

Fruit Diseases

Indiana Disease Management Program for Apples — 2018

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This publication provides a disease management schedule for Indiana commercial apple growers.

The application rates presented in these tables are based on the amount of product to apply per acre. Each table presents the diseases to control at each apple growth stage and the products that are labeled for their control.

Successful application and control depends on many factors, including the type of application equipment, how well that equipment is maintained, proper spray volume, tree phenology, tree height, row width, target pest, tractor speed, frequency of application, the appropriate pesticide, and the chemical rate per acre used. Some product labels require minimum and/or maximum recommendations for spray volume (the amount of water to use per acre when spraying).

As always, follow label precautions when tank-mixing oils, fungicides, and insecticides. *Materials are listed alphabetically.*



Delayed Dormant¹

Apply before bud scale drop to minimize injury. The urea recommendation in this table is for reducing overwintering apple scab inoculum.

Product and Formulation	FRAC Code	Fire Blight	Phytophthora Crown Rot and Collar Rot	Scab	REI PHI ²	Max. Amount/Acre/Year	Max. Applications/Year	Remarks								
Fixed Coppers³																
Bordeaux mixture, 8-8-10	M	8 lbs.	—	—	24 h N/A	N/A	N/A	If fire blight was severe last year, a fixed copper spray at silver tip is suggested. Do not apply copper after 1/4-inch green leaf stage or when drying conditions are cool and slow because severe injury can occur. Many fixed copper fungicides are registered for use on apple. Fixed coppers can be mixed with oil. However, never combine copper sulfate alone with dormant oil. See labels for rates and restrictions. Will also provide modest early-season scab control in high inoculum orchards. Only make one dormant application per season.								
Champ Flowable	M	5.3-10.5 pts.	—	—	48 h N/A	44 pts.	N/A									
Champ WG	M	8-12 lbs.	—	—	48 h N/A	12 lbs.	N/A									
C-O-C-S WDG	M	8-11.7 lbs.	—	—	24 h N/A	31 lbs.	N/A									
Cuprofix Ultra 40 Dispers	M	5-7.5 lbs.	—	—	48 h N/A	40 lbs.	N/A									
Kocide	M	3.5-7 lbs.	—	—	48 h N/A	53.3 lbs.	N/A									
Other Products																
Ridomil Gold SL	4	—	E ⁴ Rate based on tree size. See label.	—	2 d 7 d	2 qts./A (2.0) or 1.5 fl. oz./1,000 sq. f		Apply to soil in early spring before growth and in the fall after harvest but before the ground freezes. Needs rain or irrigation to move material into root zone. If weather remains unusually wet, consider using a phosphite fungicide later in the season.								
								<table border="1"> <thead> <tr> <th>Trunk Diameter at 12 In. Above Soil Line</th> <th>Quantity of Diluted Mixture</th> </tr> </thead> <tbody> <tr> <td><1 inch</td> <td>1 qt.</td> </tr> <tr> <td>1-3 inches</td> <td>3 qts.</td> </tr> <tr> <td>>5 inches</td> <td>4 qts.</td> </tr> </tbody> </table>	Trunk Diameter at 12 In. Above Soil Line	Quantity of Diluted Mixture	<1 inch	1 qt.	1-3 inches	3 qts.	>5 inches	4 qts.
Trunk Diameter at 12 In. Above Soil Line	Quantity of Diluted Mixture															
<1 inch	1 qt.															
1-3 inches	3 qts.															
>5 inches	4 qts.															
Urea (46-0-0)	N/A	—	—	44 lbs. per 100 gals. of water to fallen leaf litter	0 0	50 lbs.	1	Apply urea to help reduce overwintering apple scab inoculum. Can be applied in fall or before trees begin forming leaves.								

¹Unless otherwise noted, all rates are provided as amount to apply per acre.
²Re-entry intervals (REI) and preharvest intervals (PHI) are provided in hours (h) and days (d).
³Generic products (other materials with the same active ingredient) are available.
⁴Efficacy ratings: E = excellent, G = good, F = fair, P = poor, — = not effective.

Green Tip through Half-Inch Green¹

Product and Formulation	FRAC Code	Scab	REI PHI ²	Max. Amount/Acre/Year	Max. Applications/Year	Remarks
Although all these fungicides are labeled for use at this time, we recommend delaying the use of systemic fungicides (FRAC codes 3 and 11) until more leaf tissue is present and disease pressures are higher. This will improve management while staying within recommended application numbers per season.						
Aprovia	7	G ³ 5- 5.7 oz.	12 h 30 d	27.6 oz.	N/A	This is a new SDHI fungicide. Do not make more than 2 sequential applications.
Captan	M	G ³ 5 lbs.	24 h 0 d	40 lbs.	8	Captan is not compatible with oil. Do not apply within 2 weeks of an oil spray or spreader-sticker.
Flint 50WG	11	G-E ³ 2-2.5 oz.	12 h 14 d	11 oz.	4	Do not make more than 2 sequential applications ⁴ .
Flint Extra	11	E ³ 2.5-2.9 oz.	12 h 14 d	11 oz.	4	
Fontelis 1.67SC	7	G ³ 16-20 oz.	12 h 28 d	61 oz.	N/A	When used for scab, tank-mix with another fungicide from a different resistance management group. Do not mix with thinning agents. Do not make more than 2 sequential applications. Do not tank-mix with captan or sulfur.
Indar 2F	3	E ³ 6-8 oz.	12 h 14 d	32 oz.	4	Adding a wetting agent improves performance.
Inspire Super	3 + 9	E 12 oz.	12 h 14 d	60 oz.	5	Do not make more than 2 sequential applications ⁴ .
Luna Sensation	7 + 11	E 5-5.8 oz.	12 h 14 d	21 oz.	4	Do not make more than 2 sequential applications ⁴ .
Luna Tranquility	7 + 9	E 11.2-16 oz.	12 h 72 d	54.7 oz.	N/A	Do not make more than 2 sequential applications ⁴ .
Mancozeb 75DF ⁵	M3	—	1 d 77 d	21 lbs. or 24 lbs.	4-8	Rate depends on protectant or extended protectant program. Do not combine the 6-pound prebloom or 3-pound all-season mancozeb schedule. See labels for details. See Note About Mancozeb and Polyram (EBDC Products) (page 6) for more information.
Merivon 2.09SC	7 + 11	E 4-5.5 oz.	12 h 0 d	22 oz.	4	Do not make more than 2 sequential applications. Do not use with EC formulated products or with Captan ⁴ .
Omega 500F	29	10-13.8 fl. oz.	2 d 28 d	8.6 pts.	10	This product also controls mites.
Polyram 80DF	M3	—	1 d 77 d	21 lbs. or 24 lbs.	4-8	Rate depends on protectant or extended protectant program. See Note About Mancozeb and Polyram (EBDC Products) (page 6) for more information.
Pristine	7 + 11	E 14.5-18.5 oz.	12 h 0 d	74 oz.	4	Do not make more than 2 sequential applications ⁴
Procure 480SC	3	E ³ 8-16 oz.	12 h 14 d	64 oz.	N/A	When used for scab, tank-mix with a fungicide from a different resistance management group.
Rally 40WSP	3	F-G ³ 5-10 oz.	1 d 14 d	5 lbs.	N/A	Tank-mix with a fungicide from a different resistance management group. Fungicide resistance to this product has been observed with both apple scab and powdery mildew.
Scala	9	—	12 h 72 h	40 fl. oz.	N/A	Performs best when temperatures are below 75°F.

Green Tip through Half-Inch Green¹ (continued)

Product and Formulation	FRAC Code	Scab	REI PHI ²	Max. Amount/ Acre/Year	Max. Applications/ Year	Remarks
Sovran	11	E ³ 4-6.4 oz.	12 h 30 d	25.6 oz.	6	At the 4.0 ounces per acre rate, a maximum of 6 treatments per season can be applied. At the 6.4 ounces per acre rate, there is a limit of 4 treatments per season ⁴ .
Syllit FL	M7	—	2 d 7 d	N/A	N/A	Tank-mix with a fungicide from a different resistance management group. Can cause russetting under poor drying conditions.
Sulfur ⁵ : Kumulus DF	M2	F-G 10-20 lbs.	24 h 0 d	N/A	N/A	Do not apply in hot weather (higher than 80°F) to reduce the risk of russet fruit. Do not apply within 2 weeks of an oil spray or spreader-sticker.
Sulfur ⁵ Microthiol Dispers	M2	F-G 10-20 lbs.	24 h 0 d	N/A	N/A	
Topguard	3	G ³ 8-12 oz.	12 h 14 d	52 oz.	4	When used for scab, tank-mix with a fungicide from a different resistance management group. May injure Braeburn.
Topsin-M WSB, Topsin M70WP ⁵	1	G-p ³ 1-1.5 lbs.	2 d 1 d	4 lbs.	N/A	Widespread fungicide resistance has rendered this fungicide ineffective on apple scab at most locations. Does not control rust.
Vanguard	9	7-10 oz.	12 h 72 d	30 oz.	N/A	Performs best when temperatures are below 75°F. Adding a FRAC Code 3 fungicide to this tank-mix will control rust and powdery mildew.
Ziram 76DF	M3	3 or 6 lbs.	2 d 14 d	42.4 lbs.	7	See page 6 for details.

¹Unless otherwise noted, all rates are provided as amount to apply per acre. Efficacy ratings: E = excellent, G = good, F = fair, P = poor, — = not effective. For any given disease, highly susceptible varieties often have worse control ratings.
²Re-entry intervals (REI) and preharvest intervals (PHI) are provided in hours (h) and days (d).
³Resistant pathogens will lower the effectiveness of these fungicides.
⁴Do not exceed 4 total applications per year of any class 11 fungicide or any combination of these fungicides, such as Flint, Luna Sensation, Merivon, or Pristine.
⁵Generics (other materials with the same active ingredient) are available.

Tight Cluster through First Cover¹

Please note additional applications at bloom to provide protection against fire blight.

Product and Formulation	FRAC Code	Scab	Rust	Summer Rots	Flyspeck and Sooty Blotch	Powdery Mildew	REI PHI ²	Max. Amount/Acre/Year	Max. Applications/Year	Remarks
A critical time for control for scab, rust, and powdery mildew. Refer to Bloom and Petal Fall (page 7) for control of fire blight during bloom.										
Apruvia	7	G 5.5-7 oz.	G 5.5-7 oz.	G 5.5-7 oz.	G 5.5-7 oz.	F 5.5-7 oz.	12 h 30 d	27.6 oz.	N/A	Cease use after petal fall. Do not make more than 2 sequential applications on a 7-day interval. This product suppresses powdery mildew and summer rots only.
Captan 80WDG	M	G ³ 5 lbs.	—	G-E ³ 5 lbs.	F-G ³ 5 lbs.	—	24 h 0 d	40 lbs.	8	Applying at petal fall and first cover in tank mixes that contain surfactants can result in fruit russetting in some years.
Flint 50WG	11	E ³ 2-2.5 oz.	E ³ 2-2.5 oz.	G-E ³ 2-2.5 oz.	E ³ 2-2.5 oz.	E ³ 2-2.5 oz.	12 h 14 d	11 oz.	4	Do not make more than 2 sequential applications ⁴ .
Flint Extra	11	E ³ 2.5-2.9 oz.	E ³ 2.5-2.9 oz.	G-E ³ 2.9 oz.	E ³ 2.5-2.9 oz.	E ³ 2.5-2.9 oz.	12 h 14 d	11 oz.	4	Do not make more than 2 sequential applications ⁴ . Suppressive against summer rots.
Fontelis 1.67SC	7	F-G ³ 16-20 oz.	F 16-20 oz.	G ³ 16-20 oz.	—	E-G ³ 16-20 oz.	12 h 28 d	61 oz.	N/A	Tank-mix with a fungicide from a different resistance management group. Do not mix with thinning agents. Do not make more than 2 sequential applications. Do not mix with captan, because phytotoxicity has been known to occur.
Indar 2F	3	G ³ 6-8 oz.	G ³ 6-8 oz.	G ³ 6-8 oz.	G ³ 6-8 oz.	E ³ 6-8 oz.	12 h 14 d	32 oz.	4	Do not make more than 2 sequential applications.
Inspire Super	3 + 9	E 12 oz.	G 12 oz.	G 12 oz.	G 12 oz.	G 12 oz.	12 h 14 d	60 oz.	5	Do not make more than 2 sequential applications.
Luna Sensation	7 + 11	E ³ 4-5.8 oz.	G 5-5.8 oz.	G 5-5.8 oz.	G 5-5.8 oz.	E 5-5.8 oz.	12 h 14 d	21 oz.	4	Do not make more than 2 sequential applications ⁴ .
Luna Tranquility	7 + 9	G-E ³ 11.2-16 oz.	G-E ³ 11.2-16 oz.	G 11.2-16 oz.	E-G 11.2-16 oz.	E 11.2-16 oz.	12 h 72 d	54.7 oz.	N/A	Do not make more than 2 sequential applications.
Mancozeb 75DF	M3	G 3 or 6 lbs.	G 3 or 6 lbs.	G-E 3 or 6 lbs.	—	3 or 6 lbs.	1 d 77 d	21 or 24 lbs.	N/A	See Note About Mancozeb and Polyram (EBDC Products) (page 6).
Merivon 2.095C	7 + 11	E ³ 4-5.5 oz.	F-G 4-5.5 oz.	G-E 4-5.5 oz.	G 4-5.5 oz.	E 4-5.5 oz.	12 h 0 d	22 oz.	4	Do not make more than 2 sequential applications. Do not use with EC formulated products ⁴ .
Omega 500F	29	G-E 10-13.8 oz.	G-E 10-13.8 oz.	G 10-13.8 oz.	G 10-13.8 oz.	P-F 10-13.8 oz.	2 d 28 d	8.6 pts.	10	Omega is labeled for control of scab, bitter rot, and black rot; it suppresses powdery mildew and Juniper rusts.
Polyram 80DF	M3	G 3-6 lbs.	G 3-6 lbs.	G 3-6 lbs.	E-G 3-6 lbs.	—	1 d 77 d	21 lbs. or 24 lbs.	4-8	Rate depends on protectant or extended protectant program. See Note About Mancozeb and Polyram (EBDC Products) (page 6).
Pristine	7 + 11	G-E 14.5-18.5 oz.	G-E 14.5-18.5 oz.	G-E 14.5-18.5 oz.	G-E 14.5-18.5 oz.	E 14.5-18.5 oz.	12 h 0 d	74 oz.	4	Do not apply make than 2 sequential applications ⁴ .
Procure 480SC	3	G ³ 8-16 oz.	E-G ³ 8-16 oz.	—	—	E ³ 8-16 oz.	12 h 14 d	64 oz.	N/A	When used for scab, tank-mix with a fungicide from a different resistance management group.
Rally 40WSP	3	G ³ 5-10 oz.	E ³ 5-10 oz.	—	—	G-E ³ 5-10 oz.	1 d 14 d	5 lbs.	N/A	Tank-mix with a fungicide from a different resistance management group.
Scala	9	G 7-10 fl. oz.	—	—	—	—	12 h 72 h	40 fl. oz.	N/A	Not recommended for late-season applications.

Tight Cluster through First Cover¹ (continued)

Product and Formulation	FRAC Code	Scab	Rust	Summer Rots	Flyspeck and Sooty Blotch	Powdery Mildew	REI PHI ²	Max. Amount/Acre/Year	Max. Applications/Year	Remarks
Sercadis	7	F-G 3.5-4.5 fl. oz.	F 4.5 fl. oz.	F-E 4.5 fl. oz.	E 4.5 fl. oz.	G-E 3.4-4.5 fl. oz.	12 h 0 d	18	4	Only suppressive against juniper rusts.
Sovran	11	E ³ 4-6.4 oz.	E 4-6.4 oz.	E ³ 4-6.4 oz.	E ³ 4-6.4 oz.	G ³ 4-6.4 oz.	12 h 30 d	25.6 oz.	6	At the 4.0 ounces per acre rate, a maximum of 6 treatments per season can be applied. At the 6.4 ounces per acre rate, there is a limit of 4 treatments per season ⁴ . Sovran can burn some varieties of cherries.
Sulfur: Kumulus DF	M2	F-P 10-20 lbs.	P 10-20 lbs.	F 10-20 lbs.	P 10-20 lbs.	F-G 10-20 lbs.	24 h 0 d	N/A	N/A	Do not apply in hot weather (more than 80°F) to reduce the risk of russet fruit. Do not apply within 2 weeks of an oil spray or spreader-sticker.
Sulfur: Microthiol Disperse	M2	F-P 10-20 lbs.	F-G 10-20 lbs.	P-F 10-20 lbs.	P 10-20 lbs.	F-G 10-20 lbs.	24 h 0 d	N/A	N/A	5 lbs./A is sufficient for mildew control in a maintenance program if combined with another fungicide (such as captan or mancozeb) that will control other diseases.
Syllit	M7	E ³ 1.5-3 pts.	—	—	—	—	2 d 7 d	9 pts. or 4 lbs. ai/ acre/year	3	Tank-mix with 2 lbs. captan or 2.25 lbs. mancozeb. Can cause russetting if applied under humid conditions. Cease use after pink.
Topguard	3	E ³ 8-12 oz.	E-G ³ 8-12 oz.	—	—	E ³ 8-12 oz.	12 h 14 d	52 oz.	4	When used for scab, tank-mix with another fungicide from a different resistance management group.
Topsin-M W5B, Topsin M70WP ⁵	1	P ³ 1-1.5 lbs.	—	G-F ³ 1-1.5 lbs.	E-G ³ 1-1.5 lbs.	G-P ³ 1-1.5 lbs.	2 d 1 d	4 lbs.	N/A	Fungicide resistance has rendered this fungicide ineffective on apple scab at most locations. Does not control rust.
Vanguard	9	G 3-5 oz.	—	—	—	—	12 h 72 d	30 oz.	N/A	Not recommended for late-season applications.
Ziram 76DF	M3	F 6 lbs.	G 6 lbs.	G-F 6 lbs.	G-F 6 lbs.	—	2 d 14 d	42.4 lbs.	7	Do not apply more than 6 lbs./A per application. See below.

¹ Unless otherwise noted, all rates are provided as amount to apply per acre. Efficacy ratings: E = excellent, G = good, F = fair, P = poor, — = not effective. For any given disease, highly susceptible varieties often have worse control ratings.

² Re-entry intervals (REI) and preharvest intervals (PHI) are provided in hours (h) and days (d).

³ Resistant pathogens will lower the effectiveness of these fungicides.

⁴ Do not exceed 4 total applications per year of any class 11 fungicide or any combination of these fungicides, such as Cabrio, Flint, Luna Sensation, Merivon, or Pristine.

⁵ Generic products (other materials with the same active ingredient) are available.

Note About Mancozeb and Polyram (EBDC Products)

Mancozeb or Polyram can be applied at up to 6 lbs. per acre in prebloom sprays, but they must never be applied at more than 3 lbs. per acre any time during the season in programs where they continue to be used after bloom. This lower rate may be insufficient under heavy scab pressure. In such situations, consider using captan (which you can apply at rates up to 5 lbs. per acre) or Ziram (at a 6 lbs. per acre) rate.

If you use sterol-inhibiting (SI) fungicides (Topguard, Nova, Rubigan, Indar, Inspire Super, or Procure) for primary scab control (tight cluster to

second cover), we recommend that you apply the latest legal application of the full label rate of a protectant fungicide like mancozeb. This will provide added protection against bitter rot and the other summer rots, particularly on susceptible apples like Honeycrisp, Golden Delicious, Empire, and Fuji.

Do not apply mancozeb or Polyram within 77 days of harvest. Do not apply more than 24 lbs. of mancozeb or Polyram or more than 25.6 lbs. of Penncozeb per acre per year if you are making prebloom applications. Do not apply more than 21 lbs. of mancozeb or Polyram per year or more than 22.4 lbs. of Penncozeb per year if using lower rates of mancozeb as part of a tank-mix.

Bloom through Petal Fall¹

Beginning at king bloom through petal fall, you can add the following products for fire blight control if your orchard has had a history of fire blight. To protect blossoms and pollinators, we recommend applying fungicides before bloom and after petal fall.

Product and Formulation	FRAC Code	Fire Blight	Blister Spot	REI PHI ²	Max. Amount/Acre/Year	Max. Applications/Year	Remarks
To manage apple scab, rust, and powdery mildew, continue the recommendations listed for tight cluster through first cover.							
Agrimycin 17 ³ (streptomycin)	25	E ⁴ 28.8 oz.	P-E ⁴ 28.8 oz.	12 h 50 d	—	—	Resistance to streptomycin has been found throughout Michigan, but has not been found elsewhere in the Midwest. Tank-mix with full rate of oxytetracycline and make a minimum of two applications per season. Do not exceed 1 lb. per 100 gallons of water. Two-year shelf life. Adding Regulaid (1 pt. per 100 gallons) improves coverage and efficacy.
Apogee	None-PGR	E 6-12 oz.	—	12 h 24d			Apogee is a plant growth regulator (PGR) that reduces shoot growth, making trees less susceptible to fire blight. Apogee is not a substitute for streptomycin for blossom blight control during bloom. If needed, Apogee can be combined with streptomycin in one of the bloom sprays. Apogee 27.5W should be applied at full bloom to early petal fall on the king blooms for maximum effectiveness. Apogee is considerably less effective if applied too late. The decrease in blight susceptibility will not occur until about 10 to 14 days after application. Do not apply to Empire or Winesap.
Kasumin 2L or Mycoshield are not recommended for fire blight control in the Midwest unless antibiotic resistance is a problem in your orchard.							
Kasumin 2L	24	E 64 oz.	—	12 h 90 d	256 oz.	4	Do not make more than 2 sequential applications. Do not use alternate tree-row application method. Do not apply after petal fall. Do not apply to orchards fertilized with manure.
Mycoshield ³ (terramycin)	41	G 8 or 16 oz.	—	12 h 60 d	5 lbs.	5	Apply at the rate of 8 oz. in 50 gallons of water or 16 oz. in 100 gallons of water. Do not use higher gallonages because that will reduce the effectiveness of terramycin.

¹ Unless otherwise noted, all rates are provided as amount to apply per acre. Efficacy ratings: E = excellent, G = good, F = fair, P = poor, — = not effective. For any given disease, highly susceptible varieties often have worse control ratings.

² Re-entry intervals (REI) and preharvest intervals (PHI) are provided in hours (h) and days (d).

³ Generic products (other materials with the same active ingredient) are available.

⁴ Resistant pathogens will lower the effectiveness of this antibiotic.

Summer Cover Sprays¹

Product and Formulation	FRAC Code	Scab	Powdery Mildew	Summer Rots	Flyspeck and Sooty Blotch	REI PHI ²	Max. Amount/Acre/Year	Max. Application/Year	Remarks
Captan 80WDG	M	G ³ 5 lbs.	—	G 5 lbs.	G ³ 5 lbs.	24 h 0 d	40 lbs.	8	
Flint 50WG	11	E ³ 2-2.5 oz.	G-E ³ 2-2.5 oz.	E ³ 2-2.5 oz.	E ³ 2-2.5 oz.	12 h 14 d	11 oz.	4	Do not apply more than 2 sequential applications ⁴ .
Flint Extra	11	E ³ 2.5-2.9 oz.	G-E ³ 2.5-2.9 oz.	E ³ 2.9 oz.	E ³ 2.5-2.9 oz.	12 h 14 d	11 oz.	4	Suppressive against summer rots.
Fontelis 1.67SC	7	F-G ³ 16-20 oz.	E-G ³ 16-20 oz.	F-G ³ 16-20 oz.	F-G ³ 16-20 oz.	12 h 28 d	61 oz.	N/A	Do not make more than 2 sequential applications.
Indar 2F	3	G ³ 6-8 oz.	E ³ 6-8 oz.	—	—	12 h 14 d	32 oz.	4	Adding a wetting agent is helpful.
Inspire Super	3 + 9	G 12 oz.	E 12 oz.	—	—	12 h 14 d	60 oz.	5	Do not make more than 2 sequential applications.
Luna Sensation	7 + 11	E ³ 4-5.8 oz.	E 5-5.8 oz.	E ³ 4-5.8 oz.	E ³ 4-5.8 oz.	12 h 14 d	21 oz.	4	Do not make more than 2 sequential applications ⁴ .
Luna Tranquility	7 + 9	G ³ 11.2-16 oz.	E 11.2-16 oz.	G-F ³ 11.2-16 oz.	E ³ 11.2-16 oz.	12 h 72 d	54.7 oz.	N/A	Do not make more than 2 sequential applications.
Merivon 2.09SC	7 + 11	E ³ 4-5.5 oz.	E 4-5.5 oz.	E-G ³ 4-5.5 oz.	E-G ³ 4-5.5 oz.	12 h 0 d	22 oz.	4	Do not make more than 2 sequential applications ⁴ . Do not use with EC formulated products. This product provides extended protection against flyspeck and sooty blotch when used in the last spray of the season.
Omega 500F	29	G 10-13.8 oz.	—	G 10-13.8 oz.	G 10-13.8 oz.	2 d 28 d	8.6 pts.	10	Suppresses summer rots, flyspeck/sooty blotch, and powdery mildew.
Pristine	7 + 11	G-E 14.5-18.5 oz.	E 14.5-18.5 oz.	G-E 14.5-18.5.	G-E 14.5-18.5.	12 h 0 d	74 oz.	4	Do not make more than 2 sequential applications ⁴ . This product provides extended protection against flyspeck and sooty blotch when used in the last spray of the season.
Procure 480SC	3	G ³ 8-16 oz.	E ³ 8-16 oz.	—	—	12 h 14 d	64 oz.	N/A	When used for scab, tank-mix with a fungicide from a different resistance management group.

continued on next page

Summer Cover Sprays¹ (continued)

Product and Formulation	FRAC Code	Scab	Powdery Mildew	Summer Rots	Flyspeck and Sooty Blotch	REI PHI ²	Max. Amount/ Acre/Year	Max. Application/ Year	Remarks
Rally 40WSP	3	G ³ 5-10 oz.	E ³ 5-10 oz.	—	—	1 d 14 d	5 lbs.	N/A	Tank-mix with a fungicide from a different resistance management group.
Sercadis	7	F-G 3.5-4.5 fl. oz.	G-E 3.4-4.5 fl. oz.	F-E 4.5 fl. oz.	E 4.5 fl. oz.	2 h 0 d	18	4	Effective against black rot.
Sovran	11	E ³ 4-6.4 oz.	E ³ 4-6.4 oz.	E ³ 4-6.4 oz.	E ³ 4-6.4 oz.	12 h 30 d	25 oz.	6	Do not make more than 2 sequential applications ⁴ . Be especially cognizant of 30-day PHI ⁴ .
Sulfur ⁵ Microthiol Disperse	M2	F 10-20 lbs.	F-G 10-20 lbs.	F-P 10-20 lbs.	F-E 10-20 lbs.	24 h 0 d	N/A	N/A	Do not apply in hot weather (more than 80°F) to reduce the risk of russet fruit. Do not apply within 2 weeks of an oil spray or spreader-sticker. Can affect fruit finish of Golden Delicious.
Kumulus DF	M2	F 10-20 lbs.	F-G 10-20 lbs.	F-P 10-20 lbs.	F-E 10-20 lbs.	24 h 0 d	N/A	N/A	
Topguard	3	E ³ 8-12 oz.	G ³ 8-12 oz.	—	—	12 h 14 d	52 oz.	4	When used for scab, tank-mix with a fungicide from a different resistance management group.
Topsin-M WSB, Topsin M70WP ⁵	1	P ³ 1-1.5 lbs.	E-F ³ 1-1.5 lbs.	F-P ³ 1-1.5 lbs.	E-F ³ 1-1.5 lbs.	2 d 1 d	4 lbs.	N/A	Widespread fungicide resistance has rendered this fungicide ineffective on apple scab at most locations.
Ziram 76DF	M3	F 6 lbs.	—	G 6 lbs.	G 6 lbs.	2 d 14 d	42.4 lbs.	N/A	Using Ziram late in the season may result in unsightly residue at harvest. Do not apply within 14 days of harvest.

¹ Unless otherwise noted, all rates are provided as amount to apply per acre. Efficacy ratings: E = excellent, G = good, F = fair, P = poor; — = not effective. For any given disease, highly susceptible varieties often have worse control ratings.

² Re-entry intervals (REI) and preharvest intervals (PHI) are provided in hours (h) and days (d).

³ Resistant pathogens will lower the effectiveness of these fungicides.

⁴ Do not exceed 4 total applications per year of any class 11 fungicide or any combination of these fungicides, such as Cabrio, Flint, Luna Sensation, Merivon, or Pristine.

⁵ Generic products (other materials with the same active ingredient) are available.

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