

SMALL FRUIT DISEASES (Commercial)

Sherrie Smith and Aaron Cato

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
GRAPES								
Dormant	Anthracnose Black rot Eutypa Phomopsis	Nu-Cop 50 DF	cupric hydroxide	M1	2 lb	24 hours	Dormant	Begin applications late dormancy before bud break.
		Liquid lime-sulfur (hard to find)	calcium polysulfides	M2	Rate depends on product name. See label.	48 hours	Dormant only	Apply in late winter before buds swell.
	Powdery mildew	Sulfurix	calcium polysulfides	M2	1 gallon per acre in sufficient water	48 hours	Dormant	Early sprays are critical for control of black rot if the disease has been a historical problem.
	Phytophthora root rot	Ridomil Gold SL	mefenoxam	4	3.6 pt or 0.25 pt/1,000 row ft	48 hours	60	Apply in spring before plants begin to grow. Two more applications may be made when conditions are favorable for disease.
Bud Break to Bloom	Angular leaf scorch Black rot Downy mildew Phomopsis	Abound FL	azoxystrobin	11	11 - 15.4 fl oz	4 hours	14	Early sprays are critical for control of black rot if the disease has been a historical problem.
		Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 oz	12 hours	14	
		Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours (5 days for cane tying, turning or girdling)	14	
		Captan 50 WP	captan	M4	2 - 4 lb	72 hours	0	
		Sovran 50 WG	kresoxim-methyl	11	3.2 - 5.6 oz	12 hours	14	
		Dithane DF Rainshield	mancozeb	M3	1.5 - 2.5 lb	24 hours	66	
		Revus	mandipropamid	40	8 oz	4 hours	14	

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GRAPES (cont.)								
Bud Break to Bloom (cont.)		Revus Top	mandipropamid + difenoconazole	40 + 3	7 oz	12 hours	14	
		Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	3 - 7.2 oz	12 hours	14	Do not apply more than 48 oz per acre of Adament per season or more than 6 applications per season.
	Black rot Downy mildew Bunch rot Powdery mildew Phomopsis	Topguard EQ	azoxystrobin + flutriafol	11 + 3	5 - 6 fl oz	12 hours (5 days for cane tying, turning or girdling)	14	For powdery mildew, begin applications at 6- to 10-inch shoots.
	Alternaria Rot Angular Leaf Spot Anthracnose Black Rot Bunch Rot Powdery Mildew Septoria Leaf Spot	Inspire Super	difenoconazole + cyprodinil	3 + 9	16-20 fl oz	12 hours	14	PRECAUTION: On <i>V. labrusca</i> , <i>V. labrusca</i> hybrids and other non-vinifera hybrids such as Concord and Thomcord where sensitivity is not known, the use of Inspire Super by itself or in tank mixtures with materials that may increase uptake (adjuvants, foliar fertilizers) may result in leaf burning or other phytotoxic effects.
	Phytophthora root rot Pythium Fusarium Rhizoctonia Powdery mildew Downy mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1-3 qt/100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.
	Bunch rot Dead arm Downy mildew	Flint 50 WG	trifloxystrobin	11	1.5 - 4 oz	12 hours	14	DO NOT APPLY FLINT OR ADAMENT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT.
		Ziram Granuflo	ziram	M3	3 - 4 lb	48 hours	21	
		Aliette WDG	aluminum tris	33	3 - 5 lb	48 hours	15	
		Reason 500 SC	fenamidone	11	2.7 fl oz	12 hours	30	
		Gavel 75 DF	mancozeb + zoxamide	M3 22	2-2.5 lb	48 hours	66	Apply Gavel in sufficient water to provide thorough coverage starting when new shoots are 1/2 to 1 1/2 inches long. Repeat when shoots are 3 to 5 inches long, when shoots are 8 to 10 inches long, and then at 7 - 10 day intervals.

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GRAPES (cont.)								
Bud Break to Bloom <i>(cont.)</i>	Bunch rot Dead arm Downy mildew <i>(cont.)</i>	Topsin M WSB	thiophanate-methyl	1	0.75 - 1.5 lb	48 hours	14	
		Presidio	fluopicolide	43	3 - 4 fl oz	12 hours	21	
	Powdery mildew	Abound FL	azoxystrobin	11	11 - 15.4 fl oz	4 hours	14	
		Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 oz	12 hours	14	Apply at bud break and at 10 - 21 day intervals for powdery mildew. Do not make more than 2 sequential applications before changing to a fungicide with a different mode of action.
		Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours (5 days for cane tying, turning or girdling)	14	DO NOT APPLY PRISTINE TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT – SEE LABEL.
		Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	14	For powdery mildew, begin Inspire Super at bud break and apply on a 10 - 21 day interval.
		Sovran 50 WG	kresoxim-methyl	11	3.2 - 4.8 oz	12 hours	14	Apply prior to disease on a 14 day interval. Rotate with other chemistry.
		Quintec	quinoxifen	13	4 oz	12 hours	14	Apply when conditions are favorable for disease but before disease develops. Apply on a 14 day interval. (Do not apply to Concord grapes as injury may result.)
		AmTide	tebuconazole	3	3 - 4 fl oz	12 hours	14	
	Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	3 oz	12 hours	14	DO NOT APPLY ADAMENT OR FLINT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT.	

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SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
GRAPES (cont.)								
Bud Break to Bloom (cont.)	Powdery mildew (cont.)	Flint	trifloxystrobin	11	1.5 - 4 oz	12 hours	14	DO NOT APPLY FLINT OR ADAMENT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT.
		Procure 480 SC	triflumizole	3	4 - 8 fl oz	12 hours	14	
Bloom	Same as Bud Break							
	Botrytis bunch rot*	Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 oz	12 hours	14	Suppression only.
		Topguard EQ	azoxystrobin + flutriafol	11 + 3	5 - 6 fl oz	12 hours (5 days for cane tying, turning or girdling)	14	Do not apply more than 6 times a season.
		Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours (5 days for cane tying, turning or girdling)	14	DO NOT APPLY PRISTINE TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT – SEE LABEL.
		Vanguard 75 WG	cyprodinil	9	10 oz	12 hours	7	Begin Vanguard at early bloom. Continue through berry touch, veraison and pre-harvest on a 7 day interval.
		Botran 75 W	dicloran	14	2 lb	14 days	14	Cane turning and girdling are prohibited for 30 days after using Botran 75 W.
		Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	14	PRECAUTION: On <i>V. labrusca</i> , <i>V. labrusca</i> hybrids and other non-vinifera hybrids such as Concord and Thomcord where sensitivity is not known, the use of Inspire Super by itself or in tank mixtures with materials that may increase uptake (adjuvants, foliar fertilizers) may result in leaf burning or other phytotoxic effects.
		Elevate 50 WG	fenhexamid	17	1 lb	12 hours	0	Do not make more than 2 consecutive applications.

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SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
GRAPES (cont.)								
Bloom (cont.)	Botrytis bunch rot* (cont.)	Rovral 4 FL	iprodione	2	1 - 2 pt	48 hours	7	Begin at early bloom. Continue through berry touch, veraison and pre-harvest.
		Scala	pyrimethanil	9	18 fl oz	12 hours	7	
		Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	6 oz	12 hours	14	DO NOT APPLY ADAMENT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT.
Shatter	Black rot Downy mildew Powdery mildew	Abound FL	azoxystrobin	11	11 - 15.4 fl oz	4 hours	14	Apply Abound prior to disease on a 7 - 14 day interval. No more than 2 sequential applications before alternating with a fungicide with a different FRAC code.
		Aprovia	azoxystrobin + difenoconazole	11 3	8.6 - 10.5 fl oz	12 hours	21	For Phomopsis diseases, apply at bud break, before shoots are 0.5 inches in length, and then again when shoots are 5-6 inches in length.
		Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 oz	12 hours	14	Avoid drift of Quadris Top to apples.
	Angular leaf spot Anthracnose Black rot Leaf blight Phomopsis Powdery mildew Rotbrenner Septoria	Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours (5 days for cane tying, turning or girdling)	14	DO NOT APPLY PRISTINE TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT – SEE LABEL.
		Captan 50 WP	captan	M4	2 - 4 lb	72 hours	0	
		Sovran 50 WG	kresoxim-methyl	11	3.2 - 5.6 oz	12 hours	14	
		Dithane DF Rainshield	mancozeb	M3	1.5 - 2.5 lb	24 hours	66	
		Revus	mandipropamid	40	8 oz	4 hours	14	
		Revus Top	mandipropamid + difenoconazole	40		12 hours	14	
		Scala	pyrimethanil	9	18 fl oz	12 hours	7	
Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	3 - 7.2 oz	12 hours	14	DO NOT APPLY ADAMENT OR FLINT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT!		

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SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
GRAPES (cont.)								
Shatter (cont.)	Angular leaf spot Anthracnose	Flint 50 WG	trifloxystrobin	11	1.5 - 4 oz	12 hours	14	
	Black rot Leaf blight	Procure 480 SC	triflumizole	3	4 - 8 fl oz	12 hours	14	
	Phomopsis Powdery mildew Rotbrenner Septoria (cont.)	Ziram Granuflo	ziram	M3	3 - 4 lb	48 hours	21	
	Black rot Downy mildew Bunch rot Powdery mildew Phomopsis	Topguard EQ	azoxystrobin + flutriafol	11	5 - 6 fl oz	12 hours (5 days for cane tying, turning or girdling)	14	
	Alternaria rot Angular leaf spot Anthracnose Black rot Bunch rot Powdery mildew Septoria leaf spot	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	14	PRECAUTION: On <i>V. labrusca</i> , <i>V. labrusca</i> hybrids and other non-vinifera hybrids such as Concord and Thomcord where sensitivity is not known, the use of Inspire Super by itself or in tank mixtures with materials that may increase uptake (adjuvants, foliar fertilizers) may result in leaf burning or other phytotoxic effects.
	Phytophthora root rot Pythium Fusarium Rhizoctonia Powdery mildew Downy mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.
First Cover to Veraison	Black rot Downy mildew Powdery mildew	Same as Shatter						
Veraison to Harvest	Botrytis bunch rot*	See Bloom section						
	Powdery mildew	Abound FL	azoxystrobin	11	11 - 15.4 fl oz	4 hours	14	
		Topguard EQ	azoxystrobin + flutriafol	11 + 3	5 - 6 fl oz	12 hours (5 days for cane tying, turning or girdling)	14	Do not apply more than 6 times per season.

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SMALL FRUIT DISEASES (Commercial) – continued

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GRAPES (cont.)									
Veraison to Harvest (cont.)	Powdery mildew (cont.)	Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 oz	12 hours	14		
		Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours (5 days for cane tying, turning or girdling)	14	DO NOT APPLY PRISTINE TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT – SEE LABEL.	
		Sovran 50 WG	kresoxim-methyl	11	3.2 - 5.6 oz	12 hours	14		
		Quintec	quinoxifen	13	4 oz	12 hours	14	Apply when conditions are favorable for disease but before disease develops. Apply on a 14 day interval. (Do not apply to Concord grapes as injury may result.)	
		AmTide	tebuconazole	3	3 - 4 fl oz	12 hours	14		
		Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	3 - 7.2 oz	12 hours	14	DO NOT APPLY ADAMENT OR FLINT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT.	
		Flint 50 WG	trifloxystrobin	11	1.5 - 4 oz	12 hours	14		
		Procure 480 SC	triflumizole	3	4 - 8 fl oz	12 hours	14		
		Downy mildew	Abound	azoxystrobin	11	11 - 15.4 fl oz	4 hours	14	
			Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours (5 days for cane tying, turning or girdling)	14	DO NOT APPLY PRISTINE TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT – SEE LABEL.
	Captan 50 WP		captan	M4	2 - 4 lb	72 hours	0		
	Topguard EQ		azoxystrobin + flutriafol	11 + 3	5 - 6 fl oz	12 hours (5 days for cane tying, turning or girdling)	14		

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SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
GRAPES (cont.)								
Veraison to Harvest (cont.)	Downy mildew (cont.)	Alude	mono- and di-potassium salts of phosphorous acid	33	2.5 - 5 pt/A	4 hours	0	Due to varietal sensitivity, test for sensitivity prior to use.
		Adament 50 WG	tebuconazole + trifloxystrobin	3 + 11	3 - 7.2 oz	12 hours	14	DO NOT APPLY ADAMENT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT.
	Alternaria rot Angular leaf spot Anthracnose Black rot Bunch rot Powdery mildew Septoria leaf spot	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	14	PRECAUTION: On <i>V. labrusca</i> , <i>V. labrusca</i> hybrids and other non-vinifera hybrids such as Concord and Thomcord where sensitivity is not known, the use of Inspire Super by itself or in tank mixtures with materials that may increase uptake (adjuvants, foliar fertilizers) may result in leaf burning or other phytotoxic effects.
	Phytophthora root rot Pythium Fusarium Rhizoctonia Powdery mildew Downy mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.

SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
BLUEBERRY								
Dormant	Bacterial blight Phomopsis blight Mummy berry	Lime-sulfur spray (hard to find)	calcium polysulfides	M2	Rate depends on product name. See label.	48 hours	Dormant only	Apply at delayed dormant when leaf buds start to break.
		Kocide 3000	copper hydroxide	M1	1 - 2.5 lb	48 hours		Dormant application. Begin at bud swell.
	Phomopsis blight Mummy berry	Sulforix	calcium polysulfides	M2	See label.	48 hours		
	Phytophthora root rot	Ridomil Gold SL	mefenoxam	4	3.6 pt or 0.25 pt/1,000 row ft	48 hours	0	Ridomil Gold SL will not revitalize plants with moderate to severe root rot symptoms.
Green Tip	Alternaria fruit rot Anthracnose Botryosphaeria canker Mummy berry Mummy berry (shoot blight) Powdery mildew Septoria	Abound FL	azoxystrobin	11	6 - 15.5 fl oz	4 hours	0	Abound applications should begin prior to disease development.
	Botrytis gray mold* Mummy berry	Captan 50 WP	captan	M4	5 lb	72 hours	0	Begin Captan applications at bud swell and continue on a 7 - 10 day interval for botrytis and mummy berry.
	Alternaria leaf spot and fruit rot Anthracnose Botrytis gray mold* Mummy berry Phomopsis Powdery mildew	Pristine	boscalid + pyraclostrobin	7 + 11	18 - 23 oz	12 hours	0	No more than 4 applications of Pristine per season.
	Alternaria leaf spot Anthracnose leaf spot Leaf rust Monilinia blight Mummy berry blight Powdery mildew Septoria leaf spot	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	14	Begin applications prior to disease onset when conditions are condu- cive for disease. For Monilinia and mummy berry, apply at or near flower bud swell and again at leaf bud swelling. For other diseases, apply during early bloom.

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SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
BLUEBERRY (cont.)								
Green Tip (cont.)	Alternaria leaf spot and fruit rot Botrytis Monilinia Mummy berry Powdery mildew Septoria	Luna Tranquility	fluopyram + pyri-methanil	7 9	16 to 27 fl oz	12 hours	1 day	When disease pressure is severe, use the higher rates and/or shorter intervals.
	Phytophthora root rot Pythium Fusarium Rhizoctonia Powdery mildew Downy mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.
	Mummy berry Powdery mildew Rust Septoria leaf and stem blight	Tilt	propiconazole	3	6 fl oz	12 hours	30	Begin Tilt applications at green tip on a 7 - 10 day interval.
Early Bloom	Mummy berry Stem canker Stem blight	Same as Green Tip						
	Phytophthora root rot Anthracnose fruit rot Alternaria fruit rot (suppression only) Phomopsis canker (suppression only)	Aliette WDG	aluminum tris	33	5 lb	12 hours	12	Begin foliar sprays in the spring at approximately the pink bud stage and continue on a 14 - 21 day interval.
	Alternaria leaf spot and fruit rot Anthracnose Botrytis gray mold*	Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours	0	Begin applications prior to disease and continue on a 7 - 10 day interval. Do not use Pristine in a tank mix.

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SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
BLUEBERRY (cont.)								
Early Bloom (cont.)	Alternaria leaf spot and fruit rot Anthracnose Botrytis gray mold* Mummy berry	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	11 - 14 oz	12 hours	0	Rotate Switch with another fungicide with a different FRAC code.
	Alternaria leaf spot Anthracnose leaf spot Leaf rust Monilinia blight Mummy berry blight Powdery mildew Septoria leaf spot	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	14	Begin applications prior to disease onset when conditions are conducive for disease. For Monilinia and mummy berry, apply at or near flower bud swell and again at leaf bud swelling. For other diseases, apply during early bloom.
	Botrytis gray mold*	Elevate 50 WG	fenhexamid	17	1.5 lb	12 hours	0	Begin applications of Elevate at 10% bloom. Continue through harvest. Make applications every 7 days.
	Phytophthora root rot	Alude	mono- and di-potassium salts of phosphorous acid	33	2.5 - 5 pt/A	4 hours	0	Begin foliar sprays in the spring at approximately the pink bud stage and continue on a 14 - 21 day interval.
(continued)	Phytophthora root rot Pythium Fusarium Rhizoctonia Powdery mildew Downy mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.

SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
BLUEBERRY (cont.)								
Early Bloom (cont.)								
Full Bloom to Early Petal Fall	Same as Early Bloom							
First and Second Cover	Same as Full Bloom to Early Petal Fall							
Third and Additional Covers	Same as First and Second Cover							
After Harvest	Same as Third and Additional Covers							
BLACKBERRY, RASPBERRY, LOGANBERRY								
Delayed Dormant	Anthracnose Cane and leaf rusts Cane blight Powdery mildew Spur blight	Liquid lime-sulfur (hard to find)	calcium polysulfides	M2	6 - 12 gal	48 hours	Dormant only	Dormant application. Begin at bud swell.
		Sulfurix	calcium polysulfides	M2	See label.	48 hours		
	Crown gall	None registered in Arkansas						
First Bloom through Petal Fall	Phytophthora root rot	Aliette WDG	aluminum tris	33	5 lb	12 hours	12	Begin applications of Aliette in the spring after bud break. Apply on a 45 - 60 day schedule.
	Anthracnose Botryosphaeria canker (Abound only for Botryosphaeria)	Abound FL	azoxystrobin	11	6 - 15.5 fl oz	4 hours	0	Abound applications should begin prior to disease development.
	Colletotrichum rot Powdery mildew Rosette (double blossom)	Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours	0	Begin applications prior to disease and continue on a 7 - 10 day interval. Do not use Pristine in a tank mix.
	Rust Septoria leaf spot Spur blight	Cabrio EG	pyraclostrobin	11	14 oz	12 hours	0	Begin application of Cabrio at first sign of disease and continue on a 7 - 14 day interval. No more than 2 sequential applications before switching to a fungicide with a different FRAC code.

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SMALL FRUIT DISEASES (Commercial) – continued

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BLACKBERRY, RASPBERRY, LOGANBERRY (cont.)								
First Bloom through Petal Fall (<i>cont.</i>)	Alternaria leaf spot Anthracnose leaf spot Leaf rust Powdery mildew Septoria leaf spot	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	14	Begin applications prior to disease onset when conditions are conducive for disease.
	Anthracnose Botrytis gray mold*	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	11 - 14 oz	12 hours	0	Rotate Switch with another fungicide with a different FRAC code.
	Botrytis gray mold*	Elevate 50 WG	fenhexamid	17	1.5 lb	12 hours	1	Begin applying Elevate or Rovral at 10% bloom and continue every 7 - 14 days until harvest.
		Rovral 4 FL	iprodione	2	1 - 2 pt	24 hours	0	
	Anthracnose Botrytis* Spur blight	Captan 80 WDG	captan	M4	2 - 5 lb	72 hours	3	Apply Captan when blossoms are in bud (young canes are 8 to 10 inches long). Make a second application two weeks later. Apply a fall spray after old canes are removed.
	Phytophthora root rot Pythium, Fusarium Rhizoctonia Powdery mildew Downy mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.
Post Bloom through Harvest	Anthracnose Botrytis fruit rot*	Same as First Bloom						
	Rust	Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours	14	Follow label directions. May not control systemically infected plants but helps prevent spread of the fungus to new plants in the spring. See label.
		Cabrio	pyraclostrobin	11	14 oz	12 hours	0	

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STRAWBERRY								
Pre-Bloom (early spring)	Leather rot Red stele	Aliette WDG	aluminum tris	33	2.5 - 5 lb	12 hours	Same day (12 hours)	Begin applications of Aliette in the spring after bud break. Apply on a 45 - 60 day schedule. See label for rate/dip instructions on new plants.
		Alude	mono- and di-potassium salts of phosphorous acid	33	2.5 - 5 pt/ 100 gal	4 hours	0	Begin applications two to three weeks after planting. See label for root dip instructions.
		Ridomil Gold SL	mefenoxam	4	1 pt	48 hours	0	For new plantings apply Ridomil Gold SL up to 3 times per crop. Make first application after planting. Make second application 30 days before harvest or at fruit set. Make third application during harvest. See label for established plantings.
	Phytophthora root rot Pythium, Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions
	Anthracnose Botrytis gray mold* (suppression only) Leather rot Powdery mildew	Abound FL	azoxystrobin	11	6 - 15.5 fl oz	4 hours	0	Abound applications should begin prior to disease development on a 7 - 10 day schedule. For leather rot, apply on a 7 day schedule from late bloom through harvest.
		Topguard EQ	azoxystrobin + flutriafol	11 + 3	5 - 6 fl oz	12 hours (5 days for cane tying, turning or girdling)	0	Do not apply more than 4 applications per year.
	Anthracnose Botrytis gray mold* Powdery mildew Strawberry leaf spot Leaf rust	Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 oz	12 hours	0	
		Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours	0	Begin Pristine applications no later than 10% bloom and continue on a 7 - 14 day schedule. See label.
	Botrytis gray mold*	Captan 50 WP	captan	M4	6 lb	24 hours	0	Apply on a 7 - 14 day schedule depending on weather and continue through harvest. See label.

(continued)

SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
STRAWBERRY (cont.)								
Pre-Bloom (early spring) (cont.)	Anthracnose Botrytis gray mold* Cercospora Powdery mildew Leaf rust	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	0	Begin applications prior to disease onset when conditions are conducive for disease.
	Anthracnose Botrytis gray mold*	CaptEstate 68 WDG	captan + fenhexamid	M4 + 17	3.5 - 5.25 lb	12 hours	0	For anthracnose begin CaptEstate at flower bud emergence. For Botrytis gray mold begin at early bloom on a 7 - 10 day schedule.
	Anthracnose Botrytis gray mold* Powdery mildew	Switch 62.5 WG	cyprodinil + fludioxonil	9 + 12	11 - 14 oz (see label for anthracnose crown rot)	12 hours	0	
	Anthracnose Botrytis gray mold* Powdery mildew Strawberry leaf spot Leaf rust	Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	0	Apply Inspire Super at 7 - 14 day intervals. No more than two consecutive applications before switching to a product with a different mode of action.
	Botrytis fruit rot*	Elevate 50 WG	fenhexamid	17	1.5 lb	12 hours	0	
	Botrytis Powdery mildew	Luna Tranquility	fluopyram + pyri- methanil	7 9	16 to 27 fl oz	12 hours	1 day	Continue as needed on a 7- to 14-day interval.
	Anthracnose Botrytis gray mold* Powdery mildew Phomopsis leaf blight/ fruit rot Rhizopus fruit rot Mycosphaerella leaf spot	Luna Sensation	fluopyram + trifloxystrobin	7 + 11	4 - 7.6 fl oz	12 hours	0	Apply at the critical timings for disease control. Continue as needed on a 7 - 14 day interval. When disease pressure is severe, use the higher rates and/or shorter intervals.
	Anthracnose Botrytis crown rot* Botrytis gray mold* Stem end rot Phomopsis soft rot Strawberry leaf spot	Rovral 4 FL	iprodione	2	1.5 - 2 pt	24 hours	See label.	Do not make more than one application of Rovral per season. Do not apply after first fruiting flower.
	Botrytis gray mold* Powdery mildew	Fontelis	penthiopyrad	7	10 - 24 fl oz	12 hours	0	Begin applications of Fontelis prior to disease development and continue on a 7 - 14 day interval.

(continued)

SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
STRAWBERRY (cont.)								
Pre-Bloom (early spring) (cont.)	Anthracnose Powdery mildew Strawberry leaf spot Leaf rust	Tilt	propiconazole	3	4 fl oz	12 hours	0	Begin applications of Tilt when disease levels are no more than 5%.
	Anthracnose Botrytis gray mold* (suppression only) Powdery mildew Strawberry leaf spot	Cabrio EG	pyraclostrobin	11	14 oz	12 hours	0	Begin applications of Cabrio prior to bloom and continue at 7 - 14 day intervals.
	Botrytis gray mold*	Scala SC	pyrimethanil	9	18 fl oz	12 hours	0	Make applications of Scala before disease appears on a 7 - 14 day interval.
	Botrytis gray mold*	Thiram Granuflo	thiram	M3	3.4 - 4.4 lb	24 hours	3	Broadcast 3 - 5 lb of Thiram at 10 intervals. Good coverage of buds, blossoms and developing fruit required for control.
	Anthracnose Powdery mildew Phomopsis soft rot	Flint	trifloxystrobin	11	2 - 3.2 oz	12 hours	7	Begin Flint applications and continue as needed preventively on a 7 - 14 day interval.
Early Bloom through Bloom	Leather rot Red stele	Aliette WDG	aluminum tris	33	2.5 - 5 lb	12 hours	Same day (12 hours)	Begin applications of Aliette in the spring after bud break. Apply on a 45 - 60 day schedule.
		Ridomil Gold SL	mefenoxam	4	1 pt	48 hours		
	Anthracnose Botrytis gray mold* (suppression only) Leather rot Powdery mildew	Topguard EQ	azoxystrobin + flutriafol	11 + 3	5 - 6 fl oz	12 hours (5 days for cane tying, turning or girdling)	0	Do not apply more than 4 applications per year.

(continued)

SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
STRAWBERRY (cont.)								
Early Bloom through Bloom <i>(cont.)</i>	Anthracnose Botrytis gray mold* Powdery mildew Phomopsis leaf blight/ fruit rot Rhizopus fruit rot Mycosphaerella leaf spot	Luna Sensation	fluopyram + trifloxystrobin	7 + 11	4 - 7.6 fl oz	12 hours	0	Apply at the critical timings for disease control. Continue as needed on a 7 - 14 day interval. When disease pressure is severe, use the higher rates and/or shorter intervals.
	Phytophthora root rot Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/ 100 gallon	4 hours	0	Foliar, or aerial, or root dip, or irrigation or trunk injection. See label for rates and complete instructions.
	Botrytis gray mold* Leaf scorch Powdery mildew	Topsin M 70 WDG	thiophanate-methyl	1	0.75 - 1 lb	24 hours	1	Begin applications of Topsin M at early bloom and continue on a 7 - 10 day interval. See label for crown rot.
		Topsin M 70 WP	thiophanate-methyl	1	0.75 - 1 lb	24 hours	1	
		Anthracnose Botrytis crown rot* Botrytis gray mold* Stem end rot Phomopsis soft rot Strawberry leaf spot	Same as Pre-Bloom					
At Harvest	Botrytis fruit rot*	Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 oz	12 hours	0	.
		Pristine	boscalid + pyraclostrobin	7 + 11	8 - 12.5 oz	12 hours	0	Begin Pristine applications no later than 10% bloom and continue on a 7 - 14 day schedule. See label.
		Captan 50 WP	captan	M4	6 lb	24 hours	0	Apply Captan on a 7 - 14 day schedule depending on weather and continue through harvest. See label.
		CaptEstate 68 WDG	captan + fenhexamid	M4 + 17	3.5 - 5.25 lb	12 hours	0	For Botrytis gray mold, begin CaptEstate 68 WDG at early bloom on a 7 - 10 day schedule.
		Inspire Super	difenoconazole + cyprodinil	3 + 9	16 - 20 fl oz	12 hours	0	Apply Inspire Super at 7 - 14 day intervals. No more than 2 consecutive applications before switching to a product with a different mode of action.

(continued)

SMALL FRUIT DISEASES (Commercial) – continued

Growth Stage	Disease	Product	Active Ingredient	FRAC Code	Rate/Acre	Re-entry Interval	Days to Harvest	Comments
STRAWBERRY (cont.)								
At Harvest (cont.)		Elevate 50 WG	fenhexamid	17	1.5 lb	12 hours	0	Begin applying Elevate at 10% bloom and continue every 7 - 14 days until harvest.
		Luna Sensation	fluopyram + trifloxystrobin	7 + 11	6 - 7.6 fl oz	12 hours	0	Apply at the critical timings for disease control. Continue as needed on a 7 - 14 day interval. When disease pressure is severe, use the higher rates and/or shorter intervals.
		Fontelis	penthiopyrad	7	10 - 24 fl oz	12 hours	0	Begin applications of Fontelis prior to disease development and continue on a 7 - 14 day interval.
		Scala SC	pyrimethanil	9	18 fl oz	12 hours	0	
		Topsin M 70 WDG	thiophanate-methyl	1	0.75 - 1 lb	24 hours	1	
		Topsin M 70 WP	thiophanate-methyl	1	0.75 - 1 lb	24 hours	1	
Post-Harvest and New Plantings	See Pre-Bloom to Harvest							

***Botrytis gray mold** has a high potential to develop resistance, and recent data suggest a high percentage of strains are resistant to several important fungicides. To help combat resistant strains from developing: (1) Limit the number of times fungicides of the same class are applied in one year. (2) Tank-mix a broad-spectrum fungicide such as captan or Thiram with Topsin-M (a benzimidazole fungicide) as Topsin-M does not have Botrytis activity due to resistance but is helpful for several early-season foliar diseases if present. (3) Resistance profiles vary from farm to farm and fungicides may have to be varied.

SMALL FRUIT DISEASES (Home Garden)

Sherrie Smith

Disease	Product	Active Ingredient	FRAC Code	Rate	Comments
Fungal leaf and fruit diseases on grapes, blackberry, raspberry and strawberry	Bayer Advanced Natria Disease Control**	<i>Bacillus subtilis</i>	44	RTU*	Spray to runoff. See label.
	Hi-Yield Captan 50 WP	captan	M4	2 tbs/gal	Spray on a 7 - 14 day schedule from early bloom until harvest, depending on weather and disease. See labels for additional information. Good coverage is essential.
	Bonide Fruit Tree Spray (strawberries and grapes only)	captan + malathion + carbaryl	M4 + insecticide	1 1/2 - 2 1/2 tbs/gal	See label for complete instructions.
	Hi-Yield Vegetable, Flower, Fruit and Ornamental Fungicide (blueberry only)	chlorothalonil	M5	9 tsp per application, 27 tsp per year	Begin applications at bud break (green tip). Repeat applications until early bloom at 10 day intervals. DO NOT apply after early bloom, otherwise phytotoxicity may occur to the developing fruit.
	Monterey Fruit Tree, Vegetable and Ornamental Fungicide (blueberry only)	chlorothalonil	M5	3 3/4 tsp/gal for 200 sq ft	Begin applications at bud break (green tip). Repeat applications until early bloom at 10 day intervals. Do not apply after early bloom, otherwise phytotoxicity may occur to the developing fruit.
	Bonide Liquid Copper Fungicide Concentrate**	copper salts	M1	2 - 4 tsp/gal	See label.
	Bonide Mancozeb Flowable with Zinc (grapes only)	mancozeb	M3	3 - 4 tsp/gal	Begin at 1/2 inch new growth, continue at 7 - 10 days until bloom. See label.
	Immunox Multipurpose Fungicide for Gardens Spray Concentrate	myclobutanil + insecticide	3	1 1/4 fl oz/gal	Labeled for blackberry, raspberry, strawberry and grape.
	Shultz Garden Safe Fungicide 3 in 1**	neem	NC***	1 fl oz/gal	Spray all plant surfaces.
	Natural Guard Copper Soap Liquid Fungicide	octanoate potassium	M1	0.5 - 2 fl oz/gal	Apply at the start of flowering and continue every 7 - 10 days until harvest.
	GreenCure **	potassium bicarbonate	NC***	1 - 2 tbs/gal	Not labeled for blueberry.
	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 grapes and strawberries. Do not use on strawberries that will be canned.
	Bonide Sulfur Plant Fungicide	sulfur	M2	1 fl oz/gal	7 - 14 days. Complete coverage important. RTU* also available. Organic uses.
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. Respray every 7 - 10 days or after rain. May be used up to day before harvest.	

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	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.
			Lime sulfur (hard to find)					
			Kocide 2000	copper hydroxide	M1	6 - 12 lb	48 hours	
	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	benzovindiflupyr	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 <i>(cont.)</i>	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	Vanguard WG	cyprodinil	9	4 - 6 oz	12 hours	0	For pome fruits EXCEPT PEAR, begin applications of Vanguard 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 + pyri- methanil	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 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
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.
		Dithane Rainshield DF	mancozeb	M3	4.8 qt	24 hours	77	
	Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew	Fosphite	mono- and di-po- tassium salts of phosphorous acid	33	1 - 4 qt/ 100 gal See label for trunk injec- tions.	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	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 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.
		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.
	Cedar apple rust Bitter rot Flyspeck Necrotic leaf blotch Quince 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.

(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 <i>(cont.)</i>	Flyspeck	Topsin M 70 WDG	thiophanate-methyl	1	1 - 1.5 lb	24 hours	1	Apply Topsin M at 5 - 10 day intervals from green tip through petal fall; continue at 7 - 14 day intervals in cover sprays.	
	Fruit rots Scab Sooty blotch	Topsin M 70 WP	thiophanate-methyl	1	1 - 1.5 lb	24 hours	1		
	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 Scab	Ziram	ziram	M3	6 - 8 lb	48 hours	14	Apply Ziram from pre-bloom through cover sprays as needed.	
		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-po-tassium 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	30	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	24 - 48 oz	50 hours	30	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	benzovindiflupyr	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 <i>(cont.)</i>	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-po- tassium 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	benzovindiflupyr	7	5.5-7fl oz	12 hours	30
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	24 - 48 oz	50 hours	30	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 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.
		Dithane Rainshield DF	mancozeb	M3	4.8 qt	24 hours	77	
		Phytophthora Pythium Fusarium Rhizoctonia Powdery mildew Alternaria leaf spot Powdery mildew Quince rust Scab	Fosphite	mono- and di-potassium salts of phosphorous acid	33	1 - 3 qt/100 gal	4 hours	0
	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.
	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 restrictions.	
PEACH and NECTARINE								
Dormant	Phytophthora collar and root rot	Aliette	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 freezing occurs. Make one or two additional applications in mid-late winter before bud swell in the spring.
<i>(continued)</i>								

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 (<i>cont.</i>)	Bacterial blast	Kocide 2000	copper hydroxide	M1	6 - 12 lb	48 hours	21	Make first application of Kocide before fall rains and a second at late dormant.	
	Bacterial canker	Kocide 3000	copper hydroxide	M1	3.5 - 7 lb	48 hours	21		
	Bacterial spot	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.	
	Coryneum blight								
Leaf curl									
Peach leaf curl	Ziram	ziram	M3	6 - 8 lb	48 hours	14	Make dormant applications of Ziram after leaf drop and/or prior to bud swell.		
Pink	Alternaria spot	Abound FL	azoxystrobin	11	11 - 15.5 fl oz	4 hours	0	Begin applications of Abound at early bloom. See label.	
	Anthracnose								
	Brown rot								
	Powdery mildew								
	Rust								
	Scab								
	Shot hole								
	Alternaria spot	Quadris Top	azoxystrobin + difenoconazole	11 + 3	12 - 14 fl oz	12 hours	0		Begin applications of Quadris Top at early bloom. See label.
	Anthracnose	Topguard EQ	azoxystrobin + flutriafol	11 + 3	6 - 8 fl oz	12 hours	7		For brown rot, begin applications at 1% -5% bloom, followed by an application at 50% - 100% bloom.
Brown rot									
Powdery mildew									
Rust									
Scab									
Shot hole									

(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.)	Alternaria spot Anthracnose Brown rot Powdery mildew Rust Scab Shot hole (cont.)	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	12 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)

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.)	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	0	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 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 (<i>cont.</i>)	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	24 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).

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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 (<i>cont.</i>)	Bacterial canker	Kocide 2000	copper hydroxide	M1	6 - 12 lb	48 hours	21	Make first application of Kocide before fall rains and a second at late dormant.
	Bacterial spot Black knot Shot hole	Kocide 3000	copper hydroxide	M1	3.5 - 7 lb	48 hours	21	
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.
		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.
		Inspire Super	difenoconazole + cyprodinil	3 + 9	12 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).
		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.
		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.
	Brown rot Scab							
	Blossom blight Brown rot Scab							
	Alternaria spot and fruit rot Anthracnose Brown rot Blossom blight and fruit rot Leaf rust Powdery mildew Scab Shot hole							
	Brown rot Scab							
	Blossom blight Brown rot Scab							
	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							

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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 <i>(cont.)</i>	Blossom blight Jacket rot Scab Shot hole	Rovral 4 FL	iprodione	2	1 - 2 pt	24 hours	0	Do not make more than 2 applications of Rovral per season. Do not apply after petal fall.
	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 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		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.

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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 <i>(cont.)</i>	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.
	Brown rot Shot hole	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	0	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.