance[4]	Seed treatment	abamectin + thiamethoxam + azoxystrobin + mefenoxam + fludioxonil + sedaxane	--- --- 11 4 12 7	See label.	Available through commercial seed companies and dealer distributors.
	Poncho/Votivo 5.01 FS[4]	Seed treatment	clothianidin + *Bacillus firmus* I-1582	--- ---		Available through commercial seed companies and dealer distributors.
	BioST Nematicide 100[4]	Seed treatment	*Burkholderia* spp A396	---	7 fl oz/cwt	

[1] Certain other nematodes are considered economic problems on corn in other parts of the U.S. These include the root-knot lesion, stubby-root, ring, dagger, spiral, stunt and sting nematodes. There is no data from Arkansas to indicate the severity of these nematodes under our conditions, but at high populations a nematicide might be justified. Fields with long-term corn history that have lower than expected yields or yields that decline over time should be tested for nematodes by submitting a soil sample to the Nematode Diagnostic Laboratory located at the Southwest Research and Extension Center near Hope. Contact your local county Extension agent for guidelines on when and how to collect the sample. **A small fee is charged for this service.**

[2] **RESTRICTED USE PESTICIDES** – **These are dangerous pesticides – use caution in handling and read and follow current label directions.** There has been no recent research in Arkansas that demonstrates any economic return for the use of these products on corn. These products **can cause crop injury if certain herbicides are applied afterwards – carefully read pesticide interaction information on the label before applying these or any pesticides.**

[3] Use where nematode pressure is severe.

[4] Use where nematode pressure is low to moderate.

COTTON – FOLIAR DISEASES

Travis Faske

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Target Spot *(Corynespora cassiicola)*	**Chemical Control of Leaf Spot Diseases:** Research results from other states suggest fungicides need to be applied as early as the 1st week after bloom or by the 3rd week after bloom. Two applications appear to be the most effective. Yield responses more often occur with fields with a history of severe target spot, disease severity is great enough to result in defoliation levels of 30% to 50% by the 2nd or 3rd week of August, and irrigation or rainfall suggest continued increase in severity of disease. Until we know more about the disease and performance of these products in the mid-South, it is recommended to include a non-sprayed check.					
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 fl oz	30	
	Quadris 2.08 SC	azoxystrobin	11	6 - 9 fl oz	45	
	Miravis Top 1.67 SC	difenoconazole + pydiflumetofen	3 + 7	13.6	45	
	Topguard EQ 4.29 SC	azoxystrobin + flutriafol	11 + 3	5 - 7 fl oz	45	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	30	
	Elatus 45 WG	azoxystrobin + benzovindiflupyr	11 + 7	6 - 7.3 fl oz	45	
	Amistar Top 1.67 SC	azoxystrobin + difenconazole	11 + 3	8 - 11.6 fl oz	45	

COTTON – NEMATODES

Travis Faske

Nematode	Nematicide	Formulation	Active Ingredient	Rate/Acre	Comments
Root-knot and Reniform	Avicta 500 FS[1]	Seed treatment	abamectin	0.15 mg ai/seed	Available through commercial seed companies and dealer distributors.
	Avicta Elite Cotton[1] + Vibrance	Seed treatment	azoxystrobin + fludioxonil + mefenoxam thiamethoxam + abamectin imidacloprid sedaxane	0.03 mg ai/seed 0.53 mg ai/seed 0.375 mg ai/seed 0.0096 mg ai/seed	Available through commercial seed companies and dealer distributors. Rate based on 5,500 seed/lb.
	Aeris 5 FS[1]	Seed treatment	thiodicarb + imidacloprid	0.75 mg ai/seed	Available through commercial seed companies and dealer distributors.
	Poncho/Votivo 5 FS[1]	Seed treatment	clothianidin + *Bacillus firmus* I-1582	0.424 mg ai/seed	Commercial seed treatment equipment only.
	COPeO Prime[1]	Seed treatment	fluopyram	0.2 - 0.3mg ai/seed	Available through commercial seed company (BASF).
	Velum Total 3.67 L[1]	Liquid	fluopyram + imidacloprid	14 - 18 fl oz	Apply as in-furrow spray with 5 - 6 gal/ac water at planting.
	Telone II 9.85 L[2]	Liquid	1,3-dichloropropene	3 - 6 gal	Inject 12 inches below planting depth and seal immediately with appropriate bedding equipment. Wait 7 - 14 days before planting.
	AgLogic 15GG[1]	Granule	aldicarb	3.5 - 7 lb/A	Apply granules in the seed furrow and immediately cover seed and granules with 1 inch or more of soil.
	BioST Nematicide 100[1]	Seed treatment	*Burkholderia* spp. A396	7 fl oz/cwt	
	Velum Prime 4.16 SC	Liquid	fluopyarm	5 to 6.8 fl oz/A	Apply as in-furrow spray with 5 - 6 gal/ac waster at planting

[1]Use where nematode pressure is low to moderate. [2]Use where nematode pressure is severe.

RESTRICTED USE PESTICIDES – For sale and use only by licensed/certified applicators or persons under their direct supervision. **These are dangerous pesticides – use caution in handling and read and follow current label directions.** If nematodes are suspected to be causing problems, a diagnostic soil sample should be taken to your county agent for submission to the Cooperative Extension Service Nematode Diagnostic Laboratory. **A small fee is required.**

COTTON – SEEDLING DISEASES

Terry Spurlock

Chemical Control of Seedling Diseases of Cotton in Arkansas:

1. All cotton seed planted in Arkansas should be treated commercially.
2. Under conditions that favor seedling diseases, additional stand protection may be received from the use of in-furrow fungicides when planting treated seed (treated seed + in-furrow combination).
3. The following products are commonly used in Arkansas cotton production to control seedling diseases.

Disease	Product	Active Ingredient	FRAC Code	Rate/cwt
Commercial Seed Treatments or Distributor-Applied Seed Treatments				
Pythium and Rhizoctonia diseases; fungal seed rots	Vortex 3.77 FS + Spera 240 FS + Allegiance 2.6 FL	ipconazole + myclobutanil + metalaxyl	3 3 4	0.08 fl oz + 1.8 fl oz + 0.75 fl oz
	Systhane 40 WSP + Maxim 4 FS + Apron XL 3 SC	myclobutanil + fludioxonil + mefenoxam	3 12 4	1.25 oz + 0.08 fl oz + 0.32 fl oz
	Vibrance CST 1.65 FC	azoxystrobin + fludioxonil + mefenoxam + sedaxane	11 + 12 + 4 + 7	3.06 - 4.08 fl oz/cwt 0.040 - 0.053 mg ai/seed based on 45000 seed/lb
	Avicta Elite Cotton Plus Vibrance CST	azoxystrobin + fludioxonil + mefenoxam + sedaxane + thiamethoxam + imidacloprid + abamectin	11 + 12 + 4 + 7	0.03 + 0.0096 + 0.34 + 0.375 + 0.15 mg ai/seed
	Seed Shield Cotton 0.5 FS	azoxystrobin + fludioxonil + mefenoxam + difenoconazole	11 + 12 + 4 + 3	4 oz/cwt based on 5000 seeds/lb
	Trilex Advanced 2.5 F	trifloxystrobin + metalaxyl + triadimenol	11 + 4 + 3	1.6 fl oz
In-Furrow Applications				
	EverGol Prime 2 FS	penflufen	7	0.64 fl oz
	Vibrance 4.3 FS Vibrance CST 1.65 FC	sedaxane	7	0.3 fl oz
Pythium and Rhizoctonia diseases; fungal seed rots	Reason 500 SC Uniform 3.72 SC	fenamidone azoxystrobin + mefenoxam	11 11 + 4	0.45 fl oz per 1,000 row ft 0.32 - 0.48 fl oz per 1,000 row ft
	Headline 2.09 SC	pyraclostrobin	11	0.3 - 0.8 fl oz per 1,000 row ft
	Quadris 2.08 SC	azoxystrobin	11	0.4 - 0.7 fl oz per 1,000 row ft
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	0.1 - 0.6 fl oz per 1,000 row ft

GRAIN SORGHUM – SEEDLING DISEASES

Terry Spurlock

Disease	Product	Active Ingredient	FRAC Code	Rate/cwt	Comments
Commercial and Distributor-Applied Seed Treatments					
Pythium and Rhizoctonia diseases; fungal seed rots	Apron XL 3 SC	mefenoxam	4	0.32 - 1.64 fl oz	Pythium diseases.
	Vibrance 4.3 FS	sedaxane	7	1.16 - 2.32 g ai/seed	Rhizoctonia diseases.
	Maxim 4 FS	fludioxonil	12	0.08 - 0.16 fl oz	Rhizoctonia and Fusarium diseases.

GRAIN SORGHUM – FOLIAR DISEASES

Terry Spurlock

Disease	Fungicide	Active Ingredient	FRAC Code*	Rate/Acre	Days to Harvest	Comments
Anthracnose, target spot and other foliar fungal diseases	Quadris 2.08 SC	azoxystrobin	11	6 - 15.5 fl oz	14	University trials have shown the best timing to be boot to early heading, and up to 50% flowering.
	Aproach 2.08 SC	picoxystrobin	11	6 - 12 fl oz	Do not apply after flowering.	
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 fl oz	Apply no later than 25% flowering.	
	Quilt Xcel 2.2 SE	azoxystrobin + propiconazole	11 + 3	10.5 - 14 fl oz	21 (grain)	Same timing as Quadris; use highest rates for severe disease pressure situations as above.
	Topguard EQ 4.5 FL	azoxystrobin + flutriafol	11 + 3	5 - 7 fl oz	Do not apply within 30 days of harvest for stover, forage or grain.	Do not apply more than two applications per year.
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	21	Do not apply more than 8 fl oz per season.

***FRAC Code** – Fungicides with the same FRAC Code have the same mode of action. See http://www.frac.info/ for an explanation of the FRAC Codes. Rotation of fungicides with different FRAC Codes could minimize the development of fungicide resistant strains.

PEANUT SEEDLING DISEASES

Travis Faske

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/cwt Seed	Comments
Seed Treatments					
Rhizoctonia solani and *Pythium* spp.	Dynasty PD	azoxystrobin + mefenoxam + fludioxonil	11 + 4 + 12	3 - 4 oz	
	Maxim 4 FS	fludioxonil	12	0.08 oz	
	Rancona V PD	ipconazole + carboxin + metalaxyl	3 + 7 + 4	4 oz	
	Vibrance	sedaxane	7	0.013 - 0.053 mg ai/seed	For control of rhizoctionia seedling diseases.
Pythium	Apron XL	mefenoxam	4	0.32 oz	
In-Furrow or Band Applications					
Aspergillus crown rot *(Aspergillus niger) Pythium spp. Rhizoctonia solani*	Abound 2.08 SC (multiple generics)	azoxystrobin	11	0.4 - 0.8 fl oz/ 1,000 row ft or 5.5 - 11 fl oz/A on 38 in. row spacing	Apply in-furrow at planting.
Rhizoctonia solani and *Pythium* spp.	Uniform	azoxystrobin + mefenoxam	11 + 4	0.34 oz/row ft	At planting.
Southern Blight *(Sclerotium rolfsii)*	Proline	prothioconazole	3	5.7 oz/A	Apply 4- to 6-inch band over the row at or near emergence.

PEANUT FOLIAR DISEASES

Travis Faske

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Leaf Spots						
Chemical Control of Leaf Spot Diseases: 1. In any given field, circular-shaped spots can be found on peanut leaves; however, these spots may not be caused by the leaf spot pathogens. Sporulation (fuzzy tufts of fungal structures) can be seen with the aid of a hand lens on the upper leaf surfaces for ELS and lower leaf surface for LLS. 2. Fungicides on peanut are applied to prevent leaf spot disease development, which typically begins 60 days after planting, when conditions favor disease development. Fungicide programs consist of repeated applications at 14 - 21 day intervals depending on disease development and weather conditions. 3. Apply fungicides with sufficient water volume (15 to 20 GPA) to adequately cover foliage. 4. Do not make consecutive applications of the same mode of action (i.e., same FRAC code number) except for those applications that contain chlorothalonil in a cropping season. It is recommended to tank mix fungicides with a single mode of action with chlorothalonil.						
Early leaf spot *(Cercospora arachidicola)*	Cercobin	thiophanate-methyl	1	10.9 fl oz	14	Very good activity on leaf spot diseases. ALWAYS mix with chlorothalonil.
and	Topsin, T-Methyl 70 W	thiophanate-methyl	1	8 oz	14	
Late leaf spot *(Cercosporidium personatum)*	Topsin, T-Methyl 4.5 F	thiophanate-methyl	1	10 fl oz	14	
	Thiophanate Methyl 85 WDG	thiophanate-methyl	1	6.4 oz	14	
	Alto 100 SL	cyproconazole	3	5.5 fl oz	30	Good activity on leaf spots.
	Topguard 1.04 SC	flutriafol	3	7 - 14 fl oz	14	
	Provysol 3.34 SC	mefentrifluconazole	3	7 fl oz	14	
	Tebuconazole 3.6 F (multiple generics)	tebuconazole	3	7.2 fl oz	14	Good activity on leaf spots.
	Eminent 125 SL	tetraconazole	3	13 fl oz	14	Good activity on leaf spots.
	Fontelis 1.67 SC	penthiopyrad	7	12 - 24 fl oz	14	Good activity on leaf spots.
	Miravis 1.67 SC	pydiflumetofen	7	3.4 fl oz	14	Excellent activity against leaf spot diseases.
	Abound 2.08 SC (multiple generics)	azoxystrobin	11	6 - 18.5 fl oz	14	
	Evito 480 SC (multiple generics)	fluoxastrobin	11	5.7 fl oz	14	
(continued)	Headline 2.09 SC	pyraclostrobin	11	6 - 15 fl oz	14	Very good activity on leaf spots.

PEANUT FOLIAR DISEASES – continued

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Leaf Spots (cont.)						
Early leaf spot *(cont.)* *(Cercospora arachidicola)*	Bravo Weather Stik, Chlorothalonil, Echo 6 F	chlorothalonil	M5	1 - 1.5 pt	14	Very good activity on leaf spots when applied prior to disease development. Use high rate when applied alone or low rate in tank mix.
and	Bravo Ultrex, Chlorothalonil 82.5 DF	chlorothalonil	M5	0.9 - 1.36 lb	14	
Late leaf spot *(Cercosporidium personatum)*	Acropolis 2.38 F	thiophanate-methyl + tetraconazole	1 + 3	23 fl oz	14	
	Provost 433 SC	prothioconazole + tebuconazole	3 + 3	7 - 8 fl oz	14	Very good activity on leaf spot diseases.
	Provost Silver 3.52 SC	prothioconazole + tebuconazole	3 + 3	11 - 13 fl oz	14	
	Lucento 4.17 SC	bixafen + flutriafol	7 + 3	3 - 5.5 fl oz	14	
	Topguard EQ 4.0 SC	azoxystrobin + flutriafol	11 + 3	5 - 8 fl oz	14	
	Dexter Max	azoxystrobin + mancozeb	11 + 3	2.1 lb	14	
	Evito T 4 F	fluoxastrobin + tebuconazole	11 + 3	6 - 9 fl oz	14	
	Absolute 500 SC	trifloxystrobin + tebuconazole	11 + 3	3.5 fl oz	14	
	Elatus 45 WG	azoxystrobin + benzovindiflupyr	11 + 7	7.3 - 9.5 fl oz	30	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	14	
	Revytek 3.33 SC	pyraclostrobin + fluxapyroxad + mefentrifluconazole	11 + 7 + 3	8 - 15 fl oz	14	
	Muscle ADV 3.84 SC	chlorothalonil + tebuconazole	M5 + 3	2 pt	14	
	Echo 6 F – Eminent 125 SL Co-Pack	chlorothalonil + tetraconazole	M5 + 3	1.45 pt	14	
	Mazinga ADV 3.23 SC	chlorothalonil + tetraconazole	M5 + 3	2 pt	14	
	Arius ADV 6.65 SC	chlorothalonil + azoxystrobin	M5 + 11	21 - 30 fl oz	14	

PEANUT SOILBORNE DISEASES

Travis Faske

Chemical Control of Soilborne Peanut Diseases:

1. Southern blight is the most common soilborne disease of peanut in Arkansas, which is most active when weather conditions are hot and humid.
2. Fungicides on peanut are applied to prevent soilborne disease development, which typically begins 60 days after planting, when conditions favor disease development. Fungicide programs consist of repeated applications at 14 - 21 day intervals depending on disease development and weather conditions.
3. Apply fungicides with sufficient water volume (15 to 20 GPA) to penetrate canopy or before rainfall. Applications at night when leaves are folded have been shown to improve fungicide penetration into the lower canopy.
4. Do not make consecutive applications of the same mode of action (i.e., FRAC group number) except for those applications that contain chlorothalonil.

Southern blight *(Sclerotium rolfsii)*	tebuconazole 3.6 F (multiple generics)	tebuconazole	3	7.2 fl oz	14	Very good activity on southern blight.
	Convoy 3.8 F	flutolanil	7	16 - 32 fl oz	40	Excellent activity on southern blight.
(continued)	Fontelis 1.67 SC	penthiopyrad	7	12 - 24 fl oz	14	Excellent activity on southern blight.

PEANUT SOILBORNE DISEASES – continued

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Peanut Soilborne Diseases (cont.)						
Southern blight *(cont.)* *(Sclerotium rolfsii)*	Abound 2.08 SC (multiple generics)	azoxystrobin	11	12 - 24.5 fl oz	14	Good activity on southern blight.
	Headline 2.09 SC	pyraclostrobin	11	6 - 15 fl oz	14	Combine with triazole or flutolanil for effective southern blight control.
	Provost 433 SC	prothioconazole + tebuconazole	3 + 3	7 - 8 fl oz	14	Prothioconazole has very good activity on southern blight.
	Elatus 45 WG	azoxystrobin + benzovindiflupyr	11 + 7	7.3 - 9.5 fl oz	30	
	Evito T 4 F	fluoxastrobin + tebuconazole	11 + 3	9 - 11 fl oz	14	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	8 fl oz	14	Good activity on southern blight.
	Revytek 3.33 SC	pyraclostrobin + fluxapyroxad + mefentrifluconazole	11 + 7 + 3	8 - 15 fl oz	14	
	Muscle ADV 3.84 SC	chlorothalonil + tebuconazole	M5 + 3	2 pt	14	Very good activity on southern blight.
	Arius ADV 6.65 SC	chlorothalonil + azoxystrobin	M5 + 11	30 fl oz	14	
Limb rot *(Rhizoctonia solani)*	tebuconazole 3.6 F (multiple generics)	tebuconazole	3	7.2 fl oz	14	Good activity on Rhizoctonia limb rot.
	Convoy 3.8 F	flutolanil	7	1 - 2 pt	40	Very good activity on Rhizoctonia limb rot.
	Fontelis 1.67 SC	penthiopyrad	7	12 - 24 fl oz	14	Very good activity on Rhizoctonia limb rot.
	Abound 2.08 SC (multiple generics)	azoxystrobin	11	12 - 24.5 fl oz	14	Excellent activity on Rhizoctonia limb rot.
	Headline 2.09 SC	pyraclostrobin	11	9 - 15 fl oz	14	Combine with triazole or flutolanil for effective Rhizoctonia limb rot control.
	Provost 433 SC	prothioconazole + tebuconazole	3 + 3	7 - 8 fl oz	14	
	Evito T 4 F	fluoxastrobin + tebuconazole	11 + 3	9 - 11 fl oz	14	
	Elatus 45 WG	azoxystrobin + benzovindiflupyr	11 + 7	7.3 - 9.5 fl oz	30	
	Muscle ADV 3.84 SC	chlorothalonil + tebuconazole	M5 + 3	2 pt	14	
	Arius ADV 6.65 SC	chlorothalonil + azoxystrobin	M5 + 11	30 fl oz	14	

PEANUT SOILBORNE DISEASES – continued

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Peanut Soilborne Diseases (cont.)						
Sclerotinia blight *(Sclerotinia minor)* *(S. sclerotiorum)*	Rovral 4F	iprodione	2	2 pt	10	40 gal/ac minimum.
	Endura 70 WG	boscalid	7	8 - 10 oz	14	
	Omega 500 F	fluazinam	29	1 - 1.5 pt	30	Fields with a history of Sclerotinia blight should be treated beginning 60 to 70 days after planting or when conditions favor disease.
Pod Rots						
Pytium spp. *Rhizoctonia solani*	Ridomil Gold SL	mefenoxam	4	4 - 8 fl oz	See label.	Pythium rot only. Apply at pegging or early pod set (45 to 60 DAP) followed by irrigation.
	Metastar 2 E	metalaxyl	4	2 - 4 pt		Pythium rot only.
	Ridomil Gold 2.5 G	mefenoxam	4	11.8 lb	See label.	Pythium rot only. Apply in 12-inch band at pegging or early pod set (45 to 60 DAP).
	Abound 2.08 SC (multiple generics)	azoxystrobin	11	18 - 24.5 fl oz	14	Suppress Rhizoctonia pod rots. Apply 60 to 70 DAP. Do not make more than 2 sequential applications of FRAC group 11 fungicides.

PEANUT – AFLATOXIN

Travis Faske

Contamination	Biological Product	Active Ingredient	Rate/A	Comments
Aflatoxin Contamination by *Aspergillus flavus*	Afla-Guard	Atoxigenic strain of *A. flavus*	20 lb	Apply by ground 40 - 80 days after planting or canopy closure.

Note: Aflatoxin can be an issue in dry land production such as outside pivot irrigation.

PEANUT NEMATODES

Travis Faske

Disease	Nematicide	Active Ingredient	Rate Per Acre	Comments
Nematodes	Velum Total	fluopyram	18 fl oz	Apply as in-furrow spray with 5 - 6 gal/ac water at planting.
	Telone II	1,3-dichloropropene	4 - 6 gal	Inject 12 inches below the soil surface. Allow 2 weeks before planting.

Nematodes are not currently a serious threat to peanut production in Arkansas; therefore, we do not routinely recommend nematicides, even though certain products are labeled for this use. The peanut root-knot nematode is extremely rare in the state and reniform nematode does not reproduce on peanut. It is possible, however, that other nematode species such as the lesion nematode or the ring nematode may reach economic levels in some fields. If nematodes are suspected, soil samples should be collected in the fall (September-October) and sent to the Nematode Diagnostic Laboratory for analysis before the next crop is planted.

RICE – SEEDLING DISEASES

Yeshi Wamishe

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/cwt Seed	Comments
Pythium diseases	Allegiance FL	metalaxyl	4	0.75 - 1.5 fl oz	Apply with commercial seed-treating equipment.
	Apron XL	mefenoxam	4	0.32 - 0.64 fl oz	Apply with commercial seed-treating equipment. Use higher rates for early planting or other severe disease situations.
Rhizoctonia seedling diseases, general seed rots	RTU-Vitavax-Thiram	carboxin + thiram	7 + M3	6.8 fl oz	Apply with commercial seed-treating equipment or use as a pour-on hopper-box treatment.
	Vitavax 200	carboxin + thiram	7 + M3	4 fl oz	Apply with commercial seed-treating equipment.
	Maxim 4 FS	fludioxonil	12	0.02 - 0.08 fl oz	Apply with commercial seed-treating equipment. Use higher rates for severe disease situations.
	Vibrance*	sedaxane	7	0.12 fl oz	
	Vibrance RST	azoxystrobin + fludioxonil + mefenoxam + sedaxane	11 12 4 7	1.7 fl oz	
Pythium, Rhizoctonia, general seed rots	Vitavax 200 + Allegiance FL	carboxin + thiram + metalaxyl	7 + M3 + 4	4 fl oz + 0.375 fl oz	Apply with commercial seed-treating equipment.
	Apron XL + Maxim 4 FS	mefenoxam + fludioxonil	4 + 12	0.32 - 0.64 fl oz + 0.08 - 0.16 fl oz	Apply with commercial seed-treating equipment. Use higher rates for early planting or severe disease situations.
	Dynasty	azoxystrobin	11	0.153 - 1.53 fl oz	Commercial seed treaters only. Usually sold with Apron XL and Maxim on rice to improve seedling disease control. To reduce seedborne blast, data suggests rates of Dynasty above 0.75 fl oz per cwt. The use of a seed treatment fungicide to minimize seedborne blast does not mean complete control of the disease later in the season and the field should still be scouted for blast disease and managed with deeper flood and foliar fungicides. CruiserMaxx Rice may be used for a wider range of ai's.
	Trilex 2000 1.15 FC	trifloxystrobin + metalaxyl	11 + 4	1 - 2 oz	See label.
	EverGol Energy 1.47 FS	prothioconazole + penflufen + metalaxyl	3 + 7 + 4	1 oz	Commercial seed treatment only.
	CruiserMaxx Rice	thiamethoxam + azoxystrobin + fludioxonil + mefenoxam	--- + 11 + 12 + 4	7 fl oz	

*Rate for Vibrance is at 0.0002-0.002 mg ai/seed (based on 21,000 rice seeds/lb) for control of Rhizoctonia seedling diseases.

RICE – FUNGICIDES

Yeshi Wamishe

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Comments[1]
Fungicides to control sheath blight should be applied when effective scouting indicates more than 35% positive stops in susceptible to very susceptible varieties or more than 50% positive stops in moderately susceptible varieties between panicle differentiation and early heading. Maximum benefit from a single fungicide application will be achieved when made before the disease has damaged the upper 3 leaves of the canopy.					
Sheath Blight	Quadris 2.08 SC	azoxystrobin	11	8.5 - 12.5 fl oz	Lower rates may not provide adequate control under some conditions. Do not apply near fishponds or apple orchards. Read and follow label application directions carefully. Use higher rates or two applications for severe sheath blight conditions on highly susceptible varieties – SEE LABEL FOR RESTRICTIONS.
	Stratego	trifloxystrobin + propiconazole	11 + 3	16 - 19 fl oz	
	Quilt Xcel 2.2 EC	azoxystrobin + propiconazole	11 + 3	14 - 27 fl oz	Tested rates for Quilt Xcel were 17.5 fl oz (contains about 10 fl oz Quadris and 5 fl oz Tilt) and 21 fl oz (contains 12 fl oz Quadris and 6 fl oz Tilt) in Arkansas.
	Amistar Top	azoxystrobin + difenoconazole	11 + 3	10 - 15 fl oz	SEE LABEL FOR RESTRICTIONS AND DIRECTIONS.
	GEM	trifloxystrobin	11	3.8 - 4.7 fl oz	SEE LABEL FOR RESTRICTIONS AND DIRECTIONS.
	Sercadis	fluxapyroxad	7	4.5 - 6.8 fl oz	SEE LABEL FOR RESTRICTIONS AND DIRECTIONS.
	Elegia	flutolanil	7	32 fl oz	SEE LABEL FOR RESTRICTIONS AND DIRECTIONS.
Kernel Smut and False Smut	Tilt 3.6 EC	propiconazole	3	6 fl oz	Apply at early to late boot but before heading begins as a preventive treatment for kernel smut and/or to suppress false smut. Propiconazole fungicides can be tank-mixed with certain sheath blight fungicides or follow them as needed. Fields most likely to benefit will be those planted to a susceptible variety and fertilized heavily with nitrogen. SEE LABEL FOR RESTRICTIONS AND DIRECTIONS.
	Propimax	propiconazole	3	6 fl oz	
	Stratego	trifloxystrobin + propiconazole	11 + 3	19 fl oz	
	Amistar Top	azoxystrobin + difenoconazole	11 + 3	10 - 15 fl oz	
	Quilt Xcel 2.2 EC	azoxystrobin + propiconazole	11 + 3	15.75 - 27 fl oz	
Panicle or Neck Blast[2] (susceptible varieties – see notes and comments)	Quadris 2.08 SC	azoxystrobin	11	12.5 fl oz	Keep permanent flood depth of at least 4 inches to suppress early leaf blast and neck blast. Fungicides for neck blast work best if applied twice, the 1st at late boot and the 2nd when panicles of the main tillers are 50% - 75% heading but when the neck is still in boot. SEE LABELS FOR RESTRICTIONS AND DIRECTIONS.
	GEM	trifloxystrobin	11	3.1 - 4.7 fl oz	
	Stratego	trifloxystrobin + propiconazole	11 + 3	19 fl oz	
	Amistar Top	azoxystrobin + difenoconazole	11 + 3	10 - 15 fl oz	15 fl oz/A is the only rate labelled for blast control and PHI is 28 days.
	Quilt Xcel 2.2 EC	azoxystrobin + propiconazole	11 + 3	21 - 27 fl oz	

NOTE ON FUNGICIDES AND OTHER RICE DISEASES: We do not currently recommend fungicides for control of other rice diseases in Arkansas. Current fungicides used in rice are not recommended for bacterial panicle blight. Please consult the latest fungicide label for information on control of other rice diseases if deemed necessary.

SOYBEAN – SEEDLING DISEASES

Terry Spurlock

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/cwt Seed	Comments
Seed Rots Damping-Off Complex (Seedling Diseases) (Pythium, Rhizoctonia, etc.)	Trilex 2000 1.15 FC	trifloxystrobin + metalaxyl	11 4	1 fl oz	
	CruiserMaxx Vibrance 2.49 FS	thiamethoxam + mefenoxam + fludioxonil + sedaxane	--- 4 12 7	3.22 fl oz	Commercial seed treatment only.
	Maxim 4 FS or Allegiance 1.63 LS or Apron XL 3 SC	fludioxonil + metalaxyl + mefenoxam	12 4 4	0.08 - 0.16 fl oz 1.2 - 2.4 fl oz 0.16 - 0.64 fl oz	For on-farm or commercial use with slurry or mist treaters.
	Vitavax M 11.4 F + Allegiance 1.63 LS	carboxin + thiram + molybdenum + metalaxyl	7 M3 --- 4	9 - 12 fl oz 1.2 - 2.4 fl oz	For on-farm or commercial use with slurry or mist treaters or as a planter-box treatment.
	ApronMaxx RFC 0.52 FS	mefenoxam + fludioxonil	4 12	1.5 fl oz	
	ApronMaxx RTA + Moly 0.16 FC	mefenoxam + fludioxonil + molybdenum	4 12 ---	5 fl oz	
	EverGol Energy 1.47 FS	prothioconazole + penflufen + metalaxyl	3 7 4	1 oz	Commercial seed treatment only.
	Stamina 1.67 FC	pyraclostrobin	11	0.4 fl oz	For use by commercial seed treaters only.
	Vibrance 4.3 FS	sedaxane	7	0.08 - 0.16 fl oz	Specific for Rhizoctonia pathogens.
	Vibrance Trio 1.66 FC	fludioxonil + sedaxane + mefenoxam	12 7 4	1.55 fl oz/cwt	
Soilborne Diseases					
Though Sudden Death Syndrome is a soilborne disease that is best management with host plant resistance. Some seed applied fungicides can provide some suppression of seedling infection.					
	ILeVO 5 FC	fluopyram	7	0.15 - 0.25 mg ai/seed	Suppression of seedling infection of sudden death syndrome. Commercial seed treatment only. Do not feed as forage or hay to livestock.
	Saltro 4.17 FC	pydiflumetofen	7	0.075 mg ai/seed	Do not feed as forage or hay to livestock. Rate is 0.714 fl oz/140,000 seed or 1.52 fl oz/cwt.

NOTE: Metalaxyl and mefenoxam have activity against Pythium and Phytophthora fungi while all others listed are more active against Rhizoctonia, Fusarium and various true fungi. A combination of the two chemistries provides broadest spectrum control. If an inoculant is to be used, it should be applied after fungicide seed treatments have dried and/or right before planting. Seed treatments often have not resulted in improved stands or yields in University trials unless less-than-optimum planting conditions are prevalent (early planting, heavy clay soils, cool, wet conditions, etc.).

SOYBEAN – FOLIAR DISEASES

Travis Faske and Terry Spurlock

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Aerial Blight	Quadris 2.08 SC (multiple generics)	azoxystrobin	11	6 - 15.5 fl oz	14	Apply at first sign of disease for maximum control. Applications after significant disease development will result in poor control. Use the high rates under conditions favorable for severe disease development, dense plant canopies or when highly susceptible varieties are planted.
	Headline 2.09 SC*	pyraclostrobin	11	6 - 12 fl oz	21	
	Froghorn 4.30 SC	tebuconazole + thiophanate-methyl	3 + 1	20 fl oz	21	
	Miravis Top 1.67 SC	difenoconazole + pydiflumetofen	3 + 7	13.7 fl oz	14	
	Quadris Top SBX 3.76 SC	azoxystrobin + difenoconazole	11 + 3	7 fl oz	30	
	Topquard EQ 4.29 SC	azoxystrobin + flutriafol	11 + 3	5 - 7 fl oz	21	
	Quilt Xcel 2.2 SE, Cover XL 2.2 SE	azoxystrobin + propiconazole	11 + 3	10.5 - 14 fl oz	See label	
	Helmstar Plus 3.0 SC	azoxystrobin + tebuconazole	11 + 3	7.2 fl oz	21	
	Affiance 1.5 SC*	azoxystrobin + tetraconazole	11 + 3	14 fl oz	14	
	Zolera FX 3.34 SC	fluoxastrobin + tetraconazole	11 + 3	4.4 - 6.8 fl oz	30	
	Aproach Prima 2.34 SC*	picoxystrobin + cyproconazole	11 + 3	5 - 6.8 fl oz	30	
	Stratego 2.08 SC*	trifloxystrobin + propiconazole	11 + 3	10 fl oz	21	
	Stratego YLD 4.18 SC*	trifloxystrobin + prothioconazole	11 + 3	4 - 4.6 fl oz	21	
	Priaxor 4.17 SC*	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	21	
	Trivapro 2.21 SE	benzovindiflupyr + azoxystrobin + propiconazole	7 + 11 + 3	13.7 fl oz	14	

Frogeye Leaf Spot:
Apply in presence of disease for maximum control on susceptible varieties. Applications between R3 and R4 growth stages have been effective when conditions favor disease on susceptible variety. A strobilurin fungicide (FRAC Code 11) alone will not adequately control strains for frogeye leaf spot that are resistant to this class of fungicide. Some DMI fungicides (FRAC code 3) can cause phytotoxicity, which is similar in appearance to sudden death syndrome. Typically this appear 14 days after application.

General Seed Quality: An application between R2 and late R5 has been used by seed producers for general seed quality protection.

Anthracnose, Frogeye leaf spot, Pod and stem blight, Cercospora leaf blight, and general seed quality diseases	Cercobin 4.11 SC	thiophanate-methyl	1	10.9 - 21.8 fl oz	21	
	Thiophanate-Methyl 85 WDG	thiophanate-methyl	1	0.4 - 0.8 lb	21	
	Topsin 4.5 L	thiophanate-methyl	1	10 - 20 fl oz	21	
	Topsin 70 WDG	thiophanate-methyl	1	0.5 - 1 lb	21	
	Alto 100 SL	cyproconazole	3	4 - 5.5 fl oz	30	
	Topguard 1.04 SC	flutriafol	3	7 - 14 fl oz	21	
	Tilt, Bumper, or multiple generics 41.8 EC	propiconazole	3	4 - 6 fl oz	See label	
	Proline 480 SC	prothioconazole	3	2.5 - 3 fl oz	21	
	Domark 230 ME	tetraconazole	3	4 - 5 fl oz	See label	
	Adiamo 230 ME	tetraconazole	3	4 - 5 fl oz	R5	Apply as a curative application when disease incident does not exceed 5% of the plants.

(continued)

SOYBEAN – FOLIAR DISEASES (continued)

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Anthracnose, *(cont.)* Frogeye leaf spot, Pod and stem blight, Cercospora leaf blight, and general seed quality diseases	Quadris 2.08 SC (multiple generics)	azoxystrobin	11	6 - 15.5 fl oz	14	
	Evito 480 SC, Aftershock 480 SC	fluoxastrobin	11	2 - 5.7 fl oz	30	
	Aproach 2.08 SC	picoxystrobin	11	6 - 12 fl oz	14	
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 fl oz	21	
	GEM 500 SC	trifloxystrobin	11	3 - 3.5 fl oz	21	
	Topsin XTR 4.3 F	thiophanate-methyl + tebuconazole	1 + 3	20 fl oz	21	
	Froghorn 4.3 SC	thiophanate-methyl + tebuconazole	1 + 3	20 fl oz	21	
	Acropolis 2.38 F	thiophanate-methyl + tetraconazole	1 + 3	20 - 23 fl oz	R5	
	Lucento 4.17 SC	flutriafol + bixafen	3 + 7	3 - 5.5 fl oz	21	In university trials 5 oz/A was the most effective rate.
	Miravis Top 1.62 SC	difenconazole + pydiflumetofen	3 + 7	13.7 fl oz	14	
	Quadris Top SBX 3.76 SC	azoxystrobin + difenoconazole	11 + 3	7 fl oz	14	
	Topguard EQ 4.29 SC	azoxystrobin + flutriafol	11 + 3	5 - 7 fl oz	21	
	Custodia 2.67 SC	azoxystrobin + tebuconazole	11 + 3	8.6 fl oz	21	
	Helmstar Plus 3.0 SC	azoxystrobin + tebuconazole	11 + 3	7.2 fl oz	21	
	Quilt Xcel 2.2 SE, Cover XL 2.2 SE	azoxystrobin + propiconazole	11 + 3	10.5 - 14 fl oz	See label	
	Affiance 1.5 SC	azoxystrobin + tetraconazole	11 + 3	10 - 14 fl oz	14	
	Brixen 1.85 SC	azoxystrobin + tetraconazole	11 + 3	13 - 16 fl oz	14	
	Fortix 3.22 SC, Preemptor 3.22 SC	fluoxastrobin + flutriafol	11 + 3	5 - 6 fl oz	30	
	Evito T 4.0 SC	fluoxastrobin + tebuconazole	11 + 3	4 - 6 fl oz	30	
	Zolera FX 3.34 SC	fluoxastrobin + tetraconazole	11 + 3	4.4 - 6.8 oz	30	
	Aproach Prima 2.34 SC	picoxystrobin + cyproconazole	11 + 3	5 - 6.8 fl oz	30	
	Veltyma 3.34 SC	pyraclostrobin + mefentrifluconazole	11 + 3	7 - 10 fl oz	21	
	Stratego 2.08 SC	trifloxystrobin + propiconazole	11 + 3	10 fl oz	21	
	Stratego YLD 4.18 SC	trifloxystrobin + prothioconazole	11 + 3	4 - 4.6 fl oz	21	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	21	
	Trivapro 2.21 SE	benzovindiflupyr + azoxystrobin + propiconazole	7 + 11 + 3	13.7 fl oz	14	
	Revytek 3.33 SC	fluxapyroxad + pyraclostrobin + mefentrifluconazole	7 + 11 + 3	8 - 15 fl oz	21	
	Mazinga ADV 3.23 SC	tetraconazole + chlorothalonil	M5 + 3	2 pt	R5	
	Arius ADV 6.65 SC	chlorothalonil + azoxystrobin	M5 + 11	20 - 25 fl oz	42	

SOYBEAN – FOLIAR DISEASES (continued)

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
	Alto 100 SL	cyproconazole	3	4 - 5.5 fl oz	30	When soybean rust is present and conditions favor disease development, use high rates combined with additional triazole for improved rust control.
	Topguard 1.04 SC	flutriafol	3	7 - 14 fl oz	21	
	Tilt, Bumper, or multiple generics 41.8 EC	propiconazole	3	4 - 6 fl oz	See label	
	Proline 480 SC	prothioconazole	3	2.5 - 3 fl oz	21	
	tebuconazole (multiple generics 3.6 F)	tebuconazole	3	3 - 4 fl oz	21	
	Domark 230 ME	tetraconazole	3	4 - 5 fl oz	See label	
	Adiamo 230 ME	tetraconazole	3	4 - 5 fl oz	R5	
	Quadris 2.08 SC	azoxystrobin	11	6 - 15.5 fl oz	14	
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 fl oz	21	
	Topsin XTR 4.3 F	thiophanate-methyl + tebuconazole	1 + 3	20 fl oz	21	
	Froghorn 4.3 SC	thiophanate-methyl + tebuconazole	1 + 3	20 fl oz	21	
	Trivapro 2.21 SE	benzovindiflupyr + azoxystrobin + propiconazole	7 + 11 + 3	13.7 fl oz	14	
	Revytek 3.33 SC	fluxapyroxad + pyraclostrobin + mefentrifluconazole	7 + 11 + 3	8 - 15 fl oz	21	
	Acropolis 2.38 F	thiophanate-methyl + tetraconazole	1 + 3	20 - 23 fl oz	R5	
	Topquard EQ 4.29 SC	azoxystrobin + flutriafol	11 + 3	5 - 7 fl oz	21	
	Quilt Xcel 2.2 SE, Cover XL 2.2 SE	azoxystrobin + propiconazole	11 + 3	14 - 21 fl oz	See label	
	Helmstar Plus 3.0 SC	azoxystrobin + tebuconazole	11 + 3	7.2 fl oz	21	
	Affiance 1.5 SC	azoxystrobin + tetraconazole	11 + 3	10 - 14 fl oz	14	
	Brixen 1.85 SC	azoxystrobin + tetraconazole	11 + 3	13 - 16 fl oz	14	
	Aproach Prima 2.34 SC	picoxystrobin + cyproconazole	11 + 3	5 - 6.8 fl oz	30	
	Veltyma 3.34 SC	pyraclostrobin + mefentrifluconazole	11 + 3	7 - 10 fl oz	21	
	Stratego 2.08 SC	trifloxystrobin + propiconazole	11 + 3	10 fl oz	21	
	Stratego YLD 4.18 SC	trifloxystrobin + prothioconazole	11 + 3	4 - 4.6 fl oz	21	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	21	
	Mazinga ADV 3.23 SC	tetraconazole + chlorothalonil	M5 + 3	2 pt	R5	
	Arius ADV 6.65 SC	chlorothalonil + azoxystrobin	M5 + 11	20 - 25 fl oz	42	

*Use for control of aerial blight is based on other states' data.

Management of Soybean Diseases – Fungicide Efficacy for Control of Foliar Soybean Diseases *(January 2020)*

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. **This 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 products[1]**. 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.

NOTE: This guideline was a composite of several field trials from multiple states across the U.S. soybean belt and may not always reflect fungicide efficacy observed in Arkansas.

Fungicide(s)				Aerial Web Blight	Anthrac-nose	Brown Spot	Cercospora Leaf Blight[2]	Frogeye Leaf Spot[3]	*Phomopsis/ Diaporthe* (Pod and Stem Blight)	Soybean Rust	Target Spot	Harvest Restriction[4]
Class	Active Ingredient (%)	Product/ Trade Name	Rate/A (fl oz)									
QoI Strobilurins Group 11	Azoxystrobin 22.9%	Quadris 2.08 SC	6 - 15.5	VG	VG	G	F	P	U	G-VG	P-F	14 days
	Fluoxastrobin 40.3%	Aftershock 480 SC Evito 480 SC	2 - 5.7	VG	G	G	F	P	U	U	U	R5 (beginning seed) 30 days
	Picoxystrobin	Aproach 2.08 SC	6 - 12	VG	G	G	F	P	U	G	U	14 days
	Pyraclostrobin 23.6%	Headline 2.09 EC/SC	6 - 12	VG	VG	G	F	P	U	VG	P-F	21 days
DMI Triazoles Group 3	Cyproconazole 8.9%	Alto 100 SL	2.75 - 5.5	U	U	VG	F	F	U	VG	U	30 days
	Flutriafol 11.8%	Topguard 1.04 SC	7 - 14	U	VG	VG	F	VG	U	VG-E	P	21 days
	Propiconazole 41.8%	Tilt 3.6 EC Multiple Generics[5]	4 - 6	P	VG	G	NL	F	NL	VG	U	R6
	Prothioconazole 41.0%	Proline 480 SC	5 - 5.7	NL	NL	NL	NL	G-VG	NL	VG	U	21 days
	Tetraconazole 20.5%	Domark 230 ME Multiple Generics	4 - 5	NL	VG	VG	F	G-VG	U	VG-E	P	R5 (beginning seed)
MBC Thiophanates Group 1	Thiophanate-methyl	Topsin-M 70 WP Multiple Generics	10 - 20	U	U	U	F	VG	U	G	U	21 days
SDHI Carboximides Group 7	Boscalid 70%	Endura 0.7 DF	3.5 - 11	U	NL	VG	U	P	NL	NL	U	21 days

Management of Soybean Diseases – Fungicide Efficacy for Control of Foliar Soybean Diseases *(January 2020) – (continued)*

Fungicide(s)				Aerial Web Blight	Anthrac-nose	Brown Spot	Cercospora Leaf Blight[2]	Frogeye Leaf Spot[3]	*Phomopsis/ Diaporthe* (Pod and Stem Blight)	Soybean Rust	Target Spot	Harvest Restriction[4]
Class	Active Ingredient (%)	Product/ Trade Name	Rate/A (fl oz)									
Mixed Modes of Action Group 11 + 3 or 7	**Azoxystrobin 25.3% Flutriafol 16.83%**	**Topguard EQ 4.29 SC**	**5 - 7**	U	U	U	U	G	U	U	P	21 days
	Azoxystrobin 18.2% Difenoconazole 11.4%	**Quadris Top 2.72 SC**	**8 - 14**	U	U	U	U	VG	U	VG	P	14 days
	Azoxystrobin 19.8% Difenoconazole 19.8%	**Quadris Top SBX 3.76 SC**	**7 - 7.5**	U	U	U	U	G-VG	U	U	F-G	14 days
	Azoxystrobin 7.0% Propiconazole 11.7%	**Avaris 1.66 SC Quilt 1.66 SC HM-0812 1.66 SC**	**14 - 20.5**	U	U	G	U	F	U	VG	U	21 days
	Azoxystrobin 13.5% Propiconazole 11.7%	**Quilt Xcel 2.2 SE**	**10.5 - 21**	E	VG	G	F	F	U	VG	P	R6
	Benzovindiflupyr 10.27% Azoxystrobin 13.5% Propiconazole 11.7%	**Trivapro 2.21 EC**	**13.7**	U	U	VG	U	VG	U	U	U	14 days
	Cyproconazole 7.17% Picoxystrobin 17.94%	**Aproach Prima 2.34 SC**	**5 - 6.8**	U	U	U	U	G	U	VG	P	14 days
	Flutriafol 26.47% Bixafen 15.5%	**Lucento 4.17 SC**	**3 - 5.5**	U	U	VG	U	VG	U	U	U	21 days
	Flutriafol 19.3% Fluoxastrobin 14.84%	**Fortix 3.22 SC Preemptor 3.22 SC**	**4 - 6**	U	U	U	U	G	P	U	U	R5 (beginning seed)
	Pydiflumetofen 6.9% Difenoconazole 11.5%	**Miravis Top 1.67 SC**	**13.7**	VG	U	VG	P-G	VG	G	VG	VG	14 days
	Pyraclostrobin 28.58% Fluxapyroxad 14.33%	**Priaxor 4.17 SC**	**4 - 8**	E	VG	E	F	F	U	VG	F-G	21 days
	Pyraclostrobin 28.58% Fluxapyroxad 14.33% Tetraconazole 20.50%	**Priaxor D 4.17 SC 1.9 SC**	**4 (each component)**	U	U	U	U	G	U	VG	F-G	21 days R5 (beginning seed)
	Trifloxystrobin 32.3% Prothioconazole 10.8%	**Stratego YLD 4.18 SC**	**4 - 4.65**	VG	VG	VG	F	F	U	VG	P	21 days
	Tetraconazole 7.48% Azoxystrobin 9.35%	**Affiance 1.5 SC**	**10 - 14**	U	VG	VG	F	G	U	U	U	R5 14 days
	Thiophanate-methyl 17.76% Fluoxastrobin 17.76%	**Zolera FX 3.34%**	**4.4 - 6.8**	U	U	U	U	G	U	U	U	R5 30 days
	Thiophanate-methyl 21.3% Tetraconazole 4.2%	**Acropolis**	**20 - 23**	NL	U	U	U	VG	U	VG	U	R5
	Mefentrifluconazole 11.61% Pyraclostrobin 15.49% Fluxapyroxad 7.74%	**Revytek[12]**	**8 - 15**	U	U	VG	U	VG	U	F-G	P	

[1] Multiple 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.

[2] Cercospora 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.

[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] Harvest 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.

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

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-137 group assume no liability resulting from the use of these products.

SOYBEAN – NEMATODES

Travis Faske

Nematode	Nematicide	Formulation	Active Ingredient	Rate/Acre	Comments
Soybean Cyst, Root-Knot, Reniform, and Lesion	Telone II 9.85 L[1]	Liquid	1,3-dichloropropene	3 - 6 gal	Inject 12 inches below planting depth and seal immediately with appropriate bedding equipment. Wait 7 - 14 days before planting.
	Avicta 500 FS	Seed treatment	abamectin	0.15 mg ai/ seed	For use by commercial seed treaters only. Use in conjuction with moderately resistant cultivars. Available as Avictia Complete Beans 500.
	ILeVO 600 FS	Seed treatment	fluopyram	0.075 - 0.25 mg ai/seed	Available through commercial seed companies and dealer distributors.
	Saltro 4.17 FC	Seed treatment	pydiflumetofen	1.52 fl oz/cwt	Similar nematode suppression as other seed applied nematicides. 0.714 fl oz/140,000 seed (0.075 mg ai/ seed).
	Poncho/Votivo 5.0 FS	Seed treatment	clothianidin + *Bacillus firmus* I-1582	0.13 mg ai/seed	Commercial seed treatment equipment only.
	Clariva *pn*	Seed treatment	*Pasturia nishizawae*	1.6 fl oz/cwt	Biological control specific to soybean cyst nematodes. Available as Clariva Elite Beans.
	BioST Nematicide 100	Seed treatment	*Burkholderia* spp. A396	3 fl oz/cwt	
Complete seed treatment formulations that include seed-applied nematicides					
	Avictia Complete Beans 500	Seed treatment	abamectin + thiamethoxam + mefenoxam + fludioxinil	6.2 fl oz/cwt (@ 3000 seeds/lb)	Abamectin is the nematicide in this trade name formulation.
	Clariva Elite Beans	Seed treatment	*thiamethoxam + mefenox-am + fludioxinil + sedaxane + Pasteuria nishizawae*	5.6 fl oz/cwt or 2.6 fl oz/140,000 seeds	*P. nishizawae* is the biological nematicide for SCN only in this trade name formulation.

[1]Use where nematode pressure is severe.

RESTRICTED USE PESTICIDES – For sale and use only by licensed/certified applicators or persons under their direct supervision. **These are dangerous pesticides – use caution in handling and read and follow current label directions.** If nematodes are suspected to be causing problems, a diagnostic soil sample should be taken to your county agent for submission to the Cooperative Extension Service Nematode Diagnostic Laboratory. **A small fee is required.**

NOTE: The economic value of using nematicides on Arkansas soybeans is sometimes questionable. The value of soybeans in today's market must be considered. Planting resistant varieties or using crop rotation offers more economical control.

EDAMAME – SEEDLING DISEASES

Terry Spurlock

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/cwt Seed	Comments
Seed Treatment					
Pythium and Rhizoctonia diseases (seed rots, damping-off)	Maxim 4 FS	fludioxonil	12	0.08 - 0.16 fl oz	For commercial seed treatment.
	Apron XL 3 SC	mefenoxam	4	0.32 fl oz	
In-Furrow Application					
Phytophthora diseases	Ridomil Gold SL 4 SC	mefenoxam	4	0.08 - 0.28 fl oz	
Rhizoctonia and Phytophthora diseases	Uniform 3.72 SC	azoxystrobin + mefenoxam	11 4	0.34 fl oz	

EDAMAME – FOLIAR DISEASES

Travis Faske and Terry Spurlock

Disease	Fungicide	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
Aerial Blight	Quadris 2.08 SC	azoxystrobin	11	6 - 15.5 fl oz	0	
Anthracnose, Asian Soybean Rust, Cercospora Leaf Spot	Quadris 2.08 SC	azoxystrobin	11	6 - 15.5 fl oz	0	Do not make more than 2 sequential applications of FRAC 11 fungicide.
	Headline 2.09 SC	pyraclostrobin	11	6 - 9 oz	7	Begin applications prior to disease development, then at 7 - 14 day intervals. See label restrictions.
	Fontelis 1.67 SC	penthiopyrad	7	14 - 30 fl oz	0	Do not exceed 72 fl oz/acre per year. See label.
	Priaxor 4.17 SC	fluxapyroxad + pyraclostrobin	7 11	4 - 8 fl oz	7	7 - 14 day intervals. See label restrictions.
	Revytek 3.33 SC	pyraclostrobin + fluxapyroxad + mefentrifluconazole	11 7 3	8 - 15 fl oz	21	Maximum of 2 applications per season 14 day interval. Do not apply more than 10 fl oz per application.
	Veltyma 3.34 SC	pyraclostrobin + mefentrifluconazole	11 3	7 - 10 fl oz	21	Maximum of 2 applications per season 14 day interval. Do not apply more than 10 fl oz per application.
Ascochyta Blight, Alternaria Leaf and Pod Spot	Endura 0.7 DF	boscalid	7	8 - 11 oz	7	Maximum of 2 applications per season. 5 - 14 day intervals. Begin application prior to disease development or at beginning of flowering.

EDAMAME – NEMATODES

Travis Faske

Nematode	Nematicide	Formulation	Active Ingredient	Rate/Acre	Comments
Root-Knot, Reniform, and Soybean Cyst Nematode	Telone II 9.85 L	liquid	1,3-dichloropropene	3 gal	Inject 12 inches below planting depth and seal immediately with appropriate bedding equipment. Wait 7 - 14 days before planting.
	Avicta Complete Beans 500 FC	seed treatment	abamectin + thiamethoxam + fludioxonil + mefenoxam	6.2 fl oz/ cwt	Use where nematode pressure is low to moderate.

WHEAT – SEED TREATMENTS

Terry Spurlock

Disease	Fungicide	Active Ingredient	FRAC Code*	Rate/cwt Seed	Comments
Loose Smut, Stagonospora Blotch (glume blotch), and other seedling diseases	Charter 0.21 FS	triticonazole	3	3.1 fl oz	On-farm or commercial seed treaters. See label for details.
	Vibrance 4.3 FS	sedaxane	7	1.16 – 2.32 g ai	Also labeled for oats and triticale.
	Maxim 4 FS 4 FC	fludioxonil	12	1.16 – 2.32 g ai	See label.
	Mertect 340 F 4.1 SC	thiabendazole	1	0.17 oz	See label.
	Raxil MD 11.6 S	tebuconazole + metalaxyl + prothioconazole	3 + 4 + 3	5 – 7.5 fl oz	On-farm or commercial seed treaters. Dilute 1:1 with water before application to seed. Already contains dye. Do not graze for 38 days after seeding. Also controls loose smut of oats.
	Dividend Extreme 0.96 FC	difenoconazole + mefenoxam	3 + 4	2 - 4 fl oz	Also labeled for triticale.
	Charter F2 0.19 FS	triticonazole + metalaxyl	3 + 4	5.4 fl oz	See label.
	Rancona Crest 1.37 FS	ipconazole + metalaxyl + imidacloprid	3 + 4	5 fl oz	Do not graze or feed livestock on treated areas for 45 days after planting.
	Rancona V RTU FS 1.26 FS	ipconazole + carboxin + metalaxyl	3 + 7 + 4	4.6 fl oz	Do not graze or feed livestock on treated areas for 42 days after planting.
	Vibrance Extreme 0.81 FC	difenoconazole + sedaxane + mefenoxam	3 + 7 + 4	2.8 - 5.6 fl oz	Also labeled for oats and triticale.
	CruiserMaxx Vibrance Cereals 0.72 FS	difenoconazole + sedaxane + mefenoxam + thiamethoxam	3 + 7 + 4 + N/A	5 oz	Multiple seed and seedling diseases (see label). Also labeled for oats and triticale. Contains Cruiser 5 FS at 0.25 oz/cwt. Add additional 0.75 oz/cwt Cruiser 5 FS for aphid control and BYDV suppression.
	EverGol Energy 1.47 FS	prothioconazole + penflufen + metalaxyl	3 + 7 + 4	1 oz	Commercial seed treatment only.
	Gaucho XT 1.29 F	tebuconazole + metalaxyl + imidacloprid	3 + 4 + N/A	3.4 fl oz	See label.

***FRAC Code** – Fungicides with the same FRAC Code have the same mode of action. See http://www.frac.info/ for an explanation of the FRAC Codes. Rotation of fungicides with different FRAC Codes could minimize the development of fungicide resistant strains.

NOTE: Wheat seed producers in Arkansas should always plant seed treated with one of the listed products to prevent a buildup of loose smut and Stagonospora glume blotch in the seed supply. Growers who plant saved seed should have it treated with one of the above, especially if the seed came from a field with these diseases or if either of the diseases was at epidemic levels in nearby fields during the spring.

WHEAT – FOLIAR FUNGICIDES

Terry Spurlock

Disease	Fungicide	Active Ingredient	FRAC Code*	Rate/cwt Seed	Comments
Leaf Rust Stagonospora (Glume) Blotch[1] Septoria Leaf Blotch Powdery Mildew Stripe Rust[2]	Alto100 SL	cyproconazole	3	3 - 5.5 fl oz	See label.
	Caramba 90 EC	metconazole	3	10 - 14 fl oz	No more than 2 applications/season. See label.
	Bumper 41.8 EC, Propimax 3.6 EC, Tilt 1.04 SC	propiconazole	3	4 fl oz	Do not apply after Feekes GS 10.5 (full heading). Do not apply more than 8 fl oz per acre per crop per season.
	tebuconazole (various trade names 3.6 F)	tebuconazole	3	4 fl oz	Maximum of 4 fl oz/acre per year.
	Quadris 2.08 F**	azoxystrobin	11	6 fl oz	Do not apply after Feekes GS 10.54 (flowering over). Apply prior to disease development.
	Aftershock 480 SC	fluoxastrobin	11	2.5 - 4 fl oz	10 - 14 day intervals. See label.
	Evito 480 SC	fluoxastrobin	11	2.5 - 4 fl oz	10 - 14 day intervals. See label.
	Headline 2.09 SC*	pyraclostrobin	11	6 - 9 fl oz	Do not apply after Feekes GS 10.5. See label. Headline is also labeled for control of black point of wheat.
	Quilt Xcel 2.2 SE	azoxystrobin + propiconazole	11 + 3	10.5 - 14 fl oz	Do not apply after Feekes GS 10.54. Tank mixes with certain herbicides and fertilizers may result in crop injury – see label for all restrictions.
	Preemptor 3.22 SC	fluoxastrobin + flutriafol	11 + 3	4 - 6 fl oz	Do not apply after Feekes GS 10.5.
	Aproach Prima 2.34 SC	picoxystrobin + cyproconazole	11 + 3	3.4 - 6.8 fl oz	Do not apply more than 6.8 fl oz per acre per crop. Minimum time to harvest is 45 days for grain.
	Twinline 3.72 SE	pyraclostrobin + metconazole	11 + 3	7 - 9 fl oz	Use high rate for stripe rust. Do not apply after Feekes GS 10.5. See label.
	Stratego 2.08 SC	trifloxystrobin + propiconazole	11 + 3	10 fl oz	Do not apply after Feekes GS 10.5.
	Stratego YLD 4.18 SC	trifloxystrobin + prothioconazole	11 + 3	4 fl oz	See label for restrictions.
Fusarium head blight (Scab) (suppression only)	Absolute 500 SC	trifloxystrobin + tebuconazole	11 + 3	5 fl oz	Do not apply more than 5 fl oz per season. Do not use adjuvants.
	Topguard EQ 4.29 SC	azoxystrobin + flutriafol	11 + 3	4 - 7 fl oz	Do not apply after Feekes 10.5.4.
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	Do not apply after Feekes GS 10.5. Apply no more than 16 oz/acre per year.

(continued)

WHEAT – FOLIAR FUNGICIDES – continued

Disease	Fungicide	Active Ingredient	FRAC Code*	Rate/cwt Seed	Comments
Leaf Rust *(cont.)* (Stagonospora (Glume) Blotch[1] Septoria Leaf Blotch Powdery Mildew Stripe Rust[2]	Prosaro 421 SC	prothioconazole + tebuconazole	3 + 3	6.5 - 8.2 fl oz	Apply from early flowering to 3 days after flowering for optimal head blight suppression. 30 day PHI.
	Trivapro 1.75 EC	benzovindiflupyr + azoxystrobin +propiconazole	7 + 3 + 11	9.4 - 13.7 fl oz	Not after Feekes GS 10.5.4. Apply no more than 27.4 oz/acre per year.
	Miravis Ace 2.3 SE	pydiflumetofen + propiconazole	7 + 3	13.7 fl oz	
	Lucento 4.17 SC	bixafen + flutriafol	7 + 3	3 - 5.5 fl oz	
Fusarium Head Blight (Scab) (suppression only) and control of other diseases listed above	Caramba 90 EC	metconazole	3	13.5 - 17 fl oz	Apply at early flowering for optimal head blight suppression. See label.
	tebuconazole (various trade names 3.6 F)	tebuconazole	3	4 fl oz	Maximum of 4 fl oz/acre per year. Least effective option for Scab.
	Prosaro 421 SC	prothioconazole + tebuconazole	3 + 3	6.5 - 8.2 fl oz	Apply from early flowering to 3 days after flowering for optimal head blight suppression. 30 day PHI.
	Miravis Ace 2.3 SE	pydiflumetofen + propiconazole	7 + 3	13.7 fl oz	Apply between Feekes 10.3 and Feekes 10.5.4 for control of late season rusts. PHI for forage and hay is 7 days. Do not apply after Feekes 10.5.4.

*FRAC Code – Fungicides with the same FRAC Code have the same mode of action. See http://www.frac.info/ for an explanation of the FRAC Codes. Rotation of fungicides with different FRAC Codes could minimize the development of fungicide resistant strains.
**Only effective as a preventative treatment for stripe rust.
[1]Stagonospora (glume) blotch is more effectively controlled by seed treatment fungicides because it is primarily seedborne under Arkansas conditions and foliar symptoms are difficult to scout for in the spring. See Wheat Seed Treatment Table for details.
[2]All fields with active hot spots of stripe rust should be sprayed immediately if found prior to Feekes GS 10.5.

WHEAT DISEASE THRESHOLDS

Terry Spurlock

The following threshold system is a general guide for whether or not there is adequate disease pressure to justify fungicide use. The relative susceptibility of the variety, favorable weather conditions during the spring and location in Arkansas should also be considered. For current row crop information, sign up for the Arkansas Row Crop Updates at www.arkansas-crops.com/ or visit your local Cooperative Extension Service office.

Feekes Growth Stage	Disease	Indicator Leaf	Treatment Threshold
GS 8	Leaf Rust	Flag-3 and above	1 pustule/leaf
	Septoria tritici leaf blotch	Flag-3 and above	25% of leaves infected
	Powdery Mildew	Flag-2 and above	5 pustules/leaf
	Stagonospora blotch	Flag-2 and above	10% of leaves infected
	Tan Spot	Flag-2 and above	25% of leaves infected
	Stripe Rust	Any leaf	1 pustule/20 leaves
GS 9 - GS 10.5	Leaf Rust	Flag-2 and above	1 pustule/leaf
	Septoria tritici leaf blotch	Flag-2 and above	25% of leaves infected
	Powdery Mildew	Flag-1 and above	5 pustules/leaf
	Stagonospora blotch	Flag-2 and above	10% of leaves infected
	Tan Spot	Flag-2 and above	25% of leaves infected
	Stripe Rust	Any leaf	1 pustule/20 leaves

Management of Small Grain Diseases – Fungicide Efficacy for Control of Wheat Disease *(Revised May 2020)*

The North Central Regional Committee on Management of Small Grain Diseases (NCERA-184) has developed the following information on fungicide efficacy for control of certain foliar diseases of wheat for use by the grain production industry in the U.S. 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 is based on proper application timing 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. The table includes the most widely marketed products and is not intended to be a list of all labeled products.

Efficacy of fungicides for wheat disease control based on appropriate application timing

Fungicide(s)				Powdery Mildew	Stagonospora Leaf/Glume Blotch	Septoria Leaf Blotch	Tan Spot	Stripe Rust	Leaf Rust	Stem Rust	Head Scab	Harvest Restriction
Class	Active Ingredient	Product	Rate/A (fl oz)									
Strobilurin	Picoxystrobin 22.5%	Aproach 2.08 SC	6 - 12	G[1]	VG	VG[2]	VG	E[3]	VG	VG	NL	Feekes 10.5
	Pyraclostrobin 23.6%	Headline 2.09 SC	6 - 9	G	VG[2]	VG[2]	E	E[3]	E	G	NL	Feekes 10.5
Triazole	Metconazole 8.6%	Caramba 0.75 SL	10 - 17	VG	VG	---	VG	E	E	E	G	30 days
	Tebuconazole 38.7%	Folicur 3.6 F[4]	4	NL	NL	NL	NL	E	E	E	F	30 days
	Prothioconazole 41%	Proline 480 SC	5 - 5.7	---	VG	VG	VG	VG	VG	VG	G	30 days
	Prothioconazole 19% Tebuconazole 19%	Prosaro 421 SC	6.5 - 8.2	G	VG	VG	VG	E	E	E	G	30 days
	Propiconazole 41.8%	Tilt 3.6 EC[4]	4	VG	VG	VG	VG	VG	VG	VG	P	Feekes 10.5.4

Management of Small Grain Diseases – Fungicide Efficacy for Control of Wheat Disease *(Revised May 2020)* – *continued*

Fungicide(s)												
Class	Active Ingredient	Product	Rate/A (fl oz)	Powdery Mildew	Stagonospora Leaf/Glume Blotch	Septoria Leaf Blotch	Tan Spot	Stripe Rust	Leaf Rust	Stem Rust	Head Scab	Harvest Restriction
Mixed Modes of Action[5]	**Tebuconazole 22.6% Trifloxystrobin 22.6%**	**Absolute Maxx 5.36 SC**	**5**	G	VG	VG	VG	VG	E	VG	NL	35 days
	Cyproconazole 7.17% Picoxystrobin 17.94%	**Aproach Prima 2.34 SC**	**3.4 - 6.8**	VG	VG	VG	VG	E	VG	---	NR	45 days
	Pydiflumetofen 13.7% Propiconazole 11.4%	**Miravis Ace 2.3 SE**	**13.7**	VG	VG	VG	VG	VG	VG	VG	G[7]	Feekes 10.5.4
	Fluapyroxad 2.8% Pyraclostrobin 18.7% Propiconazole 11.7%	**Nexicor 2.96 EC**	**7 - 13**	VG	VG	E	E	E	E	VG	NL	Feekes 10.5
	Fluoxastrobin 14.8% Flutriafol 19.3%	**Preemptor 3.22 SC**	**4 - 6**	---	---	VG	VG	E	VG	---	NL	Feekes 10.5 and 40 days
	Fluxapyroxad 14.3% Pyraclostrobin 28.6%	**Priaxor 4.17 SC**	**4 - 8**	G	VG	VG	E	VG	VG	G	NL	Feekes 10.5
	Propiconazole 11.7% Azoxystrobin 13.5%	**Quilt Xcel 2.2 SE[4]**	**10.5 - 14**	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
	Prothioconazole 10.8% Trifloxystrobin 32.3%	**Stratego YLD 4.18 SC**	**4**	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5 35 days
	Benzovindiflupyr 2.9% Propiconazole 11.9% Azoxystrobin 10.5%	**Trivapro 2.21 SE**	**9.4 - 13.7**	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4 14 days
	Metconazole 7.4% Pyraclostrobin 12%	**TwinLine 1.75 EC**	**7 - 9**	G	VG	VG	E	E	E	VG	NL	Feekes 10.5
	Flutriafol 18.63% Azoxystrobin 25.30%	**Topguard EQ 4.29 SC**	**4 - 7**	VG	NL	VG	VG	E	E	VG	NL	Feekes 10.5.4 30 days

[1] Efficacy categories: NL = Not Labeled; NR = Not Recommended; P = Poor; F = Fair; G = Good; VG = Very Good; E = Excellent; --- = Insufficient data to make statement about efficacy of this product.
[2] Product efficacy may be reduced in areas with fungal populations that are resistant to strobilurin fungicides.
[3] Efficacy may be significantly reduced if solo strobilurin products are applied after stripe rust infection has occurred.
[4] Multiple generic products containing the same active ingredients also may be labeled in some states. Products including tebuconazole include: Embrace, Monsoon, Muscle 3.6 F, Onset, Orius 3.6 F, Tebucon 3.6 F, Tebustar 3.6 F, Tebuzol 3.6 F, Tegrol, and Toledo. Products containing propiconazole include: Bumper 41.8 EC, Fitness, Propiconazole E-AG, and PropiMax 3.6 EC. Products containing propiconazole + azoxystrobin include: Aframe Plus, Avaris 2XS.
[5] Products with mixed modes of action generally combine triazole and strobilurin active ingredients. Nexicor, Priaxor and Trivapro include carboxamide active ingredients.

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. No endorsement is intended for products listed nor is criticism meant for products not listed. Members or participants in the NCERA-184 committee assume no liability resulting from the use of these products.

CONIFER DISEASES (Commercial)

Sherrie Smith

Disease	Product	Active Ingredient	FRAC Code	Rate	Re-entry Interval	Comments
Phytophthora Pythium	Heritage (not labeled for pythium except turf)	azoxystrobin	11	1 - 4 oz/100 gal	4 hours	See label for specific rates. Do not allow drift to apples or crabapples.
	Mural	azoxystrobin + benzovindiflupyr	11 + 7	3 - 7 oz/100 gal	12 hours	Rate depends on whether used as soil drench or foliar spray. See label.
	Adorn	fluopicolide	43	1 - 4 fl oz/100 gal	12 hours	Adorn must be tank-mixed with another labeled fungicide for resistance management.
	Subdue MAXX	mefenoxam	4	1 - 2 fl oz/100 gal	48 hours	Drench rate.
	Segovis (not labeled for pythium)	oxanthiapiprolin	U15	0.6 - 2.4 fl oz/ 100 gal	4 hours	Make no more than 2 consecutive applications before switching to another non-U15 group fungicide.
Phomopsis blight (*Phomopsis juniperovora*)	Heritage	azoxystrobin	11	1 - 4 oz/100 gal	4 hours	Apply every 7 - 28 days.
	Mural	azoxystrobin + benzovindiflupyr	11 + 7	4 - 7 oz/100 gal	12 hours	Apply every 7 - 21 days.
	Kocide 2000	copper hydroxide	M1	1.5 - 3 lb/A	24 - 48 hours (see label)	Begin applications in the spring at the initiation of new growth.
	Kocide 3000	copper hydroxide	M1	0.75 - 1.75 lb/A	24 - 48 hours (see label)	Begin applications in the spring at the initiation of new growth.
	Protect DF	mancozeb	M3	1 - 2 lb/100 gal	24 hours	For needlecasts, make one application in spring when new shoot growth is 1/2 - 2 inches in length. See label for additional applications.
	Mancozeb 4 FL	mancozeb	M3	1.2 qt/100 gal	24 hours	
	Junction	mancozeb + copper hydroxide	M3 + 1	1.5 lb/100 gal (1/2 tbs/gal)	24 hours	Do not apply Junction in a spray solution having less than 6.5 pH as phytotoxicity may occur.

(continued)

CONIFER DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Re-entry Interval	Comments
Phomopsis blight *(cont.)* (*Phomopsis juniperovora*)	ProPensity 1.3 ME	propiconazole	3	2 - 24 fl oz/100 gal	24 hours	Apply every 14 - 21 days.
	3336 EG	thiophanate-methyl	1	12 - 24 oz/100 gal	12 hours	For needlecasts, make one application in spring when new shoot growth is 1/2 - 2 inches in length. See label for additional applications.
	3336 WP	thiophanate-methyl	1	12 - 24 oz/100 gal	12 hours	For needlecasts, make one application in spring when new shoot growth is 1/2 - 2 inches in length. See label for additional applications.
	3336 F	thiophanate-methyl	1	12 - 24 fl oz/100 gal	12 hours	Begin treatment in the fall at first sign of disease.
Kabatina blight (*Kabatina juniperi*)	Protect DF	mancozeb	M3	1 - 2 lb/100 gal	24 hours	Begin treatment in the fall at first sign of disease.
	3336 F	thiophanate-methyl	1	12 - 24 fl oz/100 gal	12 hours	Begin treatment in the fall at first sign of disease.
	3336 WP	thiophanate-methyl	1	12 - 24 oz/100 gal	12 hours	Begin treatment in the fall at first sign of disease.
	3336 EG	thiophanate-methyl	1	12 - 24 oz/100 gal	12 hours	Begin treatment in the fall at first sign of disease.
Cercospora needle blight	Kocide 2000	copper hydroxide	M1	1.5 - 3 lb/A	24 - 48 hours (see label)	Begin applications in the spring at the initiation of new growth and repeat at 7 - 30 day intervals if needed.
	Kocide 3000	copper hydroxide	M1	0.75 - 1.75 lb/A	24 - 48 hours (see label)	Begin applications in the spring at the initiation of new growth and repeat at 7 - 30 day intervals if needed.
	Mancozeb 4 FL	mancozeb	M3	1.2 qt/100 gal	24 hours	
	Junction	mancozeb + copper hydroxide	M3 + M1	1.5 lb/100 gal (1/2 tbs/gal)	24 hours	Do not apply Junction in a spray solution having less than 6.5 pH as phytotoxicity may occur.
	Eagle 20 EW	myclobutanil	3	8 fl oz/100 gal	24 hours	See label for rates per disease.

FRUIT TREE DISEASES (Commercial)

Sherrie Smith and Aaron Cato

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
APPLE								
Dormant to Silver Tip	Fire blight	Bordeaux Mixture	Basic copper sulfate Lime sulfur (hard to find)	M1		12 hours	Dormant only	Dissolve 8 lbs copper sulfate in 50 gals water; add 8 lbs spray lime with agitation and more water; add 1 gal miscible superior oil last but prior to complete fill; add water with agitation to 100 gals; spray with constant agitation. Do not mix with other pesticides or spray when drying conditions are slow or after 1/4 inch green as severe injury may result.
		Kocide 2000	copper hydroxide	M1	6 - 12 lb	48 hours	Not after green tip	Make Kocide application between silver tip and green tip. Apply as a full cover spray for early season disease suppression. NOTE: Moderate to severe crop injury may occur from late application; discontinue use when green tip reaches 1/2 inch. Applications should be made in early spring before growth starts and in the fall after harvest, but before the ground freezes.
		Kocide 3000	copper hydroxide	M1	3.5 - 7 lb	48 hours	Not after green tip	
	Phytophthora crown, root and collar rots	Aliette WDG	aluminum tris	33	2.5 - 5 lb	12 hours	14	Apply Aliette at a 30 - 60 day interval when conditions favor disease development. See label.
		Ridomil Gold SL	mefenoxam	4	2 qt/A or 1.5 fl oz/ 1,000 sq ft	48 hours	1	New plants: Dip the entire root system in Ridomil Gold solution for 30 - 60 minutes prior to planting in the field. Established plantings: see label.
Green Tip	Alternaria Blotch and Spot Bitter rot Black rot Brooks Fruit spot Cedar Apple rust Flyspeck Sooty blotch Powdery mildew Quince rust Scab White rot	Aprovia	benzovinidiflupyr	7	5.5 - 7 fl oz	12 hours	30	Scab – Protective Spray Schedule: Apply every 7 - 10 days starting at 1/4 to 1/2 inch green tip or when environmental conditions become conducive for scab. Continue through petal fall until the threat of primary scab is complete.

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
APPLE (cont.)								
Green Tip *(cont.)*	Alternaria blotch Brooks fruit spot Cedar apple rust (suppression) Flyspeck Frogeye leaf spot Powdery mildew Scab Sooty blotch White rot	Pristine	boscalid + pyraclostrobin	7 + 11	14.5 - 18.5 oz	12 hours	0	Begin applications of Pristine prior to disease development and continue on a 7 - 14 day interval. See label.
	Botrytis Blossom end rot Flyspeck Fruit rots Scab Sooty blotch	Captan 50 WP	captan	M4	4 - 8 lb	24 hours	1	Apply at 7 - 10 day intervals as needed to maintain control in pre-bloom, bloom, petal fall and first cover. Apply at 10 - 14 day intervals for second and later covers.
	Scab	Vangard WG	cyprodinil	9	4 - 6 oz	12 hours	0	For pome fruits EXCEPT PEAR, begin applications of Vangard at green tip and continue on a 7 - 10 day schedule.
		Rubigan EC	fenarimol	3	8 - 12 fl oz	12 hours	30	When Rubigan EC is used to control scab, at least two consecutive applications should be applied.
	Powdery mildew Scab	Luna Tranquility	fluopyram + pyrimethanil	7 9	11.2 - 16 fl oz	12 hours	72 days	When disease pressure is severe, use the higher rates and/or shorter intervals.
(continued)	Alternaria rot Bitter rot Black rot Botrytis gray mold Brooks fruit spot Cedar apple rust Flyspeck Powdery mildew Scab Sooty blotch Quince rust White rot	Luna Sensation	fluopyram + trifloxystrobin	7 + 11	4 - 5.8 fl oz	12 hours	14	Do not make more than 4 applications per year.

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
APPLE (cont.)								
Green Tip *(cont.)*	Alternaria blotch Brooks fruit spot Cedar apple rust (suppression) Flyspeck Frogeye leaf spot Powdery mildew Scab Sooty mold White rot	Sovran 50 WG	kresoxin-methyl	11	3.2 - 6.4 oz	12 hours	30	Begin Sovran at 1/2 inch green and repeat at 7 - 10 day intervals depending on the rate of shoot growth and level of disease pressure.
	Fabraea leaf spot Rusts Scab	Dithane F-45 Rainshield	mancozeb	M3	4.8 qt	24 hours	77	Begin applications of Dithane at 1/2 inch green tip and continue on a 7 - 10 day schedule through bloom.
	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 4 qt/ 100 gal See label for trunk injections.	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.
	Cedar apple rust Quince rust Powdery mildew Scab	Eagle 20 EW	myclobutanil	3	4 - 6 oz/ 100 gallons	24 hours	14	Begin applications of Eagle at green tip. For rust, begin applications at pink stage and continue through second cover. For powdery mildew, begin applications at tight cluster and continue through second cover spray.
	Alternaria blotch Cedar apple rust Quince rust Powdery mildew Scab	Fontelis	penthiopyrad	7	14 - 20 fl oz	12 hours	28	Begin applications of Fontelis prior to disease and continue on a 7 - 21 day interval depending on targeted disease. See label.
	Scab	Scala SC	pyrimethanil	9	7 - 10 oz	12 hours	72	Begin applications of Scala at green tip and continue on a 7 day or longer interval. See label.

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
APPLE (cont.)								
Green Tip *(cont.)*	Flyspeck Fruit rots Scab Sooty blotch	Topsin M 70 WDG Topsin M 70 WP	thiophanate-methyl thiophanate-methyl	1 1	1 - 1.5 lb 1 - 1.5 lb	24 hours 24 hours	1 1	Apply Topsin M at 5 - 10 day intervals from green tip through petal fall; continue at 7 - 14 day intervals in cover sprays.
	Cedar apple rust Bitter rot Flyspeck Powdery mildew Quince rust Scab Sooty blotch White rot	Flint 50 WG	trifloxystrobin	11	2 - 2.5 oz	12 hours	14	Begin applications of Flint at green tip and continue as needed on a 7 - 10 day schedule.
1/2" Green Tip	Alternaria blotch Brooks fruit spot Cedar apple rust Flyspeck Powdery mildew Quince rust Scab Sooty blotch	Inspire Super	difenoconazole + cyprodinil	3 + 9	12 fl oz	12 hours	14	Apply every 7 - 10 days starting at 1/4 - 1/2 inch green tip or when environmental conditions become conducive for scab. Continue through petal fall until the threat of primary scab is complete.
	Cedar apple rust Powdery mildew Scab	Procure 480 SC	triflumizole	3	8 - 16 fl oz	12 hours	14	Begin spraying Procure at first sign of mildew. Continue applications at 7 - 14 day intervals as needed through the terminal growth period. For scab, spray at 7 - 10 day intervals from 1/2" green tip stage through second cover or until primary scab sporulation is complete.
	Cedar apple rust Powdery mildew Quince rust	Ziram	ziram	M3	6 - 8 lb	48 hours	14	Apply Ziram from pre-bloom through cover sprays as needed.
	Scab	Same as Green Tip						
Tight Cluster	Powdery mildew Scab	Same as Green Tip						Some materials listed in green tip are not labeled for powdery mildew. See label for most effective material(s).
Pink	Powdery mildew Rusts Scab	Same as Tight Cluster						Critical time for control of these diseases. Some of the materials listed are not labeled for powdery mildew. Follow label information.

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
APPLE (cont.)								
Bloom	Fire blight	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gal	4 hours	0	Foliar. See label for rates and complete instructions.
		Agri-Mycin 17	streptomycin sulfate	25	12 - 48 oz	12 hours	50	Apply at first sign of blossoms and repeat on a 5 day schedule through petal fall on susceptible varieties. Warm, wet weather during bloom favors the disease.
		Firewall	streptomycin sulfate	25	8 - 16 oz	12 hours	50	Spray trees every 3 - 4 days during blossom time. Apply sprays after petal fall every 10 - 14 days to control twig blight. (This could mean an additional 6 - 8 sprays after petal fall.)
	Powdery mildew Rusts Scab	Same as Pink						
Petal Fall	Fire blight Powdery mildew Rusts Scab	Same as Bloom	See label.					
First and Second Cover Sprays	Fruit rots Powdery mildew Rusts Scab	Same as Bloom					See label for PHI.	
Third Cover	Flyspeck Fruit rots Scab Sooty blotch	Same as Second Cover					See label for PHI.	
Summer Cover Sprays (10 - 14 day schedule)	Flyspeck Fruit rots Scab Sooty blotch	Same as Third Cover					See label for PHI.	

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEAR								
Pre-Bloom	Alternaria blotch and spot Rut Powdery mildew Scab White rot	Aprovia	benzovinidiflupyr	7	5.5 - 7 fl oz	12 hours	30	For resistance management, do not apply more than 2 consecutive applications before switching to a non-Group 7 fungicide.
	Alternaria Bitter rot Black rot Blue mold Brooks spot Powdery mildew Rust (suppression only) Scab Sooty blotch White rot	Pristine	boscalid + pyraclostrobin	7 + 11	14.5 - 18.5 oz	12 hours	0	Begin applications of Pristine prior to disease development and continue on a 7 - 14 day interval. See label.
	Alternaria blotch Brooks fruit spot Cedar apple rust Flyspeck Powdery mildew Quince rust Scab Sooty blotch	Inspire Super	difenoconazole + cyprodinil	3 + 9	12 fl oz	12 hours	14	Apply every 7 - 10 days starting at 1/4 - 1/2 inch green tip or when environmental conditions become conducive for scab. Continue through petal fall until the threat of primary scab is complete.
	Powdery mildew Scab	Luna Tranquility	fluopyram + pyrimethanil	7 9	11.2 - 16 fl oz	12 hours	72 days	When disease pressure is severe, use the higher rates and/or shorter intervals.
	Alternaria rot Bitter rot Black rot Botrytis gray mold Brooks fruit spot Cedar apple rust Flyspeck Powdery mildew Scab Sooty blotch Quince rust White rot	Luna Sensation	fluopyram + trifloxystrobin	7 + 11	4 - 5.8 fl oz	12 hours	14	Do not make more than 4 applications of Luna Sensation per year. Do not use tank mixes with horticultural oils in Pear due to potential for crop injury.

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEAR (cont.)								
Pre-Bloom *(cont.)*	Powdery mildew Rust Scab	Sovran 5 WG	kresoxim-methyl	11	3.2 - 6.4 oz	12 hours	30	Begin Sovran at 1/2 inch green and repeat at 7 - 10 day intervals depending on the rate of shoot growth and level of disease pressure.
	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gal	4 hours	0	Foliar. See label for rates and complete instructions.
	Scab	Scala SC	pyrimethanil	9	7 - 10 fl oz	12 hours	72	Begin applications of Scala at green tip and continue on a 7 day or longer interval. See label.
	Flyspeck Powdery mildew Rust Scab Sooty blotch	Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	4 - 5 oz	12 hours	14	Begin applications of Adament at green tip and continue as needed on a 7 - 10 day spray schedule.
	Powdery mildew Scab	Flint 50 WG	trifloxystrobin	11	2 - 2.5 oz	12 hours	14	Begin applications of Flint at green tip and continue as needed on a 7 - 10 day schedule.
	Bitter rot Fabraea leaf spot Flyspeck Quince rust Scab Sooty blotch	Ziram	ziram	M3	6 - 8 lb	48 hours	14	Apply Ziram from pre-bloom through cover sprays as needed.
Bloom	Alternaria blotch and spot Rut Powdery mildew Scab White rot	Aprovia	benzovinidiflupyr	7	5.5 - 7 fl oz	12 hours	30	For resistance management, do not apply more than two consecutive applications before switching to a non-Group 7 fungicide.
	Fire blight	Kocide 2000	copper hydroxide	M1	6 - 12 lb	48 hours	21	Apply Kocide every 5 days throughout bloom. **Russetting and fruit damage may occur in copper-sensitive varieties before the ground freezes.**
		Kocide 3000	copper hydroxide	M1	3.5 - 7 lb	48 hours	21	

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEAR (cont.)								
Bloom *(cont.)*	Fire blight *(cont.)*	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gal	4 hours	0	Foliar. See label for rates and complete instructions.
		Mycoshield	oxytetracycline calcium	41	1 lb/100 gal	12 hours	60	Begin applications of Mycoshield at 10% bloom and continue on at 4 - 6 day intervals. Use of Mycoshield may cause phytotoxicity to fruit and/or foliage of sensitive varieties, especially Asian varieties.
		Firewall	streptomycin sulfate	25	8 - 16 oz	12 hours	50	Spray trees at 20% - 30% bloom with Firewall. Spray trees every 3 - 4 days during blossom time. Apply sprays after petal fall every 10 - 14 days to control twig blight. (This could mean an additional 6 - 8 applications after blossom sprays.)
	Fabraea leaf spot Scab Sooty blotch	Ferbam Granuflo	ferbam	M3	4 - 6 lb	24 hours	7	Make applications of Ferbam at pink, calyx, first and second cover sprays, and 1 pound in summer sprays. Do not apply in late-season cover sprays where unsightly residues may affect the fresh fruit finish of light-skinned pear varieties.
		Dithane F-45 Rainshield	mancozeb	M3	4.8 qt	24 hours	77	Do not apply Dithane after bloom. Do not graze livestock on treated areas.
	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gal	4 hours	0	Foliar. See label for rates and complete instructions.
	Alternaria leaf spot Powdery mildew Quince rust Scab	Fontelis	penthiopyrad	7	14 - 20 fl oz	12 hours	28	Begin applications of Fontelis prior to disease and continue on a 7 - 21 day interval depending on targeted disease. See label.
	Powdery mildew Scab	Procure 480 SC	triflumizole	3	8 - 16 fl oz	12 hours	14	Begin spraying Procure at the pink or white stage. Continue applications at 7 - 14 day intervals.

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEAR (cont.)								
Petal fall	Alternaria leaf spot Fire blight Flyspeck Powdery mildew Quince rust Scab	Same as Bloom						
First and Second Cover	Powdery mildew Quince rust Scab	Same as Petal Fall						
Summer Cover		Same as First and Second Cover					See labels for PHI restric-tions.	
PEACH and NECTARINE								
Dormant	Phytophthora collar and root rot	Aliette WDG	aluminum tris	33	5 lb	24 hours	365	Apply Aliette when conditions favor disease development.
		Ridomil Gold SL	mefenoxam	4	2 qt/A or 1.5 fl oz/ 1,000 sq ft	48 hours	0	Apply Ridomil under the tree canopy to cover the root zone two weeks after planting (new plantings) and in the spring before growth begins (established plantings).
	Peach leaf curl Shot hole	Bravo Ultrex Bravo WeatherStik	chlorothalonil chlorothalonil	M5 M5	2.8 - 3.8 lb 3 1/8 - 4 1/8 pt	12 hours 12 hours	Dormant (Do not apply after shuck split)	Make one application of Bravo in late autumn to early winter before hard freez-ing occurs. Make one or two additional applications in mid-late winter before bud swell in the spring.

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEACH and NECTARINE (cont.)								
Dormant *(cont.)*	Bacterial blast Bacterial canker Bacterial spot	Kocide 2000 Kocide 3000	copper hydroxide copper hydroxide	M1 M1	6 - 12 lb 3.5 - 7 lb	48 hours 48 hours	21 21	Make first application of Kocide before fall rains and a second at late dormant.
	Coryneum blight Leaf curl	Bordeaux Mixture	copper sulfate lime sulfur (lime sulfur hard to find)	M2	See label	12 hours	Dormant only	Dissolve 8 lbs copper sulfate in 50 gals water; add 8 lbs spray lime with agitation and more water; add 1 gal miscible superior oil last but prior to complete fill; add water with agitation to 100 gals; spray with constant agitation. Do not mix with other pesticides or spray when drying conditions are slow or after 1/4 inch green as severe injury may result.
	Peach leaf curl	Ziram	ziram	M3	8 - 10 lb	48 hours	30	Make dormant applications of Ziram after leaf drop and/or prior to bud swell.
Pink	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Abound FL	azoxystrobin	11	11 - 15.5 fl oz	4 hours	0	Begin applications of Abound at early bloom. See label.
	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 fl oz	12 hours	0	Begin applications of Quadris Top at early bloom. See label.
(continued)	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Topguard EQ	azoxystrobin + flutriafol	11 + 3	6 - 7 fl oz	12 hours	7	For brown rot, begin applications at 1% - 5% bloom, followed by an application at 50% - 100% bloom.

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEACH and NECTARINE (cont.)								
Pink *(cont.)*	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole (cont.)	Pristine	boscalid + pyraclostrobin	7 + 11	10.5 - 14.5 oz	12 hours	0	Begin applications of Pristine prior to disease development and continue on a 7 - 14 day interval. See label.
	Brown rot Scab	Captan 50 WP	captan	M4	4 - 8 lb	24 hours	1	Apply Captan at full pink, bloom, petal fall, shuck stages, and in cover and pre-harvest sprays.
	Alternaria spot and fruit rot Anthracnose Brown rot Blossom blight and fruit rot Leaf rust Powdery mildew Scab Shot hole	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	2	For brown rot, blossom blight, begin applications at early bloom and make a second application at full bloom. For brown rot on fruit, apply as needed a maximum of two sprays during the pre-harvest period up to the day of harvest (minimum of a 7 day retreatment interval).
	Blossom blight Brown rot Scab	Indar 2 F	fenbuconazole	3	6 fl oz	12 hours	1	Begin applications of Indar at early red bud stage before infection occurs. See label.
	Anthracnose Brown rot Blossom blight Cherry leaf spot Fruit rot Gray mold Green fruit rot Jacket rot Peach leaf curl Powdery mildew Ripe fruit rot Rusty spot Scab Rust	Luna Sensation	fluopyram + trifloxystrobin	7 + 11	5 - 7.6 fl oz	12 hours	14	Do not make more than 4 applications of Luna Sensation per year.
	Blossom blight Brown rot Scab	Rovral 4 FL	iprodione	2	1 - 2 pt	24 hours	Do not apply after petal fall.	Do not make more than 2 applications of Rovral per season.

(continued)

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEACH and NECTARINE (cont.)								
Pink *(cont.)*	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gal	4 hours	0	Foliar. See label for rates and complete instructions.
	Blossom blight Brown rot Powdery mildew Rust Shot hole	Eagle 20 EW	myclobutanil	3	2 - 3 fl oz/ 100 gal	24 hours	0	Do not apply more than 100 fl oz per acre per season.
	Alternaria spot Blossom blight Brown rot Powdery mildew Rust Scab Shot hole	Fontelis	penthiopyrad	7	14 - 20 fl oz	24 hours	0	Begin applications of Fontelis prior to disease and continue on a 7 - 14 day interval. See label.
	Brown rot	PropiMax EC	propiconazole	3	4 fl oz	12 hours	10	Apply PropiMax at early bloom, at 75% - 100% bloom, and at petal fall. See label.
	Brown rot Powdery mildew Rust	Tilt	propiconazole	3	4 fl oz	24 hours	0	Begin applications of Tilt at early bloom.
	Blossom blight Brown rot Jacket rot Shot hole	Scala SC	pyrimethanil	9	9 - 18 fl oz	12 hours	2	Begin applications of Scala at pink, red or white bud. See label.
	Blossom blight Brown rot Powdery mildew Rust Scab Shot hole	Gem 500 SC	trifloxystrobin	11	1.9 - 3.8 fl oz	12 hours	1	Begin applications of Gem at bud stage. If conditions are favorable for disease, apply again at full bloom and at petal fall or on a 14 - 21 day spray schedule.
	Alternaria spot Anthracnose Brown rot Jacket rot Powdery mildew Rust Scab Shot hole	Adament 50 WG	trifloxystrobin + tebuconazole	11 + 3	4 - 8 fl oz	12 hours	1	Begin applications of Adament when conditions are favorable for disease but before infection. Apply on a 7 - 14 day spray schedule.

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PEACH and NECTARINE (cont.)								
Pink *(cont.)*	Blossom blight Brown rot Shot hole	Ziram Granuflo	ziram	M3	4.5 - 8 lb	48 hours	14	Apply at pre-bloom through cover sprays as needed.
Full Bloom	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Same as Pink						
	Bacterial spot	Mycoshield	oxytetracycline sulfate	41	0.75 - 1.5 lb	12 hours	21	Apply on a weekly schedule beginning at petal fall (< 5% shuck split) through first cover. See label for subsequent cover sprays.
Shuck Split	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Same as Full Bloom						
	Bacterial spot							
Additional Covers and Pre-Harvest	Same as Shuck split							
PLUM								
Dormant	Phytophthora collar and root rot	Aliette	aluminum tris	33	5 lb	12 hours	365	Apply Aliette when conditions favor disease development.
		Ridomil Gold SL	mefenoxam	4	2 qt or 1.5 fl oz/ 1,000 sq ft	48 hours	0	Apply Ridomil under the tree canopy to cover the root zone two weeks after planting (new plantings) and in the spring before growth begins (established plantings).

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PLUM (cont.)								
Dormant *(cont.)*	Bacterial canker Bacterial spot Black knot Shot hole	Kocide 2000 Kocide 3000	copper hydroxide copper hydroxide	M1 M1	6 - 12 lb 3.5 - 7 lb	48 hours 48 hours	21 21	Make first application of Kocide before fall rains and a second at late dormant.
Pre-Bloom	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Topguard EQ	azoxystrobin + flutriafol	11 + 3	6 - 8 fl oz	12 hours	7	For scab, start applications at petal fall.
		Pristine	boscalid + pyraclostrobin	7 + 11	14.5 - 18.5 oz	12 hours	0	Begin applications of Pristine prior to disease development and continue on a 7 - 14 day interval. See label.
	Brown rot Scab	Captan 50 WP	captan	M4	4 - 8 lb	24 hours	1	Apply Captan at full pink, bloom, petal fall, shuck stages, and in cover and pre-harvest sprays.
	Alternaria spot and fruit rot Anthracnose Brown rot Blossom blight and fruit rot Leaf rust Powdery mildew Scab Shot hole	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	2	For brown rot, blossom blight, begin applications at early bloom and make a second application at full bloom. For brown rot on fruit, apply as needed a maximum of two sprays during the pre-harvest period up to the day of harvest (minimum of a 7 day retreatment interval).
	Blossom blight Brown rot Scab	Indar 2 F	fenbuconazole	3	6 fl oz	12 hours	1	Begin applications of Indar at early red bud stage before infection occurs. See label.
	Anthracnose Brown rot Blossom blight Cherry leaf spot Fruit rot Gray mold Green fruit rot Jacket rot Peach leaf curl Powdery mildew Ripe fruit rot Rusty spot Scab Rust	Luna Sensation	fluopyram + trifloxystrobin	7 + 11	5 - 7.6 fl oz	12 hours	14	Do not make more than 4 applications of Luna Sensation per year.

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PLUM (cont.)								
Pre-Bloom *(cont.)*	Blossom blight Jacket rot Scab Shot hole	Rovral 4 FL	iprodione	2	1 - 2 pt	24 hours	Do not apply after petal fall.	Do not make more than 2 applications of Rovral per season.
	Blossom blight Brown rot Powdery mildew Rust Shot hole	Eagle 20 EW	myclobutanil	3	2 - 3 fl oz/ 100 gal	24 hours	0	Begin applications of Eagle at green tip before infection occurs. If conditions are favorable for disease development, reapply at full bloom and petal fall.
	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gal	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions. Do not apply during dormancy.
	Alternaria spot Blossom blight Brown rot Powdery mildew Rust Scab Shot hole	Fontelis	penthiopyrad	7	14 - 20 fl oz	24 hours	0	Begin applications of Fontelis prior to disease and continue on a 7 - 14 day interval. See label.
	Blossom blight Brown rot Jacket rot Shot hole	Scala SC	pyrimethanil	9	9 - 18 fl oz	12 hours	2	Begin applications of Scala at pink, red or white bud. See label.
	Black knot	Topsin M 70 WDG	thiophanate-methyl	1	1 - 1.5 lb	24 hours	1	Apply Topsin M at pre-bloom, petal fall, and at first, second, and third covers. Spray at 10 - 14 day intervals.
		Topsin M 70 WP	thiophanate-methyl	1	1 - 1.5 lb	24 hours	1	
	Blossom blight Brown rot Powdery mildew Rust Scab Shot hole	Gem 500 SC	trifloxystrobin	11	1.9 - 3.8 fl oz	12 hours	1	Begin applications of Gem at bud stage. If conditions are favorable for disease, apply again at full bloom and at petal fall, or on a 14 - 21 day spray schedule.

(continued)

FRUIT TREE DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
PLUM (cont.)								
Pre-Bloom *(cont.)*	Alternaria spot Anthracnose Brown rot Jacket rot Powdery mildew Rust Scab Shot hole	Adament 50 WG	trifloxystrobin + tebuconazole	11 + 3	4 - 8 fl oz	12 hours	1	Begin applications of Adament when conditions are favorable for disease but before infection. Apply on a 7 - 14 day spray schedule.
Full Bloom	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Abound FL	azoxystrobin	11	11 - 15.5 fl oz	4 hours	0	Begin applications of Abound at early bloom. See label.
		Topguard EQ	azoxystrobin + flutriafol	11 + 3	6 - 8 fl oz	12 hours	7	For powdery mildew, begin applications at petal fall.
	Brown rot	PropiMax EC	propiconazole	3	4 fl oz	12 hours	10	Apply PropiMax at early bloom, at 75% - 100% bloom, and at petal fall. See label.
	Brown rot Powdery mildew Rust	Tilt	propiconazole	3	4 fl oz	12 hours	0	Begin applications of Tilt at beginning of bloom.
	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole	Same as Pre-Bloom						
	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Same as Pre-Bloom						
Petal Fall	Same as Full Bloom							
Additional Covers and PreHarvest	Same as petal fall						See label for PHI.	

*FRAC Code – Fungicides with the same FRAC Code have the same mode of action. See http://www.frac.info/ for an explanation of the FRAC Codes. Rotation of fungicides with different FRAC Codes could minimize the development of fungicide-resistant strains.

FRUIT TREE DISEASES (Home Garden)

Sherrie Smith

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Fire Blight (Apples, Pears)	Serenade**	*Bacillus subtilis*	44	2 - 4 fl oz/gal	Spray plants to runoff, covering both top and bottom surface of foliage to ensure thorough coverage.
	Agri-Mycin 17	streptomycin sulfate	25	See label.	Do not spray after fruit forms.
	Ferti-lome Fire Blight Spray	streptomycin sulfate	25	1 tbs in 2 1/2 gal of water (equivalent to 100 ppm or 4 oz per 50 gal of water)	Make first spray at the start of blossoming period. Continue spray applications every 3 to 4 days during bloom time. Apply additional sprays every 5 to 7 days after blossom period when weather conditions favor spread of Fire Blight. Do not apply when fruit is visible.
	Firewall 50 WP	streptomycin sulfate	25	8 - 16 oz (0.34 lb - 0.67 lb ai) per acre per application	Do not apply within 50 days of harvest.
Scab, Powdery Mildew, Rust, Sooty Blotch, Flyspeck (Apples, Pears)	Serenade**	*Bacillus subtilis*	44	2 - 4 fl oz/gal	For best results, treat prior to foliar disease development or at the first sign of foliar disease infection.
	Bayer Advanced Natria Disease Control	*Bacillus subtilis*	44	RTU*	For best results, treat prior to foliar disease development or at the first sign of foliar disease infection.
	Bonide Fruit Tree and Plant Guard Concentrate	boscalid + pyraclostrobin + insecticide	7 + 11	1 PT (16 fl oz) covers up to 12,000 sq ft, 1 QT (32 fl oz) covers up to 24,000 sq ft, 1 GAL covers up to 96,000 sq ft. RTU* also available.	See label for mixing instructions and days to harvest.
	Bonide Fruit Tree Spray	captan + insecticide	M4	1 1/2 - 2 1/2 tbs/gal	See label for complete instructions and days to harvest.
	Hi-Yield Captan 50 WP	captan	M4	2 tbs/gal	See label.
	Gordons Liquid Fruit Tree Spray	captan + insecticide	M4	1 1/2 - 2 1/2 tbs/gal	For peach do not exceed 3 applications per year. Do not apply within 21 days of harvest.
	Monterey Fruit Tree, Vegetable and Ornamental Fungicide	chlorothalonil	M5	3 3/4 tsp/gal for 200 sq ft	For peach leaf curl, apply at leaf fall in late autumn. When conditions favor high disease levels, apply once or twice more in mid to late winter before budswell. See label for other diseases.

(continued)

FRUIT TREE DISEASES (Home Garden) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Scab, Powdery Mildew, Rust, Sooty Blotch, Flyspeck (Apples, Pears) *(cont.)*	Hi-Yield Vegetable, Flower, Fruit and Ornamental Fungicide	chlorothalonil	M5	10 tsp per application, 50 tsp per year	Stone fruits only.
	Spectracide Immunox Multi-purpose Fungicide for Gardens Spray Concentrate	myclobutanil	3	1/2 - 2/3 fl oz/gal	Reapply every 7 - 10 days so long as disease symptoms persist. See label for days to harvest.
	Bonide Infuse Systemic Fungicide	propiconazole	3	1/2 - 1 tbs/gal	Apply only to non-bearing trees.
	GreenCure**	potassium bicarbonate	NC***	1 - 2 tbs/gal	For best protection, repeat at one to two week intervals until conditions are no longer favorable for disease development. Shorten the interval during rainy weather or during periods of high relative humidity.
	Kaligreen**	potassium bicarbonate	NC***	2.5 - 3 lb/A	Begin application at the first sign of disease.
	Milstop**	potassium bicarbonate	NC***	2 - 5 lb/A	Begin application at the first sign of disease.
	Safer Garden Fungicide for Flowers, Fruit and Vegetables Concentrate	sulfur	M2	See label.	Labeled for apples and pears.
	Bonide Citrus, Fruit and Nut Orchard Spray Concentrate	sulfur + pyrethrins	M2	2.5 - 5 fl oz/gal	For best control apply as a protective spray early in the season before the diseases are noticed. Re-spray every 7 - 10 days or after rain. May be used up to day before harvest.
	Bonide Sulfur Plant Fungicide	sulfur	M2	1 fl oz/gal	7 - 14 days. Complete coverage important. RTU* also available. Organic uses.

* RTU – Ready to use.
** Approved for use in organic crops.
*** NC – Resistance not known.

ORNAMENTAL DISEASES (Commercial)

Sherrie Smith and Keiddy Urrea

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Bacterial blight *(Xanthomonas campestris)* Fire blight	Aliette	aluminum tris	33	See label.	12 hours	See label.
Bacterial leaf, twig blight Bacterial leaf spot *Pseudomonas syringae*	Junction	mancozeb + copper hydroxide	M3 + M1	1.5 lb/100 gal (1/2 tbs/gal)	24 hours	Use in a spray solution with greater than 6.5 pH (phytotoxicity).
	Junction WSP	mancozeb + copper hydroxide	M3 + M1	2.5 lb/100 gal	48 hours	
	Alude	salts of phosphorus acid	33	See label.	4 hours	Rate depends on application (soil drench or foliar spray). See label.
Downy mildew	Aliette WDG	aluminum tris	33	See label.	12 hours	Rate depends on application (soil drench or foliar spray). See label.
	Heritage	azoxystrobin	11	1 - 4 oz/100 gal	4 hours	See label for specific rates per container size. May cause phytotoxixity on apples or crabapples. Do not allow drift to apples or crabapples.
	Segway	cyazofamid	21	2.1 - 3.5 fl oz/100 gal	12 hours	
	Stature SC	dimethomorph	40	6.12 - 12.25 fl oz/ 100 gal	12 hours	Do not make more than 8 applications per season for greenhouse-grown ornamentals.
	Micora	mandipropamid	40	4 - 8 fl oz/100 gal	4 hours	See fungicide management strategies.
	Fenstop	fenamidone	11	7 - 14 fl oz/100 gal	12 hours	See label for rates for drench applications.
	Adorn	fluopicolide	43	1 - 4 fl oz/100 gal	12 hours	See fungicide management strategies.
	Subdue MAXX	mefenoxam	4	See label.	48 hours	See label for drench and foliar rates.
	Segovis	oxanthiapiprolin	U15	0.6 - 3.2fl oz/100 gal	4 hours	See fungicide management strategies.
(continued)	Affirm WDG	polyoxin D zinc salts	19	0.25 - 0.5 oz ai/acre	4 hours	See fungicide management strategies.

***FRAC Code** – Fungicides with the same FRAC Code have the same mode of action. See http://www.frac.info/ for an explanation of the FRAC Codes. Rotation of fungicides with different FRAC Codes could minimize the development of fungicide resistant strains.

ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Downy mildew *(cont.)*	Insignia SC	pyraclostrobin	11	3 - 6.1 fl oz/100 gal	12 hours	Use preventatively.
	Insignia	pyraclostrobin	11	4 - 8 fl oz/100 gal	12 hours	Use preventatively.
	Alude	salts of phosphorus acid	33	See label.	4 hours	Rate depends on whether used as soil drench or foliar spray. See label.
	Compass	trifloxystrobin	11	1 - 4 oz/100 gal	12 hours	
Phytophthora Pythium	Aliette	aluminum tris	33	See label.	12 hours	Rate depends on application type (whether used as soil drench or foliar spray). See label.
	Heritage	azoxystrobin	11	1 - 4 oz/100 gal	4 hours	See label for specific rates per container size. Do not allow drift to apples or crabapples. Not labeled for Pythium except in turf.
	Mural	azoxystrobin + benzovindiflupyr	11 + 7	2 - 7 oz/100 gal	12 hours	Rate depends on whether used as soil drench or foliar spray. See label.
	Segway	cyazofamid	21	1.5 - 6 fl oz/100 gal	12 hours	Group 21 fungicide. Crown rots and damping off. 14 - 28 day interval.
	Stature SC	dimethomorph	40	6.12 - 12.25 fl oz/ 100 gal	12 hours	DO NOT make more than 8 applications of per crop per season for greenhouse-grown ornamentals. No labeled for Pythium.
	Banrot 40 WP/8 G	etridiazole + thiophanate-methyl	14 + 1	3 - 12 oz/100 gal	12 hours	For use in commercial greenhouses only. See label for specific rates per container or seedbed.
	Fenstop	fenamidone	11	7 - 14 fl oz/100 gal	12 hours	See label for rates for drench applications.
	Hurricane	fludioxonil + mefenoxam	12 + 4	See label.	48 hours	Do not apply more than 2 pt of drench mixture per sq foot of application.
	Hurricane WDG	fludioxonil + mefenoxam	12 + 4	0.75 - 1.5 oz/100 gal	48 hours	See label for rate based on application method.
	Adorn	fluopicolide	43	1 - 4 fl oz/100 gal	12 hours	See fungicide management strategies.
	Subdue MAXX	mefenoxam	4	See label.	48 hours	
	Micora	mandipropamid	40	4 - 8 fl oz/100 gal	4 hours	Apply Micora as a foliar and stem spray on a 7 - 14 day interval. Not labeled for pythium.

(continued)

ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Phytophthora *(cont.)* Pythium	Segovis	oxanthiapiprolin	U15	0.6 - 3.2 fl oz/100 gal	4 hours	Make no more than two consecutive applications before switching to another non U15 group fungicide. Not labeled for Pythium.
	Insignia SC Intrinsic	pyraclostrobin	11	6.1 - 12.2 fl oz/100 gal	12 hours	Use preventatively.
	Insignia	pyraclostrobin	11	8 - 16 fl oz/100 gal	12 hours	
	Alude	salts of phosphorus acid	33	See label.	4 hours	See label for soil drench and foliar rates.
	Compass	trifloxystrobin	11	1 - 4 oz/100 gal	12 hours	Start applications when conditions are favorable for disease development. Not labeled for Pythium. See label for rates per specific application method and crop.
	Strike Plus 50 WDG	trifloxystrobin + triadimefon	11 + 3	3 - 9 oz/100 gal	12 hours	Apply as a full coverage spray to the point of drip. Repeat at 14 - 28 day intervals.
Black root rot (*Thielaviopsis* spp.)	Banrot 40 WP/8 G	etridiazole + thiophanate-methyl	14 + 1	3 - 12 oz/100 gal	12 hours	For use in commercial greenhouses only. Rate depends on crop. See label.
	Medallion and Medallion WDG	fludioxonil	12	See label	12 hours	See label for instructions on drench and mixing with growing media.
	Affirm WDG	polyoxin D zinc salts	19	0.5 lb/acre	4 hours	Do not apply more than three applications per season.
	Compass	trifloxystrobin	11	1 - 4 oz/100 gal	12 hours	Use preventatively.
	Terraguard SC	triflumizole	3	2 - 8 fl oz/100 gal (1/4 - 1 tsp/gal)	12 hours	Applications should be made preventatively.
Rhizoctonia aerial blights and root rots	Heritage	azoxystrobin	11	0.2 - 16 oz/100 gal	4 hours	See label for specific rates per container size. May cause phytotoxicity on apples or crabapples.
	Daconil Ultrex	chlorothalonil	M5	1.4 lb/100 gal	12 hours	Begin application at first evidence of disease activity. See label for specific precautions regarding REI.

(continued)

ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Rhizoctonia aerial blights and root rots *(cont.)*	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	Fruits and other structures which may be borne on treated plants must not be eaten. See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	Fruits and other structures which may be borne on treated plants must not be eaten. See label for specific precautions regarding REI.
	Banrot 40 WP/8G	etridiazole + thiophanate-methyl	14 + 1	3 - 12 oz/100 gal	12 hours	For use in commercial greenhouses only. Rate depends on crop. See label.
	Palladium	cyprodinil + fludioxonil	9 + 12	2 - 4 oz/100 gal	12 hours	For stem diseases, ensure full coverage of all stems and inner areas of plant to the soil/media level.
	Medallion	fludioxonil	12	1 - 4 oz/100 gal (foliar spray)	12 hours	For indoor drench applications use up to 30 oz Medallion per 1,000 sq ft.
	Hurricane	fludioxonil + mefenoxam	12 + 4	See label.	48 hours	Do not apply more than 2 pt of drench mixture per sq foot of application.
	Prostar 70 WP	flutolanil	7	3 - 12 oz/100 gal	12 hours	Observe for phytotoxicity prior to each application and 2 weeks after final application.
	26 GT	iprodione	2	1 - 13 fl oz	12 hours	Rate depends on application method. See label. Do not use as a drench on impatiens or pothos.
	26019 N/G	iprodione	2	1 - 2.5 lb/100 gal	12 hours	
	26019 FLO	iprodione	2	1 - 2.5 qt/100 gal	12 hours	
	3336 EG and 3336 WP and 3336 F	thiophanate-methyl	1	8 - 24 oz/100 gal	12 hours	Rate depends on method of application. See label.
	TwoSome	thiophanate-methyl + iprodione	1 + 2	See label	12 hours	May be used as a foliar, root dip, or soil drench application. See label for rates.
	26/36	thiophanate-methyl + iprodione	1 + 2	17 - 34 fl oz/100 gal	12 hours	
	Compass	trifloxystrobin	11	1 - 4 oz/100 gal	12 hours	Use preventatively.
	Terraguard SC	triflumizole	3	2 - 8 fl oz/100 gal (1/4 - 1 tsp/gal)	12 hours	For optimum disease control, applications should be made prior to or at the first sign of disease.

ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Soilborne Fusarium	Heritage	azoxystrobin	11	1 - 4 oz/100 gal	4 hours	See label for specific rates per container size. May cause phytotoxixity on apples or crabapples.
	Palladium	cyprodinil + fludioxonil	9 + 12	2 - 4 oz/100 gal	12 hours	For stem diseases, ensure full coverage of all stems and inner areas of plant to the soil/ media level.
	Banrot 40 WP/8 G	etridiazole + thiophanate-methyl	14 + 1	3 - 12 oz/100 gal	12 hours	For use in commercial greenhouses only. Rate depends on crop. See label.
Southern blight *(Sclerotium rolfsii)*	Palladium	cyprodinil + fludioxonil	9 + 12	2 - 4 oz/100 gal	12 hours	For stem diseases, ensure full coverage of all stems and inner areas of plant to the soil/ media level.
	Medallion	fludioxonil	12	1 - 4 oz/100 gal (foliar spray)	12 hours	For indoor drench applications use up to 30 oz Medallion per 1,000 sq ft.
	Medallion WDG	fludioxonil	12	1 - 4 oz/100 gal	12 hours	See label for specific instructions on growing media mix and medium drench.
	Torque	tebuconazole	3	4 - 10 fl oz/100 gal	12 hours	Apply every 14 days for a total of three applications beginning at the first sign of disease.

ORNAMENTAL DISEASES (Commercial) – continued

Actinopelte leaf spot (now *Tubakia* spp.)	Daconil Ultrex	chlorothalonil	M5	1.4 lbs/100 gal	12 hours	Begin application at first evidence of disease activity. See label for specific precautions regarding REI.
	Pegasus 6L	chlorothalonil	M5	1 - 7 pt/100 gal	12 hours	
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.
	Concert II	chlorothalonil + propiconazole	M5 + 3	22 - 35 fl oz/100 gal	12 hours	Do not use Concert II in greenhouses. Apply every 21 days. See label for specific precautions regarding REI.
	Mancozeb DG	mancozeb	M3	1.5 lb/100 gal	24 hours	Begin spraying when plants are well leafed out, or at the first sign of disease at 7 - 10 day intervals.
	Banner Maxx II and ProPensity 1.3ME	propiconazole	3	16 fl oz/100 gal	24 hours	Rate depends on crop and disease. See label.
Algal Leaf Spot *(Cephaleuros virescens)*	Junction	mancozeb + copper hydroxide	M3 + M1	1.5 lb/100 gal	24 hours	Do not apply Junction in a spray solution having less than 6.5 pH as phytotoxicity may occur.
	Junction WSP	mancozeb + copper hydroxide	M3 + M1	2.5 lb/100 gal	48 hours	See label for complete instruction on rates as some crops require a smaller rate than listed here.
Alternaria leaf blight (See individual labels)	Heritage	azoxystobin	11	4 oz/100 gal	4 hours	See label for specific rates. May cause phytotoxicity on apples or crabapples.
	Daconil Ultrex	chlorothalonil	M5	1.4 lbs/100 gal	12 hours	Begin application at first evidence of disease activity. See label for specific precautions regarding REI.
	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.
	Concert II	chlorothalonil + propiconazole	M5 + 3	22 - 35 fl oz/100 gal	12	Do not use in greenhouses. Apply every 21 days.
	Palladium	cyprodinil + fludioxonil	9 + 12	2 - 4 oz/100 gal	12 hours	Foliar applications or excessive run-off of Palladium may cause stunting or chlorosis to geranium at higher rates.
	Medallion and Medallion WDG	fludioxonil	12	1 - 4 oz/100 gal (foliar spray)	12 hours	
	26019 FLO	iprodione	2	1 - 2.5 qt/100 gal	12 hours	
	26 GT and 26019 N/G	iprodione	2	1 - 2.5 qt/100 gal	12 hours	Do not use as a drench on impatiens or pothos. Rate depends on application method. See label.
	Mancozeb DG and Protect DF	mancozeb	M3	1 - 2 lb/100 gal	24 hours	Begin spraying when plants are well leafed out, or at the first sign of disease at 7 - 10 day intervals.

(continued)

ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Alternaria leaf blight (See individual labels) *(cont.)*	Junction	mancozeb + copper hydroxide	M3 + M1	1.5 lb/100 gal	24 hours	Do not apply Junction in a spray solution having less than 6.5 pH as phytotoxicity may occur.
	Junction WSP	mancozeb + copper hydroxide	M3 + M1	2.5 lb/100 gal	48 hours	See label for complete instruction on rates as some crops require a smaller rate than listed here.
	Affirm WDG	polyoxin D zinc salts	19	0.5 lb/acre	4 hours	Do not apply more than 3 applications per season.
	MilStop	potassium bicarbonate	NC	2.5lb /100 gal	1 hour	Do not use on pansy at early stages of growth. See label for field rates.
	Banner Maxx II	propiconazole	3	5 - 8 fl oz/100 gal	24 hours	Rate depends on crop See label.
	Insignia SC Intrensic	pyraclostrobin	11	1.5 - 12.2 fl oz/100 gal	12 hours	Use preventatively.
	26/36	thiophanate-methyl + iprodione	1 + 2	33 - 84 fl oz/100 gal	12 hours	Do not use as a drench on impatiens, petunias, or pothos.
	TwoSome	thiophanate-methyl + iprodione	1 + 2	See label	12 hours	May be used as a foliar, root dip, or soil drench application. See label for rates.
	Compass	trifloxystrobin	11	1 - 4 oz/100 gal	12 hours	Use preventatively.
Anthracnose (See individual labels)	Heritage	azoxystobin	11	4 oz/100 gal	4 hours	See label for specific rates. May cause phytotoxixity on apples or crabapples.
	Daconil Ultrex	chlorothalonil	M5	1.4 lbs/100 gal	12 hours	Begin application at first evidence of disease activity. See label for specific precautions regarding REI.
	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.

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ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Scab (See specific labels) *(cont.)*	Junction WSP	mancozeb + copper hydroxide	M3 + M1	2.5 lb/100 gal	48 hours	See label for complete instruction on rates as some crops require a smaller rate than listed here.
	Affirm WDG	polyoxin D zinc salts	19	0.5 oz ai/acre	4 hours	Do not apply more than 3 applications of Affirm per season.
	MilStop	potassium bicarbonate	NC	2.5 lb/100 gal	1 hour	Do not use on pansy at early stages of growth.
	Banner Maxx II and ProPensity 1.3ME	propiconazole	3	2 - 4 fl oz/100 gal	24 hours	Rate depends on crop and disease. See label.
	Insignia SC Intrensic	pyraclostrobin	11	3 - 6.1 fl oz/100 gal	12 hours	Use preventatively.
	Pageant	pyraclostrobin + boscalid	7 + 11	6 - 12 oz/100 gal	12 hours	Use preventatively. Begin applications when conditions are favorable for fungal infection, prior to disease symptom development.
	Torque	tebuconazole	3	4 - 10 fl oz/100 gal	12 hours	Apply every 14 days for a total of three applications beginning at the first sign of disease.
	TwoSome	thiophanate-methyl + iprodione	1 + 2	See label	12 hours	Mix 17 to 34 fl. oz. of this product with 100 gallons of water.
	Compass	trifloxystrobin	11	2 - 4 oz/100 gal	12 hours	Use preventatively.
	Terraguard SC	triflumizole	3	4 - 8 fl oz/100 gal (1/4 - 1 tsp/gal)	12 hours	For optimum disease control, applications should be made prior to, or at the first sign of disease.
Sclerotinia blight/stem rot (*Sclerotinia* spp.)	Palladium	cyprodinil + fludioxonil	9 + 12	2 - 4 oz/100 gal	12 hours	Foliar applications or excessive run-off of Palladium may cause stunting or chlorosis to geranium at higher rates.
	TwoSome	thiophanate-methyl + iprodione	1 + 2	See label	12 hours	May be used as a foliar, root dip, or soil drench application. See label for rates.
Septoria leaf spot	Daconil Ultrex	chlorothalonil	M5	1.4 lbs/100 gal		Begin application at first evidence of disease activity. See label for specific precautions regarding REI.

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ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Septoria leaf spot *(cont.)*	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.
	Concert II	chlorothalonil + propiconazole	M5 + 3	22 - 35 fl oz/100 gal	12 hours	Do not use Concert II in greenhouses. Apply every 21 days.
	Palladium	cyprodinil + fludioxonil	9 + 12	2 - 4 oz/100 gal	12 hours	
	Mancozeb DG	mancozeb	M3	1 - 2 lb/100 gal	24 hours	Begin spraying when plants are well l eafed out, or at the first sign of disease at 7 - 10 day intervals.
	Protect DF	mancozeb	M3	1 - 2 lb/100 gal	24 hours	To improve performance, add 2 - 4 oz. of an effective spreader-sticker, such as Cleary's Clearyspray, per 100 gallons of spray.
	Junction	mancozeb + copper hydroxide	M3 + M1	1.5 lb/100 gal or 1/2 tablespoon/gal	24 hours	Do not apply Junction in a spray solution having less than 6.5 pH as phytotoxicity may occur.
	Junction WSP	mancozeb + copper hydroxide	M3 + M1	2.5 lb/100 gal	48 hours	See label for complete instruction on rates as some crops require a smaller rate than listed here.
	MilStop	potassium bicarbonate	NC	2.5 lb/100 gal	1 hour	Do not use on pansy at early stages of growth.
	Banner Maxx II and ProPensity 1.3ME	propiconazole	3	8 - 12 fl oz/100 gal	24 hours	Rate depends on crop and disease. See label.
	Insignia SC Intrensic	pyraclostrobin	11	3 - 6.1 fl oz/100 gal	12 hours	Use preventatively.
	TwoSome	thiophanate-methyl + iprodione	1 + 2	See label	12 hours	
Sphaeropsis leaf spot	Daconil Ultrex	chlorothalonil	M5	1.4 lbs/100 gal	12 hours	Begin application at first evidence of disease activity. See label for specific precautions regarding REI.
	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.
	Mancozeb DG	mancozeb	M3	1 - 2 lb/100 gal	24 hours	Begin spraying when plants are well leafed out, or at the first sign of disease at 7 - 10 day intervals.
Spilocaea pyracantha (Scab)	Banner Maxx II and ProPensity 1.3ME	propiconazole	3	5 - 8 fl oz/100 gal	24 hours	See label for specific precautions regarding REI.
	Concert II	chlorothalonil + propiconazole	M5 + 3	26 - 35 fl oz/100 gal	12 hours	Do not use Concert II in greenhouses. Apply every 21 days.

ORNAMENTAL DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code*	Rate	Re-entry Interval	Comments
Stagonospora leaf scorch	Daconil Ultrex	chlorothalonil	M5	1.4 lbs/100 gal	12 hours	Begin application at first evidence of disease activity. See label for specific precautions regarding REI.
	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.
	Palladium	cyprodinil + fludioxonil	9 + 12	4 - 6 oz/100 gal	12 hours	Foliar applications or excessive run-off of Palladium may cause stunting or chlorosis to geranium at higher rates.
Stigmina shothole	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.
Taphrina leaf blister	Mancozeb DG	mancozeb	M3	1 - 2 lb/100 gal	24 hours	Begin spraying when plants are well leafed out, or at the first sign of disease at 7-10 day intervals.
Tulip Fire (*Botrytis tulipae*)	26019 N/G	iprodione	2	1 - 2.5 lb/100 gal	12 hours	Rate depends on application method. See label.
	Mancozeb DG	mancozeb	M3	1.5 lb/100 gal	24 hours	Begin spraying when plants are well leafed out, or at the first sign of disease at 7-10 day intervals.
Viburnum downy mildew	Junction	mancozeb + copper hydroxide	M3 + M1	1.5 lb/100 gal or 1/2 tablespoon/gal	24 hours	Do not apply Junction in a spray solution having less than 6.5 pH as phytotoxicity may occur.
	Junction WSP	mancozeb + copper hydroxide	M3 + M1	2.5 lb/100 gal	48 hours	See label for complete instruction on rates as some crops require a smaller rate than listed here.
Volutella leaf blight/canker	Daconil Ultrex	chlorothalonil	M5	1.4 lbs/100 gal	12 hours	Begin application at first evidence of disease activity. See label for specific precautions regarding REI.
	Pegasus 6L	chlorothalonil	M5	1 3/8 pt/100 gal	12 hours	See label for specific precautions regarding REI.
	Pegasus DFX	chlorothalonil	M5	1.25 lb/100 gal	12 hours	See label for specific precautions regarding REI.
	Protect DF	mancozeb	M3	1 - 2 lb/100 gal	24 hours	
Willow Tar Spot, leaf blight, Scab, Black Canker, Spot Anthracnose	Junction	mancozeb + copper hydroxide	M3 + M1	1.5 lb/100 gal or 1/2 tablespoon/gal	24 hours	Do not apply Junction in a spray solution having less than 6.5 pH as phytotoxicity may occur.
	Junction WSP	mancozeb + copper hydroxide	M3 + M1	2.5 lb/100 gal	48 hours	See label for complete instruction on rates as some crops require a smaller rate than listed here.

ORNAMENTAL DISEASES (Home Garden)

Sherrie Smith

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Bacterial leaf spots/ blights	Serenade Garden Disease Control**	*Bacillus subtilis*	44	RTU*	Approved for organic use.
	Serenade Garden Disease Control Concentrate**	*Bacillus subtilis*	44	4 - 8 tbs/gal	Approved for organic use.
	Bayer Advanced Natria Disease Control**	*Bacillus subtilis*	44	RTU*	Approved for organic use.
	Bonide Copper Dust**	copper hydroxide	M1	2 1/4 - 6 oz/gal	Use at the first sign of disease.
	Bonide Liquid Copper Fungicide Concentrate**	copper sulfate	M1	0.5 - 2 oz/gal	Also available RTU*
	Natural Guard Copper Soap RTU*	copper soap	M1	RTU*	Apply at first sign of disease.
	Ortho Disease B Gon Copper*	copper octanoate	M1	RTU*	One quart will treat 10 square feet.
Black spot Fungal leaf spots Powdery mildew Rusts	Ortho Garden Disease Control	chlorothalonil	M5	1 tbs	
	Bonide Fung-onil RTU*	chlorothalonil	M5	RTU*	Apply at 7 - 14 days. Apply to runoff.
	Bonide Fung-onil Concentrate	chlorothalonil	M5	2 - 2.75 tsp/gal	Apply at 7 - 14 days. Apply to runoff.
	Garden Tech Daconil Concentrate	chlorothalonil	M5	1.5 tsp - 1 tbs	Bud break. 7 - 14 days.
	Garden Tech Daconil Concentrate RTU*	chlorothalonil	M5	RTU*	Apply to runoff.
	Hi-Yield Vegetable, Flower, Fruit and Ornamental Fungicide	chlorothalonil	M5	6 tsp/gal	Apply to runoff.
	Monterey Fruit Tree, Vegetable and Ornamental Fungicide	chlorothalonil	M5	2.5 tsp/gal for 200 sq ft	Apply at first sign of disease.
	Ferti-lome Broad Spectrum Lawn and Garden Fungicide	chlorothalonil	M5	4 - 14 tsp/gal	Rate depends upon crop.
	Ferti-lome Broad Spectrum Lawn and Garden Fungicide RTU*	chlorothalonil	M5	RTU*	Spray to the point of runoff.
	Bonide Mancozeb FL with Zinc Concentrate	mancozeb	M3	2 - 5 tsp/gal	Begin spraying when plants are well leafed out or at first sign of disease, in a full coverage spray at 7 - 10 day intervals throughout the season.

(continued)

ORNAMENTAL DISEASES (Home Garden) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Black spot Fungal leaf spots Powdery mildew Rusts *(cont.)*	Ferti-lome F-Stop Lawn and Garden Fungicide RTU*	myclobutanil	3	RTU*	Apply to the point when spray begins to run off the leaves. Treat once every 2 weeks throughout the season or until conditions for favorable disease development (warm, moist weather) are no longer present.
	Ferti-lome F-Stop Lawn and Garden Fungicide	myclobutanil	3	3 tbs/gal	
	Spectracide Immunox Plus Insect and Disease Control for Gardens RTU*	myclobutanil + permethrin	3	RTU*	Begin early in the season. Start treating when insects first appear or conditions favoring disease start to develop.
	Spectracide Immunox Multi-Purpose Fungicide Spray Concentrate for Gardens	myclobutanil	3	1 tbs/gal	Apply to the point when spray just begins to run off the leaves. Apply once every two weeks.
	Neem (various brands)	neem oil	NC***	RTU*	
	GreenCure**	potassium bicarbonate	NC***	1 - 2 tbs/gal	Approved for organic use.
	Kaligreen**	potassium bicarbonate	NC***	2.5 - 3 lb/A	Approved for organic use.
	MilStop**	potassium bicarbonate	NC***	2.5 - 3 lb/A	Approved for organic use.
	Actinovate Biological Lawn and Garden Fungicide**	*Streptomyces lydicus*	NC***	1 - 2 tsp/2 gal	One cup of solution usually treats about one 6-inch pot or its equivalent.
	Ferti-lome Dusting Sulfur**	sulfur	M2	4 tbs/gal (or use as a dusting powder directly out of the can)	DO NOT RE-ENTER TREATED AREAS FOR AT LEAST 24 HOURS AFTER APPLICATION IS MADE.
	Bonide Sulfur Plant Fungicide**	sulfur	M2	2 - 2 1/4 tbs/gal	Begin when diseases appear and repeat at 5 - 10 day intervals and after rains.
	BioAdvanced Science-Based Solutions All-In-One Rose & Flower Spray Concentrate	tebuconazole + tau-fluvalinate	3	5 1/4 tbs/gal	Apply the product to growing plants during early morning or late evening, when bees are not present.
	Bayer Advanced Garden – Disease Control for Roses, Flowers, Shrubs	tebuconazole	3	1 qt makes 42 gal of spray (or 1.52 tbs/gal)	Apply every 7 - 14 days during the growing season, starting when leaves first appear.
(continued)	Bayer Advanced All-In-One Rose and Flower Care	tebuconazole + imidacloprid	3	See label.	Soil drench. Protects against diseases for up to 6 weeks.

ORNAMENTAL DISEASES (Home Garden) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Black spot Fungal leaf spots Powdery mildew Rusts *(cont.)*	Bonide Infuse Systemic for Turf and Ornamentals	thiophanate-methyl	1	3 lb/1,000 sq ft	See label for warnings and crop restrictions.
	Ortho Rose and Flower Disease Control	triticonazole	3	2 fl oz/gal	Apply as soon as disease problems are noticed. Wait 2 - 4 weeks to re-apply if disease problems reappear. Each gallon is intended to treat 100 sq ft of garden area.
Fire Blight	Ferti-lome Fire Blight Spray	streptomycin sulfate	25	1 tbs/2 1/2 gal	Begin at blooming period, then every 3 - 4 days during bloom. Spray timing and coverage important for fire blight control. Professional spray equipment and applications may be necessary for larger trees.
Viruses	No chemical treatments				

* RTU – Ready to use.
** Approved for organic use.
*** NC – Resistance unknown.

DISEASES of COMMERCIAL PECANS

Sherrie Smith and Aaron Cato

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
Bud Break	Anthracnose Scab	Abound FL	azoxystrobin	11	6 - 12 fl oz	4 hours	45	Apply Abound when buds are bursting and first leaves are beginning to show.
	Downy spot Liver spot Powdery mildew Scab Vein spot Zonate leaf spot	Amistar Top	azoxystrobin + difenoconazole	11 3	8 - 14 fl oz	12 hours	45	Apply Amistar Top on a 14- to 21-day schedule, making no more than two sequential applications before alternating to another fungicide with a non-QoI (Group 11) mode of action.
	Downy leaf spot Liver spot Powdery mildew Scab Vein spot Zonate leaf spot	Quadris Top	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	12 hours	45	Apply Quadris Top on a 14 - 21 day schedule. Do not make more than 2 sequential applications.
	Anthracnose Downy leaf spot Powdery mildew Scab Zonate leaf spot	Topguard EQ	azoxystrobin + flutriafol	11 + 3	5 - 8 fl oz	12 hours	45	Apply Topguard EQ at bud break for scab.
	Anthracnose Downy leaf spot Powdery mildew Scab Zonate leaf spot	Quilt Xcel	azoxystrobin + propiconazole	11 + 3	14 - 21 fl oz	12 hours	45	Do not apply Quilt Xcel after shuck split.
	Scab	Pristine	boscalid + pyraclostrobin	7 + 11	10.5 - 14.5 oz	12 hours	14	Make no more than 4 applications of Pristine per season.
	Downy Spot Scab Powdery Mildew	Inspire Super	difenoconazole + cyprodinil	3 + 9	12 fl oz	12 hours	14	Apply Inspire Super on a 14 - 21 day schedule, making no more than two sequential applications before alternating to another fungicide with a different mode of action.
	Downy leaf spot Gnomonia leaf spot Leaf blotch Powdery mildew Scab Vein spot	Enable 2 F	fenbuconazole	3	8 fl oz	12 hours	28	Apply Enable 2 F when buds are bursting and first leaves are beginning to show. Do not apply after shuck split.
	Anthracnose Powdery mildew Scab	Luna Sensation	fluopyram + trifloxystrobin	7 + 11	4 - 7.6 fl oz	12 hours	14	Do not apply Luna Sensation after shuck split or within 30 days of harvest.
	Anthracnose Scab	Merivon	fluxapyroxad + pyraclostrobin	7 + 11	5 - 6.5 oz	12 hours	14	Begin applications of Merivon prior to onset of disease development and continue on a 7 - 21 day interval for the control of scab. Use the shorter interval and/or the higher rate when disease pressure is high.

(continued)

DISEASES of COMMERCIAL PECANS – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
Bud Break *(cont.)*	Scab	Sovran	kresoxim-methyl	11	2.4 - 4.8 oz	12 hours	45	Apply Sovran when buds are bursting and first leaves begin to show. See label.
	Scab	Quash	metconazole	3	2.5 - 3.5 oz	12 hours	25	Begin applications of Quash when leaves reach one-half mature size.
	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/gal (see label for trunk injection rates)	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions. Do not apply during dormancy.
	Phytophthora Scab	Alude	mono- and di-potassium salts of phosphorous acid	33	2.5 - 5 pts/A	4 hours	See label.	Apply with first irrigation in spring for Phytophthora. Repeat at 3 - 5 month intervals. For scab begin at bud break as preventative.
	Downy leaf spot Leaf spot Liver spot Scab Vein spot Zonate leaf spot	PropiMax EC	propiconazole	3	6 - 8 fl oz	12 hours	Do not apply after shuck split.	Apply PropiMax on a 14-day schedule during bud break and re-pollination sprays. See label.
	Downy leaf spot Leaf spot Liver spot Powdery mildew Scab Vein spot Zonate leaf spot	Tilt	propiconazole	3	4 - 8 fl oz	12 hours	Do not apply after shuck split.	Apply Tilt on a 14-day schedule during bud break pre-pollination.
	Anthracnose Scab	Stratego	propiconazole + trifloxystrobin	3 + 11	10 oz	12 hours	30	Do not apply more than 2 sequential applications of Stratego before alternating with a fungicide with a different FRAC code.
	Brown leaf spot Downy leaf spot Fungal leaf scorch Leaf blotch Leaf spot Liver spot Powdery mildew Scab Sooty mold Vein spot Zonate leaf spot	Orbit 45 WP AGPAK/ Super Tin* 80 WP AGPAK	propiconazole + triphenyltin	3 + 30	5 acres/ 20 oz Orbit 45 WP AGPAK + 18.75 oz Super Tin 80 WP AGPAK	48 hours	30	Apply Orbit and Super Tin AGPAKS when new leaves are unfolding. See label for restrictions.
(continued)	Downy leaf spot Liver spot Powdery mildew Scab Vein spot Zonate Leaf Spot	Miravis	pydiflumetofen + difenoconazole	3 + 7	13.6 fl oz./A	12 hours	45	Do not apply after shuck split.

DISEASES of COMMERCIAL PECANS – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
Bud Break *(cont.)*	Scab	Headline SC	pyraclostrobin	11	6 - 7 oz	12 hours	14	Begin applications of Headline SC prior to disease development and continue on a 14-day interval.
	Anthracnose Scab	Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	3 - 8 oz	12 hours	60	Begin applications of Adament when conditions are favorable for disease but before infection. Apply on a 7 - 14 day spray schedule.
	Brown leaf spot Downy leaf spot Liver spot Powdery mildew Scab Stem end blight Vein spot Zonate leaf spot	Topsin M 70 WDG	thiophanate-methyl	1	1 lb	12 hours	Do not apply after shuck split.	Begin applications of Topsin when first leaves are showing and repeat at 3 - 4 week intervals until shuck split.
	Brown leaf spot Downy leaf spot Liver spot Powdery mildew Scab Stem end blight Vein spot Zonate leaf spot	Topsin M 70 WP	thiophanate-methyl	1	1 lb	12 hours	Do not apply after shuck split.	Begin applications of Topsin when first leaves are showing and repeat at 3 - 4 week intervals until shuck split.
	Brown spot Downy spot Fungal leaf scorch Powdery mildew Scab Zonate leaf spot	Bonide Infuse Systemic Disease Control**	thiophanate-methyl	1	2 tbsp (1 fl oz) per gal of water	See label.	12 months for bearing trees	Non-bearing fruit and nut trees are those trees that will not produce fruit for a least one year after application of this product. Apply product to the point just when it begins to run off the leaves.
	Brown leaf spot Downy leaf spot Leaf blotch Liver spot Powdery mildew Scab Sooty mold	Super Tin 80 WP*	triphenylin hydroxide	30	5 - 7.5 oz	48 hours	30	Begin applications of Super Tin at pre-pollination before leaves begin unfolding.

DISEASES of COMMERCIAL PECANS – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
Second Pre-Pollination Spray	Same as Bud Break							Apply 14 days after pre-bud sprays. Follow labels.
First Cover Spray	Same as Bud Break							Apply 14 days after pre-pollination spray or when young nuts first appear.
Second Cover Spray	Same as First Cover							Apply 3 weeks after first cover spray.
Third Cover Spray	Same as Second Cover							Apply 2 - 3 weeks after second cover spray.
Fourth Cover Spray	Same as Third Cover							Apply 2 - 3 weeks after third cover spray.
Fifth Cover Spray	Same as Fourth Cover							Apply 2 - 3 weeks after fourth cover spray.
Sixth Cover Spray	Same as Fifth Cover							Apply 2 - 3 weeks after fifth cover spray. A seventh spray may be needed if rainy weather persists in late August, but fungicides should not be applied after shucks begin to open.

***Super Tin is a restricted use pesticide – see label for warnings.**

**Labeled for homeowner use.

TOMATO DISEASES (Commercial Production)

Terry Spurlock and Aaron Cato

Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Comments
TRANSPLANT PRODUCTION						
Bacterial Speck and Bacterial Spot (Seed Disinfection for transplant production)	Bleach	5.25% sodium hypochlorite		1 part bleach + 4 parts water		Wash tomato seed in bleach solution for 45 minutes with constant agitation. Air dry disinfected seed on a clean bench immediately.
Transplant Protection	Agrimycin 17	streptomycin sulfate	25	1 lb in 100 gal water		Spray transplants every 10 days from first leaf until transplanted. For use only in transplant production beds.
Early Blight, Gray Mold and Late Blight (transplants)	Bravo Ultrex 82.5 WDG Bravo WeatherStik 6 F Bravo 500 4.17 F	chlorothalonil	M5	1.3 - 1.8 lb 1 3/8 - 2 pt 2 - 3 pt	2 days 2 days 2 days	Starting at emergence, spray transplants every week until transplanted. Good coverage is essential.
	Scala SC	pyrimethanil	9	7 fl oz	12 hours	See label for restrictions and warnings.
	Dithane DF (Rainshield NT) Manzate 75 DF Penncozeb 75 DF	mancozeb	M3	1.5 - 2 lb 1.5 - 2 lb 0.75 - 2 lb	1 day 1 day 1 day	Starting at emergence, spray transplants every week until transplanted. Good coverage is essential. Latron surfactant is recommended to improve coverage.
	OR plus Serenade MAX	*Bacillus subtilis*	44	1 - 2 lb	0 day	Do not use without a tank mix partner of one of the previously listed products.

TOMATO DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Pre-Harvest Interval	Comments
FIELD PRODUCTION							
Early Blight Late Blight Septoria Leaf Spot	Quadris 2.08	azoxystrobin	11	5 - 6.2 fl oz	4 hr	0	Apply at first sign of disease and repeat every 7 - 21 days. Do not make more than one application of strobilurins before rotating to a fungicide with a different mode of action. No more than 5 applications per acre per year. See label for incompatible spray mixtures.
	Quadris Opti	azoxystrobin + chlorothalonil	11 M5	1.6 pt	12 hr	0	
	Cabrio 20 EG	pyraclostrobin	11	8 - 12 oz	12 hr	0	Use 8 - 16 oz for late blight. Maximum amount per season is 96 oz. See label for other information.
	Flint 50 WG	trifloxystrobin	11	2 - 4 oz	12 hr	3	Apply at first sign of disease and repeat every 7 - 10 days. Use the higher rate for late blight. Suppression only for Septoria. See label for other precautions and restrictions.
	Bravo Ultrex 82.5 WDG Bravo WeatherStik 6 F Bravo 500 4.17 F	chlorothalonil	M5	1.3 - 1.8 lb 1 3/8 - 2 pt 2 - 3 pt	12 hr 12 hr 12 hr	0 0 0	Apply at 7 - 10 day interval after first appearance of disease. Do not mix chlorothalonil with Copper-Count N, Foil, DIPEL, Triton, AG98 or Latron surfactants.
	Gavel 75 DF	mancozeb + zoxamide	M3 22	1.5 - 2 lb	2 days	5	See label for restrictions and warnings.
	OR plus Serenade MAX	*Bacillus subtilis*	44	1 - 3 lb	4 hr	0	Do not use without a tank mix partner of one of the previously listed products.
	Tanos 50 WG	famoxadone + cymoxanil	11 27	6 - 8 oz		3	
Early Blight Late Blight Septoria Leaf Spot **and** Bacterial Speck Bacterial Spot Bacterial Canker	mancozeb **OR** chlorothalonil **OR** azoxystrobin **plus**		M3 or M5 or 11	See above	See above	See above	See above
	Kocide 2000 Kocide 4.5 LF Nu-Cop 3 L Champion WP	copper hydroxide	M1	1.5 - 3 lb 1 1/3 - 2 1/3 pt 1 1/3 - 2 1/3 pt 2 lb	2 day	0	Spray on a 7 - 10 day schedule as above.
	OR BasiCop WP Champ 4.6 F Tenn-Cop 5 E	fixed copper	M1	2 - 4 lb 1 1/3 - 2 1/3 pt 3 pt	1 day	0	
	Cuprofix Ultra 40 Disperss	copper sulfate	M1	0.75 - 3 lb	12 hr	0	

TOMATO DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Pre-Harvest Interval	Comments
FIELD PRODUCTION (cont.)							
Anthracnose Early Blight Septoria Leaf Spot Powdery Mildew	Quadris Top	azoxystrobin + difenoconazole	11 + 3	8 fl oz	12 hr	0	
	Aftershock, Evito 480 SC	fluoxastrobin	11	2 - 5.7 fl oz	12 hr	3	
	Priaxor	fluxapyroxad + pyraclostrobin	7 + 11	4 - 8 fl oz	12 hr	7	Use 6 - 8 fl oz for powdery mildew control.
	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hr	0	
	Fontelis	penthiopyrad	7	16 - 24 fl oz	12 hr	0	
Late Blight only	Quadris 2.08	azoxystrobin	11	5 - 6.2 fl oz	4 hr	0	Spray on a 5 - 7 day interval.
	Quadris Opti	azoxystrobin + chlorothalonil	11 M5	1.6 pt	4 hr	0	See above.
	Cabrio 20 EG	pyraclostrobin	11	8 - 16 oz	12 hr	0	Do not make more than one application before alternating to a non-strobilurin fungicide.
Late Blight and Buckeye Rot	Quadris 2.08	azoxystrobin	11	5 - 6.2 fl oz	4 hr	0	Apply prior to disease development and repeat every 5 - 7 days. Do not make more than one application of strobilurins before rotating to a fungicide with a different mode of action. No more than 5 applications per acre per year. See label for incompatible spray mixtures.
	Quadris Opti	azoxystrobin + chlorothalonil	11 M5	1.6 pt	4 hr	0	
	Gavel 75 DF	mancozeb + zoxamide	M3 22	1.5 - 2 lb	2 days	5	See label for restrictions and warnings.
	Ridomil Gold MZ	mefenoxam	4	2.5 lb	48 hr	14	Apply every 14 days if conditions favor late blight or buckeye rot (cool, wet weather). No more than 3 applications per crop.
	Ridomil Gold-Copper	mefenoxam + copper	4 M1	2 lb	48 hr	14	Apply every 14 days if conditions favor late blight or buckeye rot (cool, wet weather). No more than 3 applications per crop.
	Gavel 75 DF	mancozeb + zoxamide	M3 + 22	1.5 - 2 lb		5	
	Quadris 2.08 F	azoxystrobin	11	6.2 oz		0	
	Quadris Opti 5.5 SC	azoxystrobin + chlorothalonil	11 M5	1.6 pt		0	
	Presidio 4 SC	fluopicolide	43	3 - 4 oz		2	

TOMATO DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Comments	Comments
FIELD PRODUCTION (cont.)							
Late Blight and Early Blight	Previcur Flex	propamocarb hydrochloride	28	0.7 - 1.5 pt	12 hr	5	See label for restrictions and warnings.
	Reason 500 SC	fenamidone	11	5.5 - 8.2 fl oz	12 hr	14	See label for restrictions and warnings.
Southern Blight	Blocker	PCNB	14	1.2 - 1.8 gal	12 hr	---	In-furrow or transplant application only.

TOMATO DISEASES (Home Garden)

Sherrie Smith

Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Comments
Bacterial Leaf and Fruit Spots	Bio Advanced Natria Disease Control**	*Bacillus subtilis*	44	RTU*	0	For best results, treat prior to foliar disease development or at the first sign of foliar disease infection.
	Bonide Copper Dust**	copper hydroxide	M1	2 1/4 - 6 oz/gal	0	Begin to apply in plant bed as soon as plants are established. Repeat at 4 - 14 day intervals throughout growing season.
	Bonide Liquid Copper Fungicide Concentrate**	copper sulfate	M1	0.5 - 2 oz/gal	0	Also available RTU.*
	Natural Guard Copper Soap RTU*	copper soap	M1	RTU*	Label	Apply at first evidence of disease.
Fungal Leaf and Fruit Spots including Early Blight and Septoria Leaf Spot	Serenade**	*Bacillus subtilis*	44	2 - 4 fl oz/gal	0	Spray plants to runoff, covering both top and bottom surface of foliage to ensure thorough coverage.
	Natria Disease Control**	*Bacillus subtilis*	44	RTU*	0	Approved for organic use.
	Ortho Garden Disease Control (Daconil)	chlorothalonil	M5	1 tbs/gal	0	Apply every 7 - 14 days when diseases are threatening.
	Ferti-lome Liquid Fungicide	chlorothalonil	M5	2 tbs/gal	0	Apply at first evidence of disease, then 7 - 10 days.
	Hi-Yield Vegetable, Flower, Fruit and Ornamental Fungicide	chlorothalonil	M5	6 tsp per application, 42 tsp per year	0	Begin applications when dew or rain occur and disease threatens. Use the highest rate and shortest interval specified when disease conditions are severe.
	Bonide Fung-onil Multipurpose Fungicide Concentrate	chlorothalonil	M5	1 - 1 1/2 tbs/gal	0	Apply at first evidence of disease.
	Bonide Fung-onil RTU	chlorothalonil	M5	RTU*	0	Begin when conditions favor disease.
	Garden Tech Daconil Fungicide Concentrate	chlorothalonil	M5	See label.	0	Apply at first evidence of disease.
	Monterey Fruit Tree, Vegetable and Ornamental Fungicide	chlorothalonil	M5	2 1/2 tsp/gal for 200 sq ft	0	Begin applications when dew or rain occur and disease threatens. Use the highest rate and shortest interval specified when disease conditions are severe.
(continued)	Bonide Liquid Copper Fungicide Concentrate**	copper salts	M1	RTU*	1	Approved for organic use.

TOMATO DISEASES (Home Garden) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Comments
Fungal Leaf *(cont.)* and Fruit Spots including Early Blight and Septoria Leaf Spot	Bonide Copper Dust**	copper sulfate	M1 + M2	2 1/4 - 6 oz/gal	1	Begin to apply in plant bed as soon as plants are established. Repeat at 4 - 14 day intervals throughout growing season.
	Bonide Mancozeb Flowable w/Zinc	mancozeb	M3	2 - 5 tbs/gal	5	Apply at first evidence of disease.
	Neem (various brands)	neem oil	NC***	RTU* and in concentrate, see individual labels.	0	Use with care on plants with tender tissue. Check for leaf burn in small scale trials prior to use.
	Kaligreen**	potassium bicarbonate	NC***	2 1/2 - 3 lb/A	1	Begin applications at first sign of disease.
	GreenCure **	potassium bicarbonate	NC***	1 - 2 tbs/gal	1	Begin applications at first sign of disease.
	GreenCure EZ**	potassium bicarbonate	NC***	RTU*	1	
	MilStop**	potassium bicarbonate	NC***	2 - 5 lb/A	1	Begin applications at first sign of disease.
	Actinovate® Lawn and Garden** (foliar and Pythium, Phytophthora, Rhizoctonia, Fusarium root rots)	*Streptomyces lydicus* WYEC 108		1/2 - 2 tsp/ 2 gal	0	May be used as a foliar spray or root drench. See label.
	Natria Fruit and Vegetable Ready to Use	sulfur + pyrethrins	M2	RTU*	1	For best control apply as a protective spray early in the season before the diseases are noticed. Re-spray every 7 - 10 days or after rain.
	Bonide Tomato and Vegetable Concentrate	sulfur + pyrethrins	M2	5 oz/gal	1	Thoroughly spray all areas of the plant, especially new shoots and the underside of leaves.
Blossom End Rot	Stop-Rot	calcium chloride	Micro-nutrient		0	Apply calcium chloride solution to plants and fruit as soon as symptoms are noticed. Spray in early morning every 7 days for 4 weeks. Thorough coverage is important.
	End Rot Control	calcium chloride	Micro-nutrient		0	Apply calcium chloride solution to plants and fruit as soon as symptoms are noticed. Spray in early morning every 7 days for 4 weeks. Thorough coverage is important.

* RTU – Ready to use.
** Approved for use in organic crops.
*** NC – Resistance not known.

TURF DISEASES (Commercial)

Terry Spurlock

Disease	Product	Active Ingredient	FRAC Code	Rate/1,000 sq ft	Comments
Brown Patch	Heritage 50 WG	azoxystrobin	11	0.2 - 0.4 oz	Apply in 2 - 4 gals water/1,000 sq ft every 14 - 28 days as a preventative during warm, humid weather favorable for the disease. Use the higher rate and shorter interval if disease is evident and conditions are very favorable.
	Insignia 20 WG	pyraclostrobin	11	0.5 - 0.9 oz	
	Compass 50 WG	trifloxystrobin	11	0.15 - 0.25 oz	14 day interval at first sign of disease.
	Renown 5.16 SCII	chlorothalonil + azoxystrobin	M5 + 11	2.5 - 4.5 oz	Apply at a 14 - 21 day interval. Commercial use only.
	Endorse 2.5 WP	polyoxin D	19	4 oz	Apply in a minimum of 0.5 gal/1,000 sq ft. Repeat on a 7 - 14 day interval as needed.
	Medallion 50 WP	fludioxonil	12	0.25 - 0.5 oz	Begin applications before disease development and repeat on 7 - 14 day intervals. May be used with Banner Maxx for extended control of various leaf spots.
	Daconil WeatherStik 6 F	chlorothalonil	M5	3 - 7 fl oz	Apply in 2 - 5 gals water/1,000 sq ft at 7 - 10 day intervals as a preventative (before disease is noticed). Use high rate on 7 day schedule once disease is evident. See label for fairway rates. Commercial use only.
	Daconil Ultrex 82.5 SDG	chlorothalonil	M5	1.8 - 3.25 oz	Protectant qualities. Commercial use only.
	Chipco 26019 50 W	iprodione	2	1.5 - 2 oz	Apply in 2 - 5 gal water/1,000 sq ft at 14 - 21 day intervals as a preventative. See label for restrictions. Iprodione is for commercial use only.
	Eagle 40 WSP	myclobutanil	3	0.6 - 1.2 oz	
	Fore Rainshield 80 WP	mancozeb	M3	4 - 8 oz	Apply in 3 - 5 gals water/1,000 sq ft every 7 - 14 days as a preventative. A non-ionic surfactant should be used. Use 7 day interval if disease is severe.
	Banner MAXX 1.3 EC	propiconazole	3	1 - 2 fl oz	Apply in 2 - 5 gals water/1,000 sq ft at 7 - 21 day intervals as a preventative. Can be tank-mixed with certain contact fungicides – see label for details**. Do not exceed 2 fl oz rate on bermudagrass and St. Augustinegrass.**
	Concert II 4.3 SE	propiconazole + chlorothalonil	3 + M5	3 - 5.5 oz	Begin applications in May or June before disease is present. Commercial use only.
	Spectro 90 WDG	chlorothalonil + thiophanate-methyl	M5 + 1	3 - 8 oz	Best applied when conditions favor disease. Repeat as needed at 14 - 21 days as indicated on label. Commercial use only.

(continued)

TURF DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/1,000 sq ft	Comments
Brown Patch *(cont.)*	Cleary's 3336 F 4 F	thiophanate-methyl	1	2 - 4 oz	Apply in 3 - 5 gals water/1,000 sq ft every 7 - 14 days at first sign of disease.
	26/36 Fungicide 3.8 F	iprodione + thiophanate-methyl	2 + 1	2 - 4 oz	Iprodione is for commercial use only.
	Secure 0.88 EC	fluzinam	29	0.5 oz	Commercial use only.
	Prostar 70 WP	flutolanil	7	2 - 3 oz	Apply in 2 - 5 gals water at first sign of disease with a non-ionic surfactant. Repeat as needed every 14 - 21 days.
	Bayleton 50 WSP	triadimefon	3	0.5 - 1 oz	
	Tartan 9.85 L	trifloxystrobin + triadimefon	11 + 3	1 - 2 oz	Begin applications prior to or in early stages of disease onset. 14 - 28 day interval.
	Rhapsody 68 WG	*Bacillus subtilis*	44	2 - 10 oz	Apply in 2 gal/1,000 sq ft. Apply when conditions are conducive for disease. May be used in organic production.
Dollar Spot	Daconil WeatherStik 6 F	chlorothalonil	M5	3 - 7 fl oz	Apply in 2 - 5 gals water/1,000 sq ft at 7 - 10 day intervals as a preventative (before disease is noticed). Use high rate on 7 day schedule once disease is evident. See label for fairway rates. Commercial use only.
	Daconil Action 6.11 F	chlorothalonil + acibenzolar-S-methyl	M5 + P1	1 - 3.5 fl oz	See label restrictions. Commercial use only.
	Chipco 26019 50 W	iprodione	2	1.5 - 2 oz	Apply in 2 - 5 gals water/1,000 sq ft at 14 - 21 day intervals as a preventative. See labels for restrictions. Iprodione is Commercial use only.
	Eagle 40 WSP	myclobutanil	3	0.6 - 1.2 oz	
	Fore Rainshield 80 WP	mancozeb	M3	4 - 8 oz	Apply in 3 - 5 gals water/1,000 sq ft every 7 - 14 days as a preventative. A non-ionic surfactant should be used. Use 7 day interval if disease is severe.
	Banner MAXX 1.3 EC	propiconazole	3	1 - 2 fl oz	Apply in 2 - 5 gals water/1,000 sq ft at 7 - 21 day intervals as a preventative. **Can be tank-mixed with certain contact fungicides – see label for details. Do not exceed 2 fl oz rate on bermudagrass or St. Augustine grass.**
	Spectro 90 WDG	chlorothalonil + thiophanate-methyl	M5 + 1	3 - 8 oz	Best applied when conditions favor disease. Repeat as needed at 14 - 21 days as indicated on label. Commercial use only.
	Cleary's 3336 F 4 F	thiophanate-methyl	1	2 - 4 oz	Apply in 3 - 5 gals water/1,000 sq ft every 7 - 14 days at first sign of disease.
(continued)	Insignia 20 WG	pyraclostrobin	11	0.9 oz	Suppression only. 14 - 28 day intervals.

TURF DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/1,000 sq ft	Comments
Dollar Spot *(cont.)*	Tartan 9.85 L	trifloxystrobin + triadimefon	11 + 3	1 - 2 oz	Begin applications prior to or in early stages of disease onset. Apply at a 14 - 28 day intervals.
	Emerald 70 WDG	boscalid	7	0.13 - 0.18 oz	Begin applications prior to or in early stages of disease onset. Apply at a14 - 28 day intervals.
	Trinity 2.21 SE	triticonazole	3	0.5 - 2 oz	See label. Apply in 1 - 5 gals/1,000 sq ft.
	Rhapsody 68 WG	*Bacillus subtilis*	44	2 - 10 oz	2 gal/1,000 sq ft. Begin when conditions are conducive for disease. May be used for organic production.
	Junction 61.1 DF	mancozeb + copper hydroxide	M3 + M1	2 - 4 oz	Begin at disease onset, then at 5 day intervals. See label.
	Secure 0.88 EC	fluzinam	29	0.5 oz	Commercial use only.
Rhizoctonia Large Patch (zoysia and bermuda)	Heritage 50 WG	azoxystrobin	11	0.4 oz	Apply in 2 - 5 gals water/1,000 sq ft between September 10 and October 10 and again between March 15 and April 15. In very severe instances, an additional application may be made about 4 weeks after the first fall application.
	Prostar 70 WP	flutolanil	7	3 oz	
	Eagle 40 WSP	myclobutanil	3	1.2 oz	
	Trinity 2.21 SE	triticonazole	3	0.5 - 2 oz	
	Bayleton 50 WSP	triadimefon	3	1 oz	
Fairy Ring (suppression)	Prostar 70 WP	flutolanil	7	2.2 - 4.5 oz	Apply in 3 - 5 gals water/1,000 sq ft at first sign of disease and repeat in 28 days if necessary. Apply as soon as possible after initial symptoms. Reapply after 28 days if needed.
	Heritage 50 WG	azoxystrobin	11	0.4 oz	
	Insignia 20 WG	pyraclostrobin	11	0.9 oz	
	Headway 1.39 EC	azoxystrobin + propiconazole	11 + 3	3 oz	Apply at 4 gals/1,000 sq ft at first disease evidence.
	Tourney 1.15 WDG	metconazole	3	0.37 oz	Apply at 4 gals/1,000 sq ft. Reapply at 21 days.
	Affirm 11 WDG	polyoxin D zinc salt	19	1 oz	Use 2 - 3 applications at 7 day intervals with a wetting agent.
	Pillar G 0.81 G	pyraclostrobin + triticonazole	3 + 11	3 lbs	Use at 14 - 28 day intervals with a wetting agent.
	Torque 50 WDG	tebuconazole	3	0.6 oz	66 - 132 GPA water volume. See label directions.

TURF DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/1,000 sq ft	Comments
Pythium Blight (also Pythium Root and Crown Rots)	Heritage 50 WG	azoxystrobin	11	0.4 oz	Apply in 2 - 4 gals water/1,000 sq ft every 10 - 14 days as a preventative. Use the 10 day interval during prolonged hot, wet weather. Do not make more than 2 sequential applications.
	Terrazole 35 WP	etridiazole	14	2 - 4.5 oz	Apply to established turf in 5 gals water/1,000 sq ft every 5 - 10 days as a preventative. Water in immediately.
	fosetyl-Al (various trade names 80 WDG)	fosetyl-Al	33	4 - 8 oz	Apply in 5 gals water/1,000 sq ft every 5 - 10 days at the first sign of disease and when conditions favor the disease. See label for tank-mixing suggestions.
	Fore Rainshield 80 W	mancozeb	M3	8 oz	Apply in 1 - 5 gals water/1,000 sq ft every 14 - 21 days as a preventative when hot, wet conditions persist. Use high rate and 14 day interval when disease is present. Allow foliage to dry before watering or mowing.
	Subdue MAXX 40 WP	mefenoxam	4	0.5 - 1 fl oz	Apply to established turf every 10 - 21 days in 3 - 5 gals water/1,000 sq ft as a preventative during hot, wet weather. See label for tank mix information.
	Banol 66.5 L	propamocarb	28	1.33 - 4 fl oz	Apply in 2 - 5 gals water/1,000 sq ft every 7 - 21 days as a preventative during hot, wet weather.
	Alude 6.27 SC	salts of phosphorus acid	33	5 - 10 oz	Apply at 14 - 21 day intervals.
	Junction 61.1 DF	mancozeb + copper hydroxide	M3 + M1	2 - 4 oz	Begin at disease onset, then at 5 day intervals.
	Stellar 2.08 SC	fluopicolide + propamocarb	43 + 28	1.2 fl oz	Apply when conditions favor disease development.
Leaf Rust Gray Leaf Spot (St. Augustinegrass, ryegrass, tall fescue)	Heritage 50 WG	azoxystrobin	11	0.2 - 0.4 oz	Apply at first sign of disease and repeat every 2 - 4 weeks until conditions become less favorable.
	Compass 50 WG	trifloxystrobin	11	0.15 - 0.25 oz	
	Banner MAXX 1.3 EC	propiconazole	3	2 - 4 fl oz	Apply as above but on a 2 - 3 week schedule.
	Bayleton 50 WSP	triadimefon	3	0.5 - 1 oz	Apply at first sign of disease, then at 14 day intervals.
	Torque 50 WDG	tebuconazole	3	0.6 - 1.1 fl oz	See label.
	Insignia 20 WG	pyraclostrobin	11	0.5 - 0.9 oz	Apply when conditions are favorable for disease. 14 - 28 day intervals. See label.
	Eagle 40 WSP	myclobutanil	3	1.2 oz	See label.

TURF DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/1,000 sq ft	Comments
Leaf Spots	Heritage 50 WG	azoxystrobin	11	0.2 - 0.4 oz	Apply at first sign of disease and repeat every 2 - 4 weeks until conditions become less favorable.
	Compass 50 WG	trifloxystrobin	11	0.15 - 0.25 oz	
	Insignia 20 WG	pyraclostrobin	11	0.5 - 0.9 oz	
	Fore Rainshield 80 WP	mancozeb	M3	4 oz	Apply as above but on a 1 - 2 week schedule.
	Banner MAXX	propiconazole	3	2 - 4 fl oz	Apply as above but on a 2 - 3 week schedule.
	Chipco 26019 50 WP	iprodione	2	2 oz	Apply as above but on a 2 - 3 week schedule. Commercial use only.
	Eagle 40 WSP	myclobutanil	3	0.6 oz	
Spring Dead Spot (bermuda only; provides suppression)	Heritage 50 WG	azoxystrobin	11	0.4 oz	Make one application in early fall (two if disease history is very severe) in 2 - 4 gals water/1,000 sq ft.
	Eagle 40 WSP	myclobutanil	3	1.2 oz	
	Disarm 480 SC	fluoxastrobin	11	0.36 oz	Apply 1 - 2 months before dormancy. Irrigate 0.25 - 0.50 in. after application.
	ProPensity 1.3 ME	propiconazole	3	4 oz	Use 1 - 3 applications beginning Sep/Oct.
	Torque 50 WDG	tebuconazole	3	0.6 oz	For prevention. Apply in fall and spring.
Summer Patch	Heritage 50 WG	azoxystrobin	11	0.4 oz	Apply two applications in the fall and two in early spring at28 day intervals. Apply in 2 - 4 gal water/1,000 sq ft.
	Compass 50 WG	trifloxystrobin	11	0.25 oz	
	Eagle 40 WSP	myclobutanil	3	0.6 - 1.2 oz	
	Insignia 20 WG	pyraclostrobin	11	0.5 - 0.9 oz	
Take-All Patch	Heritage 50 WG	azoxystrobin	11	0.4 oz	Apply two applications in the fall and two in early spring at 28 day intervals. Apply in 2 - 4 gals water/1,000 sq ft.
	Eagle 40 WSP	myclobutanil	3	1.2 oz	
	Insignia 20 WDG	pyraclostrobin	11	0.9 oz	
	Disarm 480 SC	fluoxastrobin	11	0.36 oz	Apply at 28 day intervals.
	Torque 50 WDG	tebuconazole	3	0.6 oz	For prevention. Apply in fall and spring.

TURF DISEASES (Commercial) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/1,000 sq ft	Comments
Yellow Patch (cool season brown patch)	Heritage 50 WG	azoxystrobin	11	0.2 - 0.4 oz	Apply one application in late fall (two at 28 day intervals if severe disease history).
	Prostar 70 WP	flutolanil	7	1.5 oz	Apply at first sign of disease and repeat as needed.
	Daconil 2787 4 F	chlorothalonil	M5	3 - 11 fl oz	Apply at first sign of disease and repeat as needed. Commercial use only
	Daconil 2787 90 WDG	chlorothalonil	M5	1.75 - 6.5 oz	Apply at first sign of disease and repeat as needed. Commercial use only.
	Daconil Ultrex 82.5 SDG	chlorothalonil	M5	1.8 - 7.4 oz	Apply at first sign of disease and repeat as needed. Commercial use only.
	Fore Rainshield 80 WP	mancozeb	M3	4 oz	Apply at first sign of disease and repeat as needed.
	Renown 5.16 SC	chlorothalonil + azoxystrobin	11 + M5	2.5 - 4.5 oz	Apply at a 14 - 28 day interval. Commercial use only.
Nematodes	MultiGuard Protect 8.6 EC	furfural		0.126 - 0.184 gal (5.5 - 8 gal/A)	Apply up to 6 applications per year at 14 - 28 day intervals. Irrigate immediately after application with 1/4 - 1/2 acre inch water using overhead sprinklers.
	Indemnify 3.34 SC	fluopyram	7	0.195 - 0.39 fl oz (8.49 - 16.98 oz/A)	Do not apply more than 17.1 fl oz/A per year. Irrigate to depth of the root zone. Minimum time between applications is 14 days.
	Nimitz Pro G 1.5 G	fluensulfone		60 - 120 lbs/A	Do not apply more than 240 lbs of product per acre per calendar year.

CAUTION: Chlorothalonil, Iprodione, Vinclozolin and PCNB are prohibited on home lawns (turf).

HOME LAWN DISEASES

Sherrie Smith

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Anthracnose Brown Patch Fairy Ring Fusarium Patch Gray Leaf spot Gray & Pink Snow Mold Leafspot Leaf Rust Melting Out Necrotic Ring Spot Pink Patch Powdery Mildew Pythium Red Thread Rhizoctonia Large Patch Southern & Typhula Blight Spring Dead Spot Stem & Stripe Rust Summer Patch Take-All Patch Yellow Patch Zoysia Patch	Scotts Disease EX Lawn Fungicide	azoxystrobin	11	4lb/1000 sq ft	Product may be reapplied at 14 - 28 day intervals.
Ascochyta leaf blight Cercospora Dollar spot Rust	Natural Guard Copper Soap Liquid Fungicide	copper octanoate	M1	1.5 - 6 oz/ 2.5 gal/ 1,000 sq ft	See label.
Anthracnose Brown patch/crown rot Copper spot Dollar spot Fusarium blight Fusarium patch (pink snow mold) Gray leaf spot Leaf smut Necrotic ring spot	Ferti-lome F-Stop Liquid (not granules)	myclobutanil	3	Dilute 5 1/3 fl oz of product in 1 gal of water to treat 250 sq ft of lawn area.	Repeat application once every 2 - 4 weeks or at the first sign of new disease development.

HOME LAWN DISEASES – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
(continued) Powdery mildew Red thread Rust Septoria leaf spot Summer patch Zonate leaf spot	Ferti-lome F-Stop Liquid (not granules)	myclobutanil	3	Dilute 5 1/3 fl oz of product in 1 gal of water to treat 250 sq ft of lawn area.	Repeat application once every 2 - 4 weeks or at the first sign of new disease development.
Alternaria leaf spot Anthracnose Ascochyta blight Brown blight Cercospora leaf spot Dollar spot Downy mildew Helminthosporium leaf spot Powdery mildew Rust Septoria leaf spot	H & I Agritech GreenCure	potassium bicarbonate	N/A	1 - 2 tbs/gal	Start application at first sign of disease.
Anthracnose Brown patch Dichondra rust on lawns Dollar spot Powdery mildew Red thread Rust Stripe smut Take-all patch	Ferti-lome Liquid Systemic Fungicide II	propiconazole	3	3 - 5 fl oz in 1 gal of water per 250 sq ft of lawn	For Brown Patch, apply every 10 days. For Anthracnose, Rust, and Powdery Mildew, apply every 14 days. For Dicondra Rust, 5 fl oz in 1 gal of water per 250 sq ft of lawn. Repeat every 21 days, if needed. For Take-All Patch, 5 fl oz in 1 gal of water per 250 sq ft of lawn. Apply twice in the fall (September - October) and twice in the spring (April - May). For southern lawns, also make applications twice in the summer (June - August).
Brown patch Copper spot Dollar spot Leaf smuts Necrotic ring spot Powdery mildew Septoria leaf spot Red thread Rust Spring dead spot Summer patch	Spectracide Immunox Fungus Plus Insect Control for Lawns (granules)	propiconazole + lambda-cyhalothrin	3	4 lb/1,000 sq ft	See label.

HOME LAWN DISEASES – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Brown patch Copper spot Dollar spot Leaf smuts Necrotic ring spot Powdery mildew Septoria leaf spot Red thread Rust Spring dead spot Summer patch	Spectracide Immunox Fungus Plus Insect Control for Lawns (RTU*)	propiconazole + lambda-cyhalothrin	3	RTU*	See label for application instructions and cautions.
Anthracnose Brown patch Dollar spot Fusarium patch Powdery mildew Red thread Rusts Stripe smut Summer patch Snow mold	Bio Advanced Science-Based Solutions Fungus Control for Lawns (RTU*)	propiconazole	3	2 - 3.5 lb/1,000 sq ft	Repeat applications dependent on disease. See label.
Anthracnose Brown patch Dollar spot Fusarium patch Powdery mildew Red thread Rusts Stripe smut Summer patch Snow mold	Bio Advanced Science-Based Solutions Fungus Control for Lawns (RTU*)	propiconazole	3	RTU*	Repeat applications dependent on disease. See label.

HOME LAWN DISEASES – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Anthracnose Brown ring patch Fusarium patch Gray leaf spot Gray snow mold Helminthosporium Leaf Spot Large patch Necrotic ring spot Pink patch Pink snow mold Red leaf spot Red thread Take-all patch Yellow spot Zoysia patch	Scotts Lawn Fungus Control	thiophanate methyl	1	6.75 lb/2400 sq ft	Do not apply if wind speed exceeds 10 mph.
Ascochyta blight Bipolaris Brown patch Copper spot Curvularia leaf spot Dollar spot Drechslera leaf spot Exserolium leaf spot Fusarium patch Gray leaf spot Necrotic ringspot Pink snow mold Stripe smut Summer patch Take-all patch Zoysia patch	Bonide Infuse Systemic Disease Control Lawn and Landscape	thiophanate-methyl	1	7.5 lb/5,000 sq ft	Apply every 14 days at first sign of disease.

HOME LAWN DISEASES – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Take-all patch (*Gaeumannomyces graminis* var. *graminis*)	Scotts Disease EX Lawn Fungicide	azoxystrobin	11	4lb/1000 sq ft	
	Spectracide Immunox Fungus Plus Insect Control for Lawns	propiconazole + lambda-cyhalothrin	3	10 lb/2,500 sq ft	See label.
	Bio Advanced Science-Based Solutions Fungus Control for Lawns	propiconazole	3	10 lb/5,000 sq ft	Repeat applications dependent on disease. See label.
	Ferti-lome Liquid Systemic Fungicide II	propiconazole	3	3 - 5 fl oz in 1 gal of water per 250 sq ft of lawn	Apply twice in the fall (September - October) and twice in the spring (April - May).
	Ferti-lome Liquid Systemic Fungicide II RTU*	propiconazole	3	RTU*	Apply twice in the fall (September - October) and twice in the spring (April - May).
	Scotts Lawn Fungus Control	thiophanate methyl	1	6.75 lb/2400 sq ft	Do not apply if wind speed exceeds 10 mph.
Large patch Zoysia patch (*Rhizoctonia solani*)	Scotts Disease EX Lawn Fungicide	azoxystrobin	11	4lb/1000 sq ft	
	Spectracide Immunox Fungus Plus Insect Control for Lawns	propiconazole + lambda-cyhalothrin	3	10 lb/2,500 sq ft	See label.
	Bonide Infuse Systemic Disease Control Lawn and Landscape	thiophanate-methyl	1	7.5 lb/5,000 sq ft	Apply every 14 days at first sign of disease.
Brown patch (*Rhizoctonia* spp.)	Scotts Disease EX Lawn Fungicide	azoxystrobin	11	4lb/1000 sq ft	
	Ferti-lome F-Stop Liquid (not granules)	myclobutanil	3	Dilute 5 1/3 fl oz of product in 1 gal of water to treat 250 sq ft of lawn area.	Repeat application once every 2 - 4 weeks or at the first sign of new disease development.
	Ferti-lome Liquid Systemic Fungicide II	propiconazole	3	3 - 5 fl . oz. in 1 gal. of water per 250 sq. ft. of lawn	Repeat treatment every 10 days if necessary.
	Ferti-lome Liquid Systemic Fungicide II RTU*	propiconazole	3	RTU*	Repeat treatment every 10 days if necessary.
	Spectracide Immunox Fungus Plus Insect Control for Lawns	propiconazole + lambda-cyhalothrin	3	10 lb/2,500 sq ft	See label.
	Bio Advanced Science-Based Solutions Fungus Control for Lawns	propiconazole	3	10 lb/5,000 sq ft	Repeat applications dependent on disease. See label.
	Bonide Infuse Systemic Disease Control Lawn and Landscape	thiophanate-methyl	1	7.5 lb/5,000 sq ft	Apply every 14 days at first sign of disease.

HOME LAWN DISEASES – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Powdery mildew	Ferti-lome F-Stop Liquid (not granules)	myclobutanil	3	Dilute 5 1/3 fl oz of product in 1 gal of water to treat 250 sq ft of lawn area	Repeat application once every 2 - 4 weeks or at the first sign of new disease development.
	H & I Agritech GreenCure	potassium bicarbonate	N/A	1 - 2 tbs/gal	Start application at first sign of disease.
	Ferti-lome Liquid Systemic Fungicide II	propiconazole	3	3 - 5 fl oz in 1 gal of water per 250 sq ft of lawn	Repeat treatment every 10 days if necessary.
	Ferti-lome Liquid Systemic Fungicide II RTU*	propiconazole	3	RTU*	Repeat treatment every 10 days if necessary.
	Spectracide Immunox Fungus Plus Insect Control for Lawns	propiconazole + lambda-cyhalothrin	3	10 lb/2,500 sq ft	See label.
	Bio Advanced Science-Based Solutions Fungus Control for Lawns	propiconazole	3	10 lb/5,000 sq ft	Repeat applications dependent on disease. See label.
Spring Dead Spot (*Leptosphaeria korrae*)	Scotts Disease EX Lawn Fungicide	azoxystrobin	11	4lb/1000 sq ft	
Necrotic Ring Spot (*Leptosphaeria korrae*)	Ferti-lome F-Stop Liquid (not granules)	myclobutanil	3	Dilute 5 1/3 fl oz of product in 1 gal of water to treat 250 sq ft of lawn area	Repeat application once every 2 - 4 weeks or at the first sign of new disease development.
	Bonide Infuse Systemic Disease Control Lawn and Landscape	thiophanate-methyl	1	7.5 lb/5,000 sq ft	Apply in the fall before dormancy and again in the spring.
	Scotts Lawn Fungus Control	thiophanate methyl	3	6.75 lb/2400 sq ft	Do not apply if wind speed exceeds 10 mph.
Downy mildew	H & I Agritech GreenCure	potassium bicarbonate	N/A	1 - 2 tbs/gal	Start application at first sign of disease.

*RTU – Ready To Use

VEGETABLE DISEASES (Commercial Production)

Travis Faske and Aaron Cato

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
ASPARAGUS						
Rust	Rally 40 WSP	myclobutanil	3	5 oz	See label.	Apply at first evidence of disease.
	Bravo WeatherStik	chlorothalonil	M5	2 - 4 pt	See label.	Follow label instructions.
	Sonata	*Bacillus pumilus* (bacteria)	---	2 - 4 qt	0	Can be used for organic production. See label.
Stemphylium Purple Spot	Flint 50 WG Quadris	trifloxystrobin azoxystrobin	11 11	3 - 4 oz 6 - 15.5 fl oz	0 100	
BEANS (Snap and Pole)						
Pythium Damping-Off	Ridomil Gold SL	mefenoxam	4	8 - 16 fl oz	2	Preplant incorporate in the top 2 inches. Also for this disease on lima and dry beans.
Pythium and Rhizoctonia Damping-Off	Trilex 2000	trifloxystrobin + metalaxyl	11 4	1 oz/cwt seed		
	Basicop WP Champ 4.6 F Tenn-Cop 5 E	fixed copper	M1	2 - 4 lb 1 1/3 - 2 1/3 pt 3 pt	1	Spray at first sign of disease; repeat on a 10 day schedule as needed.
White Mold (Sclerotinia)	Blocker 4 F	PCNB	14	4 pt	See label.	Do not apply after pod formation.
	Endura	boscalid	7	8 - 11 oz		
Gray Mold (Botrytis) and Rust	Bravo Ultrex	chlorothalonil	M5	2.7 lb	7	Apply at first sign of disease on a weekly schedule as needed.
	Equus	chlorothalonil	M5	1.37 - 2 pt		Follow label directions.
	Endura	boscalid	7	8 - 11 oz	See label.	Apply at first sign of disease.
Powdery Mildew and Rust	Microthiol Special	wettable sulfur	M2	7 lb	0	Apply at first sign of disease and repeat at 14 day intervals as needed.
	Endura 70 WG	boscalid	7	8 - 11 oz	7	7 - 10 day interval
	Headline 2.09 F	pyraclostrobin	11	6 - 9 fl oz	7	7 - 10 day interval
Gray Mold (Botrytis), Powdery Mildew and Rust	Priaxor	fluxapyroxad + pyraclostrobin	7 11	4 - 8 fl oz	7	
Root and Stem Rot (*Rhizoctonia solani*)	Blocker 4 F	PCNB	14	2 - 3 pt	45	Apply in-furrow at planting.

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
BEANS (Dry)						
Anthracnose, Downy Mildew, Rust	Bravo Ultrex Maneb 80 WP	chlorothalonil maneb	M5 M3	1.25 - 1.8 lb 1.5 - 2 lb	7 30	Apply at early bloom and repeat as needed at 7 - 10 day intervals.
Rust	tebuconazole (various trade names 3.6 F)	tebuconazole	3	4 - 6 fl oz	14	
Anthracnose, Ascochyta Blight	Quadris Opti	azoxystrobin + chlorothalonil	11 M5	1.6 - 2.4 pt		See label for important restrictions and application information.
Anthracnose, Ascochyta Blight, Powdery Mildew, Rust	Vertisan Priaxor	penthiopyrad fluxapyroxad + pyraclostrobin	7 7 11	14 - 20 fl oz 4 - 8 fl oz	21 21	
BEANS (Dry) and FIELD PEAS (*Phaseolus* and *Vigna* spp.)						
Anthracnose, Ascochyta Blight, Mycosphaerella Blight, Powdery Mildew, Rust	Headline	pyraclostrobin	11	6 - 9 fl oz	30	See label for important restrictions and application information.
	Endura	boscalid	7	8 - 11 oz	See label.	Follow label instructions. Not labeled on peas.
	Topsin M 4.5 F	thiophanate-methyl	1	20 - 30 fl oz	1	See label information.
	Quilt Xcel	azoxystrobin + propiconazole	11 3	10.5 - 14 fl oz	14	
	Aprovia Top 1.62 EC	difenconazole + benzovindiflupyr	3 + 7	10.5 - 11 fl oz	14	
Rust, White Mold	Proline 480 SC	prothioconazole	3	5.7 fl oz	7	
BRASSICA (Leafy Greens)						
White Rust (*Albugo*) Black Spot (*Alternaria*)	Quadris 2.08	azoxystrobin	11	6 - 15.5 fl oz	0	Apply prior to disease and continue on a 7 - 14 day schedule. Do not make more than 2 consecutive applications of Quadris nor more than 3 total applications per acre per crop year. Do not apply more than 1.44 qts per acre per season.
Alternaria	Fontelis Quadris Top Inspire Super	penthiopyrad azoxystrobin + difenoconazole difenoconazole + cyprodinil	7 11 3 3 9	14 - 30 fl oz 12 - 14 fl oz 16 - 20 fl oz	3 1 7	
Downy Mildew	Revus	mandipropamid	40	8 fl oz		See label information.

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
CABBAGE, BROCCOLI, COLE CROPS						
Alternaria Leaf Spot	Endura 70 WP	boscalid	7	6 - 9 oz	0	7 - 14 day schedule.
	Maneb 80 WP	maneb	M3	1.5 - 2 lb	7	7 - 14 day schedule.
	Ridomil Gold Bravo SC	mefenoxam + chloro-thalonil	4 M5	1.5 pt	7	7 - 14 day schedule.
	Cabrio 20 EC	pyraclostrobin	11	12 - 16 oz	0	7 - 14 day schedule.
	Bravo Weatherstik	chlorothalonil	M5	1.5 - 3 pt	7	7 - 14 day schedule.
	Quadris 2.08	azoxystrobin	11	6 - 15 fl oz	0	7 - 14 day schedule.
	Switch 62.5 WG	cyprodinil + fludioxonil	9 12	11 - 14 oz	7	7 - 14 day schedule.
Downy Mildew	Ridomil Gold Bravo SC	mefenoxam + chloro-thalonil	4 M5	1.5 pt	7	7 - 10 day interval until disease is under control. Alternate fungicides with different modes of action.
	Cabrio 20 EC	pyraclostrobin	11	12 - 16 oz	0	See label.
	Quadris 2.08	azoxystrobin	11	6 - 15 oz	0	See label.
	Aliette 80 WG	fosetyl-Al	33	2 - 5 lb	3	See label.
	Presidio 4 SC	fluopicolide	43	3 - 4 fl oz	2	See label.
	Reason 500 SC	fenamidone	11	5.5 - 8.2 fl oz	2	See label.
	Revus 2.08 SC	mandipropamid	40	8 fl oz	1	See label.
Pythium Damping-Off	Ridomil Gold SL	mefenoxam	4	0.25 - 0.5 pt	NA	Apply to soil at planting or transplanting.
Rhizoctonia Stem and Root Rot	Endura 70 WG	boscalid	7	6 - 9 oz	0	Apply at first sign of disease; may be repeated 7 - 14 days later.
CANTALOUPE – See CUCURBITS						

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
CORN (Sweet)						
Anthracnose (*Colletotrichum*)	Tilt, Propimax 3.6 EC (multiple generics)	propiconazole	3	4 fl oz	14	
Northern corn leaf blight (*Exserohilum turcicum*)	Quadris 2.08 SC	azoxystrobin	11	6.2 - 9 fl oz	7	See Fungicide resistance management guidelines.
Southern rust (*Puccinia polysora*)	Evito 480 SC	fluoxastrobin	11	2 - 3.8 fl oz	7	See Fungicide resistance management guidelines.
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 fl oz	7	See Fungicide resistance management guidelines.
	Bravo Weatherstick (multiple generics)	chlorothalonil	M5	16 - 24 oz	14	See label on other chlorothalonil fungicides.
	Dithane DF (multiple generics)	mancozeb	M3	32 - 48 oz	7	See label on other mancozeb fungicides.
	Quilt Xcel 2.2 SE	azoxystrobin + propiconazole	11 + 3	10.5 - 14 fl oz	14	
	Stratego YLD 4.18 SC	trifloxystrobin + prothioconazole	11 + 3	4 - 5 fl oz	0	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	7	
	Elatus 45 WG	azoxystrobin + benzovindiflupyr	11 + 7	7.3 oz	7	
	Trivapro 2.21 SE	benzovindiflupyr + azoxystrobin + propiconazole	7 + 11 + 3	13.7 fl oz	14	
CUCUMBERS – See CUCURBITS						

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
CUCURBITS: CANTALOUPE, CUCUMBER, MUSKMELON, PUMPKIN, SUMMER SQUASH, AND WATERMELON						
Angular leaf spot (*Pseudomonas syringae* pv. *lachrymans*)	Kocide 2000	copper hydroxide	M1	1 - 2.25 lb		Crop injury may occur at high rates.
Alternaria leaf spot	Topsin or T-Methyl 70 W	thiophanate-methyl	1	16 oz	0	Not for *Alternaria* or *Cercospora*. See Fungicide resistance management guidelines.
Anthracnose (*Colletotrichum* spp.)	Topsin or T-Methyl 4.5 F	thiophanate-methyl	1	10 oz	1	Not for *Alternaria* or *Cercospora*. See Fungicide resistance management guidelines.
Cercospora leaf spot (*Cercospora citrulina*)	Quadris 2.08 SC	azoxystrobin	11	11 - 15.5 fl oz	1	See Fungicide resistance management guidelines.
	Cabrio 20 EC	pyraclostrobin	11	12 - 16 oz	0	See Fungicide resistance management guidelines.
Gummy stem blight (*Didymella bryoniae*)	Bravo Weatherstick (multiple generics)	chlorothalonil	M5	16 - 24 oz	3	See label on other chlorothalonil fungicides.
Target spot (*Corynespora cassiicola*)	Dithane DF (multiple generics)	mancozeb	M3	32 - 48 oz	5	
	Aprovia Top 1.62 EC	difenoconazole + benzovindiflupyr	3 + 7	10.5 - 13.5 fl oz	0	
	Inspire Super 2.82 SC	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	7	
	Luna Experience 3.3 F	fluopyram + tebuconazole	7 + 3	6 - 17 fl oz	0	
	Luna Sensation 1.67 F	fluopyram + trifloxystrobin	7 + 11	7.6 fl oz	0	
	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	11 - 14 oz	0	
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	12 - 14 fl oz	0	
	Pristine 38 WG	pyraclostrobin + boscalid	11 + 7	12.5 - 18.5 oz	0	
	Tanos 50 WP	famoxadone + cymoxanil	11 + 27	8 oz	3	Only *Alternaria* and Anthracnose.
	Quadris Opti	azoxystrobin + chlorothalonil	11 + M5	3.2 pt	1	
	Gavel 75 DF	zoxamide + mancozeb	22 + M3	1.5 - 2 lb	5	*Cercospora* and *Alternaria* only.
	Orondis Opti 3.37 SC	oxathiapiprolin + chlorothalonil	49 + M5	1.75 - 2.5 fl oz	0	
	Orondis Ultra 2.33 SC	oxathiapiprolin + mandipropamid	49 + 40	5.5 - 8 fl oz	0	

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
CUCURBITS: CANTALOUPE, CUCUMBER, MUSKMELON, PUMPKIN, SUMMER SQUASH, AND WATERMELON (cont.)						
Downy Mildew (*Pseudopernospra cubensis*)	Reason 500 SC	fenamidone	11	5.5 oz	14	See Fungicide resistance management guidelines.
	Cabrio 20 EC	pyraclostrobin	11	8 - 12 oz	0	See Fungicide resistance management guidelines.
	Flint 50 WG	trifloxystrobin	11	4 oz	0	See Fungicide resistance management guidelines.
	Pristine 38 WG	pyraclostrobin + boscalid	11 + 7	12.5 - 18.5 oz	0	
	Ranman 400 SC	cyazofamid	21	2 - 2.75 fl oz	0	
	Curzate 60 DF	cymoxanil	27	3.2 - 5 oz	3	
	Previcur Flex 6 F	propamocarb	28	1.2 pt	2	
	Omega 500 F	fluazinam	29	0.75 - 1.5 pt	30	
	Aliette 80 WDG	fosetyl-AL	33	2 - 5 lb	1	
	Forum 4.18 F	dimethomorph	40	6 fl oz	0	
	Revus 2.08 SC	mandipropamid	40	8 fl oz	1	
	Presido 4 F	fluopicolide	43	4 fl oz	2	
	Dithane DF (multiple generics)	mancozeb	M3	32 - 48 oz	5	
	Tanos 50 WP	famoxadone + cymoxanil	11 + 27	8 oz	3	
	Ridomil Gold Bravo SC 3.67	mefenoxam + chlorothalonil	4 + M5	2 lb	7	
	Gavel 75 DF	zoxamide + mancozeb	22 + M3	1.5 - 2 lb	5	
	Orondis Opti 3.37 SC	oxathiapiprolin + chlorothalonil	49 + M5	1.75 - 2.5 fl oz	0	Good on downy mildew.
	Orondis Ultra 2.33 SC	oxathiapiprolin + mandipropamid	49 + 40	5.5 - 8 fl oz	0	

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
CUCURBITS: CANTALOUPE, CUCUMBER, MUSKMELON, PUMPKIN, SUMMER SQUASH, AND WATERMELON (cont.)						
Powdery Mildew						
Powdery Mildew of cucurbits is caused by two fungal genera, *Sphaerotheca* and *Erysiphe*, that can quickly (high risk) develop resistance to fungicides. Use a tank mix or premix with two modes of action (different FRAC Code numbers) and avoid sequential use of a single chemistry (same FRAC Code number) within the same season.						
Powdery Mildew (*Sphaerotheca* spp. or *Erysiphae cichoracearum*)	Ralley 40 WSP	myclobutanil	3	2.5 - 5 oz	1	
	Velum Prime	fluopyram	7	6.5 - 6.8 fl oz	0	
	Fontelis 1.67 SC	penthiopyrad	7	12 - 16 fl oz	0	
	Quintec 2.08 SC	quinoxyfen	13	4 - 6 oz	3	
	Bravo Weatherstick (multiple generics)	chlorothalonil	M5	16 - 24 oz	3	See label on other chlorothalonil fungicides.
	Torino 0.85 SC	cyflufenamid	U06	3.4 oz	0	Resistance is known in some populations.
	Gatten	flutianil	U13	6 - 8 fl oz	0	Cantaloupe, cucumber, and squash only.
	Inspire Super 2.82 SC	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	7	
	Luna Experience 3.3 F	fluopyram + tebuconazole	7 + 3	6 - 17 fl oz	7	
	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	11 - 14 oz	1	
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	12 - 14 fl oz	1	
	Pristine 38 WG	pyraclostrobin + boscalid	11 + 7	12.5 - 18.5 oz	0	
	Quadris Opti 1.0 SC	azoxystrobin + chlorothalonil	11 + M5	3.2 qt		
	Aprovia Top 1.62 EC	difenoconazole + benzovindiflupyr	3 + 7	10.5 - 13.5 fl oz	0	
	Orondis Opti 3.37 SC	oxathiapiprolin + chlorothalonil	49 + M5	1.75 - 2.5 fl oz	0	

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Days to Harvest	Comments
EGGPLANT						
Anthracnose fruit rot, Early blight (*Alternaria solani*) Gray mold (*Botrytis* sp.)	Endura 70 WP	boscalid	7	2.5 - 3.5 oz	0	
	Fontelis 1.67 SC	penthiopyrad	7	16 - 24 fl oz	0	
	Quadris 2.08 SC	azoxystrobin	11	6.2 - 15.5 fl oz	0	See Fungicide resistance management guidelines.
	Reason 500 SC	fenamidone	11	5.5 oz	14	See Fungicide resistance management guidelines.
	Evito 480 SC	fluoxastrobin	11	2 - 5.7 fl oz	3	See Fungicide resistance management guidelines.
	Cabrio 20 EC	pyraclostrobin	11	8 - 12 oz	0	See Fungicide resistance management guidelines.
	Bravo Weatherstick (multiple generics)	chlorothalonil	M5	12 - 16 oz	3	See label on other chlorothalonil fungicides.
	Aprovia Top 1.62 EC	difenoconazole + benzovindiflupyr	3 + 7	10.5 - 13.5 fl oz	14	
	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	11 - 14 oz	0	
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	1	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	0	
Phytophthora blight and fruit rot	Ranman 400 SC	cyazofamid	21	2.75 fl oz	0	
	Omega 500 F	fluazinam	29	0.75 - 1.5 pt	30	
	Forum 4.18 F	dimethomorph	40	6 fl oz	3	
	Revus 2.08 SC	mandipropamid	40	8 fl oz	1	
	Tanos 50 WP	famoxadone + cymoxanil	11 + 27	8 - 10 oz	3	
OKRA						
Anthracnose Downy Mildew	Quadris 2.08 SC	azoxystrobin	11	6 - 15.5 fl oz	0	Apply prior to disease and on a 7 - 14 day schedule as needed. Do not make more than 2 consecutive applications and do not make more than 4 applications per crop year. Do not apply more than 1.92 qts per acre per season.
	Reason 500 SC	fenamidone	11	5.5 oz		
Seedling Disease	Quadris 2.08 SC	azoxystrobin	11	0.4 - 0.8 fl oz/ 1,000 row ft	N/A	In-furrow at planting or 7 inch band over the row shortly after emergence.

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
ONION, GARLIC, LEEK, SHALLOT						
Alternaria Blotch Powdery Mildew Downy Mildew	Cabrio 20 EG	pyraclostrobin	11	8 - 12 oz	7	Follow label directions closely.
	Pristine	boscalid + pyraclostrobin	7 11	12.5 - 18.5 oz	See label.	Follow label information for crops and diseases.
	Scala SC	pyrimethanil	9	9 - 18 oz		Use lower rate only in a tank mix with a broad-spectrum fungicide.
Downy Mildew	Revus	mandipropamid	40	8 fl oz		See label information.
Purple Blotch, Stemphylium, Botrytis	Inspire Super	difenoconazole + cyprodinil	3 9	16 - 20 fl oz	7	
	Quadris Top	azoxystrobin + difenoconazole	11 3	12 - 14 fl oz	3	
	Fontelis	penthiopyrad	7	16 - 24 fl oz	3	
PEAS (Southern and English)						
Pythium Damping-Off	Ridomil Gold SL	mefenoxam	4	8 - 16 fl oz	2	Preplant incorporate in the top 2 inches.
Downy Mildew Cercospora Leaf Spot Anthracnose, Rust	Bravo WeatherStik	chlorothalonil	M5	1 3/8 - 2 pt	14	Apply at first sign of disease on a 7 - 10 day schedule as needed.
	Priaxor	fluxapyroxad + pyraclostrobin	7 11	4 - 8 fl oz	7	
Cercospora Leaf Spot, Anthracnose, Rust	Fontelis	penthiopyrad	7	14 - 30 fl oz	0	
Cercospora Leaf Spot, Anthracnose, Rust, Powdery Mildew	Vertisan	penthiopyrad	7	14 - 20 fl oz	21	

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
PEPPER						
Anthracnose fruit rot (*Colletotrichum* spp.)	Quadris 2.08 SC	azoxystrobin	11	6 - 15.5 fl oz	0	See Fungicide resistance management guidelines.
	Reason 500 SC	fenamidone	11	5.5 - 8.2 oz	14	See Fungicide resistance management guidelines.
	Cabrio 20 EC	pyraclostrobin	11	8 - 12 oz	0	See Fungicide resistance management guidelines.
	Flint 50 WG	trifloxystrobin	11	3 - 4 oz	3	See Fungicide resistance management guidelines.
	Bravo Weatherstick (multiple generics)	chlorothalonil	M5	16 - 24 oz	3	See label on other chlorothalonil fungicides.
	Dithane DF (multiple generics)	mancozeb	M3	32 - 48 oz	7	See label on other mancozeb fungicides.
	Aprovia Top 1.62 EC	difenoconazole + benzovindiflupyr	3 + 7	10.5 - 13.5 fl oz	0	
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	0	
	Tanos 50 WP	famoxadone + cymoxanil	11 + 27	8 - 10 oz	3	
	Orondis Opti 3.37 SC	oxathiapiprolin + chlorothalonil	49 + M5	1.75 - 2.5 fl oz	0	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	0	
Bacterial spot (*Xanthomonas* sp.)	Tanos 50 WP	famoxadone + cymoxanil	11 + 27	8 - 10 oz	3	Suppression only. Tank mix with copper or mancozeb.
	Kocide 2000	copper hydroxide	M1	1.5 - 2.25 lb	0	Several other copper compounds available.
	Manzate Pro-Stick (multiple generics)	mancozeb	M3	1.6 - 2.1 lb	7	See label on other mancozeb fungicides.

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
PEPPER (cont.)						
Cercospora leaf blight	Cabrio 20 EC	pyraclostrobin	11	8 - 12 oz	0	See Fungicide resistance management guidelines.
	Manzate Pro-Stick (multiple generics)	mancozeb	M3	1 - 2 lb	7	See label on other mancozeb fungicides.
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	0	
	Aprovia Top 1.62 EC	difenoconazole + benzovindiflupyr	3 + 7	10.5 - 13.5 fl oz	0	
	Orondis Opti 3.37 SC	oxathiapiprolin + chlorothalonil	49 + M5	1.75 - 2.5 fl oz	0	
Phytophthora foliar blight and fruit rot (*Phytophthora capsici*)	Reason 500 SC	fenamidone	11	8.2 oz	14	See Fungicide resistance management guidelines.
	Ranman 400 SC	cyazofamid	21	2.75 fl oz	0	
	Omega 500 F	fluazinam	29	0.75 - 1.5 pt	30	
	Forum 4.18 F	dimethomorph	40	6 fl oz	0	
	Revus 2.08 SC	mandipropamid	40	8 fl oz	1	
	Manzate Pro-Stick (multiple generics)	mancozeb	M3	1.6 - 2.1 oz	7	See label on other mancozeb fungicides.
	Tanos 50 WP	famoxadone + cymoxanil	11 + 27	8 - 10 oz	3	
	Orondis Opti 3.37 SC	oxathiapiprolin + chlorothalonil	49 + M5	1.75 - 2.5 fl oz	0	

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
PEPPER (cont.)						
Powdery Mildew	Quadris 2.08 SC	azoxystrobin	11	6 - 15.5 fl oz	0	See Fungicide resistance management guidelines.
	Fontelis 1.67 SC	penthiopyrad	7	16 - 24 fl oz	0	
	Flint 50 WG	trifloxystrobin	11	1.5 - 2 oz	0	See Fungicide resistance management guidelines.
	Quintec 2.08 SC	quinoxyfen	13	4 - 6 oz	3	Leaf spotting can occur.
	Aprovia Top 1.62 EC	difenoconazole + benzovindiflupyr	3 + 7	10.5 - 13.5 fl oz	0	
	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	8-14 oz	0	
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	1	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	0	
	Orondis Ultra 2.33 SC	oxathiapiprolin + mandipropamid	49 + 40	5.5 - 8 fl oz	0	
	Orondis Opti 3.37 SC	oxathiapiprolin + chlorothalonil	49 + M5	1.75 - 2.5 fl oz	0	
Southern blight (*Sclerotium rolfsii*)	Evito 480 SC	fluoxastrobin	11	2 - 5.7 fl oz	3	
	Cabrio 20 EC	pyraclostrobin	11	12 - 16 oz	0	Suppression only.
	Blocker 4F	PCNB	14	4.5 - 7.5 pt/ 100 gal water		Use ½ pt transplant solution per plant.
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	7	Suppression only.

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
PEPPER (cont.)						
Target Spot (*Corynespora cassiicola*)	Evito 480 SC	fluoxastrobin	11	2 - 5.7 fl oz	3	
	Cabrio 20 EC	pyraclostrobin	11	8 - 12 oz	0	See Fungicide resistance management guidelines.
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	7	
POTATO: IRISH						
Early Blight (*Alternaria* sp.)	Velum Prime	fluopyram	7	6.5 - 6.8 fl oz	7	
	Scala 5.0 SC	pyrimethanil	9	7 oz	7	
	Quadris 2.08 SC	azoxystrobin	11	6 - 15 fl oz	14	See Fungicide resistance management guidelines.
	Reason 500 SC	fenamidone	11	5.5 - 8.2 oz	14	See Fungicide resistance management guidelines.
	Evito 480 SC	fluoxastrobin	11	2 - 3.8 fl oz	7	
	Gem 500 SC	trifloxystrobin	11	2.9 - 3.8	7	
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 oz	3	See Fungicide resistance management guidelines.
	Previcur Flex 6 F	propamocarb	28	0.7 - 1.2 pt	2	
	Kocide 2000	copper hydroxide	M1	0.75 - 3 lb	0	Several other copper.
	Bravo Weatherstick (multiple generics)	chlorothalonil	M5	16 - 24 oz	3	See label on other chlorothalonil fungicides.
	Dithane F-45(multiple generics)	mancozeb	M3	0.4 - 1.6 lb	3	Not for target spot. See label on other mancozeb fungicides.
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	14	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	4 - 8 fl oz	7	
	Tanos 50 WP	famoxadone + cymoxanil	11 + 27	8 - 10 oz	3	
	Gavel 75 DF	zoxamide + mancozeb	22 + M3	1.5 - 2 lb	5	

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
POTATO: IRISH (cont.)						
Late blight (*Phytophthora infestans*)	Reason 500 SC	fenamidone	11	5.5 - 8.2 oz	14	See Fungicide resistance management guidelines.
	Ranman 400 SC	cyazofamid	21	1.4 - 2.75 fl oz	7	
	Curzate 60 DF	cymoxanil	27	3.2 oz	14	
	Forum 4.18 F	dimethomorph	40	4 - 6 fl oz	4	
	Ridomil Gold Bravo SC 3. 67	mefenoxam + chlorothalonil	4 + M5	2.5 pt	14	
	Quadris Opti 1.0 SC	azoxystrobin + chlorothalonil	11 + M5	3.2 qt	7	
Powdery mildew	Vertisan	penthiopyrad	7	10 - 24 fl oz	7	
	Quadris 2.08 SC	azoxystrobin	11	6 - 15 fl oz	14	See Fungicide resistance management guidelines.
	Headline 2.09 SC	pyraclostrobin	11	6 - 12 fl oz	3	See Fungicide resistance management guidelines.
	Luna Tranquility	fluopyram + pyrimethanil	7 + 9	8 - 11.2 fl oz	7	
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	14	
	Priaxor 4.17 SC	pyraclostrobin + fluxapyroxad	11 + 7	6 - 8 fl oz	0	
	Quadris Opti 1.0 SC	azoxystrobin + chlorothalonil	11 + M5	1.6 pt	14	
PUMPKIN – See CUCURBITS						

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
Alternaria Leaf Spot Cercospora Leaf Spot Powdery Mildew White Rust	Cabrio 20 EG	pyraclostrobin	11	8 - 12 oz	0	Use 8 - 16 oz for white rust control. See label for other information.
Alternaria Leaf Spot Cercospora Leaf Spot Powdery Mildew Rust	Fontelis	penthiopyrad	7	16 - 30 fl oz		
Pythium Damping-Off Phytophthora Stem Rot White Rust	Ridomil Gold SL	mefenoxam	4	8 - 16 fl oz		Apply to the soil at planting or transplanting.
SPINACH						
Pythium Damping-Off White Rust	Ridomil Gold SL	mefenoxam	4	8 - 16 fl oz		Apply to the soil at planting or transplanting.
Downy Mildew	Aliette 50 WDG	fosetyl-Al	33	2 - 5 lb	3	Apply at first sign of disease and repeat on a 7 - 21 day schedule as needed. Beware of certain tank mixes – see label.
	Ridomil Gold-Copper	mefenoxam + copper hydroxide	4 M1	2.5 lb	21	Spray at first sign of disease. Apply 21 days after Ridomil EC preplant application and on a 14 day schedule afterwards as needed. See label for precautions.
Foliar Leaf Spots White Rust	Quadris 2.08 FL	azoxystrobin	11	6.2 - 15.4 fl oz	0	Apply at first sign of disease and then on a 7 - 14 day schedule. Follow resistance management guidelines on label.
Downy Mildew Powdery Mildew	Quadris 2.08 FL	azoxystrobin	11	12.3 - 15.4 fl oz	0	Apply preventively on a weekly basis. If possible, alternate applications with a fungicide with a different mode of action.
	Kocide 2000	copper hydroxide	M1	1.5 - 2 lb	0	Apply as needed. Use higher rate for heavier disease situations. Flecking may occur on leaves.
Downy Mildew White Rust	Reason 500 SC	fenamidone	11	5.5 - 8.2 oz		See label.
Alternaria Leaf Spot Cercospora Early Blight Late Blight Powdery Mildew Rust	Fontelis	penthiopyrad	7	14 - 30 fl oz	3	

VEGETABLE DISEASES (Commercial Production) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
SQUASH – See CUCURBITS.)						
SWEET POTATO						
Black rot (*Certocystis fimbriata*)	Mertec 340 F	thiabendazole	3	107 fl oz/100 gal		Drip roots 1 to 2 min before planting.
Damping Off (*Pythium* spp.)	Ridomil Gold 4 SL	mefenoxam	4	1 - 2 pt	7	Incorporate into soil.
Foliar diseases (Alternaria) and powdery mildew	Velum Prime	fluopyram	7	6 - 6.8 fl oz	7	
	Quadris 2.08 SC	azoxystrobin	11	9 - 15.5 fl oz	14	See Fungicide resistance management guidelines.
	Reason 500 SC	fenamidone	11	5.5 - 8.2 oz	14	See Fungicide resistance management guidelines.
	Scala 5.0 SC	pyrimethanil	9	7 fl oz	7	
	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	11 - 14 oz	7	
	Quadris Top 1.67 SC	azoxystrobin + difenoconazole	11 + 3	8 - 14 fl oz	14	
	Aprovia Top 1.EC	difenoconazole + benzovindiflupyr	3 + 7	10.5 - 13.5 fl oz	14	
Soilborne (*Rhizoctonia* sp. *Sclerotinia* sp.)	Endura 70 WP	boscalid	7	2.5 - 10	10	
	Vertisan	penthiopyrad	7	14 - 24 fl oz	7	
	Velum Prime	fluopyram	7	6 - 6.8 fl oz	7	
	Quadris 2.08 SC	azoxystrobin	11	0.4 - 0.8 fl oz/ 1000 ft of row	0	See Fungicide resistance management guidelines.
	Evito 480 SC	fluoxastrobin	11	0.16 - 0.24 fl oz/ 1000 ft of row	7	
Postharvest Rhizopus soft rots	Botran 75 W	dicloran	14	1 lb/100 gal		Dip seed sweet potatoes 10 to 15 seconds in a well agitated Botran suspension. See label for more information.
Scurf (*Monilochaetes infuscans*) and Sclerotial blight (*Sclerotium rolfsii*)	Botran 75 W	dicloran	14	1 lb/7.5 gal		Dip seedling roots for 30 seconds before planting. See label for more information.
TOMATO – See tomato disease section						
WATERMELON – See CUCURBITS						

VEGETABLE NEMATODES (Commercial Production)

Travis Faske

Nematode	Nematicide	Formulation	Active Ingredient	Rate/Acre	Comments
Root-Knot, Lesion, Stubby Root and Reniform	Telone II	Liquid	1,3-dichloropropene	See label.	Inject 12 inches below planting depth and seal immediately with appropriate bedding equipment. Wait 7 - 14 days before planting.
	Vydate L	Liquid	oxamyl	See label.	
	Velum Prime	Liquid	fluopyram	6.5 - 6.8 fl oz	Apply as in-seed-furrow spray at planting directed on or below seed. Can be applied with drip irrigation in some vegetable systems, see label for details.

RESTRICTED USE PESTICIDES – For sale and use only by licensed/certified applicators or persons under their direct supervision. **These are dangerous pesticides – use caution in handling and read and follow current label directions.** If nematodes are suspected to be causing problems, a diagnostic soil sample should be taken to the county agent for submission to the Cooperative Extension Service Nematode Diagnostic Laboratory. **A small fee is required.**

VEGETABLE DISEASES (Home Garden)

Sherrie Smith

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
Bacterial Leaf and Fruit Spots (copper mostly effective against bacterial diseases, but labeled also for fungal diseases)	Serenade Garden Disease Control**	*Bacillus subtilis*	44	RTU*	0 - 14 days (see label)	
	Natria Disease Control**	*Bacillus subtilis*	44	RTU*	0	Approved for organic use.
	Bonide Copper Dust	copper hydroxide	M1	2 1/4 - 6 oz/gal	0	Begin to apply in plant bed as soon as plants are established. Repeat at 4 - 14 day intervals throughout growing season.
	Bonide Liquid Copper Fungicide Concentrate	copper sulfate	M1	0.5 - 2 oz/gal	0	Also available RTU.*
	Natural Guard Copper Soap RTU*	copper soap	M1	RTU*	Label	Apply at first evidence of disease.
Fungal leaf spots	Serenade**	*Bacillus subtilis*	44	2 - 4 fl oz/gal	0	Spray plants to runoff, covering both top and bottom surface of foliage to ensure thorough coverage.
	Serenade Garden Disease Control**	*Bacillus subtilis*	44	RTU*	0 - 14 days (see label)	
	Ortho Garden Disease Control	chlorothalonil	M5	1 tbs/gal	0 - 14 days (see label)	Apply in early morning or late evening using 1 gal spray per 250 sq ft of garden (10 x 25 ft). Good coverage is essential. Apply at first sign of disease and every 7 - 14 days as needed.
	Bonide Fung-onil RTU*	chlorothalonil	M5	RTU*	0 - 14 days (see label)	Apply at first sign of disease and every 7 - 14 days as needed.
	Bonide Fung-onil Concentrate	chlorothalonil	M5	2 - 2.75 tsp/gal	0 - 14 days (see label)	Apply at first sign of disease and every 7 - 14 days as needed.
	Garden Tech Daconil Concentrate	chlorothalonil	M5	1.5 tsp - 1 tbs/gal	0 - 14 days	Apply at first sign of disease and every 7 - 14 days as needed.
	Ferti-lome Liquid Fungicide	chlorothalonil	M5	2 tbs/gal	0	Apply at first evidence of disease, then 7 - 14 days as needed.
	Hi-Yield Vegetable, Flower, Fruit and Ornamental Fungicide	chlorothalonil	M5	6 tsp/gal	0	Begin applications when dew or rain occur and disease threatens. Use the highest rate and shortest interval specified when disease conditions are severe.
	Monterey Fruit Tree, Vegetable and Ornamental Fungicide	chlorothalonil	M5	2 1/2 tsp/gal for 200 sq ft	0	Begin applications when dew or rain occur and disease threatens. Use the highest rate and shortest interval specified when disease conditions are severe.

(continued)

VEGETABLE DISEASES (Home Garden) – continued

Disease	Product	Active Ingredient	FRAC Code	Rate	Days to Harvest	Comments
Fungal leaf spots *(cont.)*	Bonide Mancozeb FL with Zinc Concentrate	mancozeb	M3	2 - 5 tsp/gal	3 - 14 days (see label)	Use sufficient water for thorough coverage.
	Neem (various brands)	neem oil	NC***	RTU*	0	This product is most effective when applied on a 7 - 14 day schedule.
	GreenCure**	potassium bicarbonate	NC***	1 - 2 tbs/gal	1	Potassium bicarbonate fungicide primarily targets powdery mildew on many vegetables. Labeled for organic use.
	Kaligreen**	potassium bicarbonate	NC***	2.5 - 3 lb/A		
	MilStop**	potassium bicarbonate	NC***	2.5 - 3 lb/A		
	Actinovate® Lawn and Garden** (foliar and Pythium, Phytophthora, Rhizoctonia, Fusarium root rots)	*Streptomyces lydicus* WYEC 108	NC***	1/2 - 2 tsp/ 2 gal	0	May be used as a foliar spray or root drench. See label.
	Natria Fruit and Vegetable Ready to Use	sulfur + pyrethrins	M2	RTU*	1	For best control apply as a protective spray early in the season before the diseases are noticed. Re-spray every 7 - 10 days or after rain.
	Bonide Tomato and Vegetable Concentrate	sulfur + pyrethrins	M2	5 oz/gal	1	Thoroughly spray all areas of the plant, especially new shoots and the underside of leaves.
	Miracle-Gro Nature's Care 3-in-1 Insect, Disease, and Mite Control RTU*	sulfur + pyrethrins	M2	RTU*	1	
Virus Diseases	No chemical controls					

* RTU – Ready to use.
** Labeled for organic use.
*** NC – Resistance not known.

NOTES

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