

2018–2019 Florida Citrus Production Guide: Greasy Spot¹

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Greasy spot is caused by the fungus *Mycosphaerella citri*, which has been recently renamed *Zasmidium citri-griseum*. Management must be considered in groves intended for processing and fresh market fruit. Greasy spot is usually more severe on leaves of grapefruit, pineapples, Hamlins, and tangelos than on Valencias, Temples, Murcotts, or most tangerines and their hybrids. Greasy spot rind blotch (GSRB) is particularly problematic for grapefruit destined for the fresh fruit market.

Airborne ascospores produced in decomposing leaf litter on the grove floor are the primary inoculum source for greasy spot. These spores germinate on the fruit and the underside of the leaves where the fungus grows for a time on the leaf surface before penetrating through the stomates (natural openings on lower leaf surface). Internal growth is slow and symptoms do not appear for several months. Warm humid nights and high rainfall, typical of Florida summers, promote infection and disease development. Major ascospore releases usually occur from April to early June with favorable conditions for infection occurring from June through September. Leaves are susceptible throughout their life.

On processing Valencias, a single spray of oil (5–10 gal/acre) or copper + oil (5 gal/acre) should provide acceptable control when applied from mid-May to June. With average

quality copper products, 2 lb of metallic copper per acre usually provide adequate control. The strobilurin containing fungicides (Abound, Amistar Top, Gem, Headline, or Pristine), as well as Enable 2F, are also suitable with or without petroleum oil. On early and mid-season oranges as well as processing grapefruit, two sprays may be needed especially in the southern part of the state where summer flushes constitute a large portion of the foliage. Two applications also may be needed where severe defoliation from greasy spot occurred in the previous year. In those cases, the first spray should be applied from mid-May to June and the second soon after the major summer flush has expanded. Copper fungicides provide a high degree of control more consistently than oil sprays. Control of greasy spot on late summer flushes is less important than on the spring and early summer growth flushes since the disease develops slowly and defoliation will not occur until after the next year's spring flush. **Thorough coverage of the underside of leaves is necessary for maximum control of greasy spot, and higher spray volumes and slower tractor speeds may be needed than for control of other pests and diseases.**

The program is essentially the same for fresh fruit. That is, a fungicide application in May-June and a second in July should provide control of rind blotch. A third application in August may be needed if rind blotch has been severe in

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the grove. Petroleum oil alone is less effective than other fungicides for control of GSRB. Heavier oils (455 or 470) are more effective for GSRB control than are lighter oils (435). Copper fungicides are effective for control of GSRB, but may result in fruit spotting especially if applied at high rates in hot, dry weather or if applied with petroleum oil. If copper fungicides are applied in summer, they should be applied when temperatures are moderate (< 94°F), at rates no more than 2 lb of metallic copper per acre, without petroleum oil or other additives, and using spray volumes of at least 125 gal/acre. Copper residue levels can be monitored with the [Citrus Copper Application Scheduler](#). Further details are available in EDIS PP289 *A Web-Based Tool for Timing Copper Applications in Florida Citrus*. Enable 2F can be applied for greasy spot control at any time but is especially indicated in mid to late summer for rind blotch control.

The strobilurin containing fungicides (Abound, Amistar Top, Gem, Headline, or Pristine) or Enable 2F can be applied at any time to all citrus and provide effective control of the disease on leaves or fruit. Use of a strobilurin (Abound, Amistar Top, Gem, Headline, or Pristine) is especially indicated in late May and early June since it will control both melanose and greasy spot and avoids potential fruit damage from the copper fungicides at that time of year. A strobilurin fungicide should not be applied more than once a year for greasy spot control because of the potential for the development of resistance. The addition of petroleum oil increases the efficacy of these products.

Web addresses for links:

Citrus Copper Application Scheduler: <http://agroclimate.org/tools/citrus-copper-application-scheduler/>

A Web-Based Tool for Timing Copper Applications in Florida Citrus (PP289): <http://ufdc.ufl.edu/IR00007639/00001>

Recommended Chemical Controls

READ THE LABEL.

See Table 1.

Rates for pesticides are given as the maximum amount required to treat mature citrus trees unless otherwise noted. To treat smaller trees with commercial application equipment including handguns, mix the per acre rate for mature trees in 250 gallons of water. Calibrate and arrange nozzles to deliver thorough distribution and treat as many acres as this volume of spray allows.

Table 1. Recommended chemical controls for greasy spot.

Pesticide	FRAC MOA ²	Mature Trees Rate/Acre ¹
Petroleum Oil 97+% (FC 435-66, FC 455-88, or 470 oil)	NR ³	5–10 gal. Do not apply when temperatures exceed 94°F. 470 weight oil has not been evaluated for effects on fruit coloring or ripening. These oils are more likely to be phytotoxic than lighter oils.
copper fungicide	M01	Use label rate.
copper fungicide + Petroleum Oil 97+% (FC 435-66, FC 455-88, or 470 oil)	M01 and NR	Use label rate + 5 gal. Do not apply when temperatures exceed 94°F. 470 weight oil has not been evaluated for effects on fruit coloring or ripening. These oils are more likely to be phytotoxic than lighter oils.
Abound ⁴	11	12.0–15.5 fl oz. Do not apply more than 92.3 fl oz (1.5 lb a.i.)/acre/season for all uses. Best applied with petroleum oil.
Amistar Top (formerly Quadris Top) ^{4,5}	11/3	10–15.4 fl oz. Do not apply more than 61.5 fl oz/acre/season for all uses. Do not apply more than 0.5 lb ai/acre/season difenoconazole. Do not apply more than 1.5 lb ai/acre/season azoxystrobin.
Enable 2F ⁵	3	8 fl oz. Do not apply more than 3 times per year; no more than 24 fl oz. (0.38 lb a.i.)/acre. Minimum retreatment interval is 21 days. Do not apply with polymer-based spray adjuvants.
Gem 500 SC ⁴	11	1.9–3.8 fl oz. Do not apply more than 15.2 fl oz/acre/season for all uses. Best applied with petroleum oil. Do not apply within 7 days of harvest.
Headline SC ⁴	11	9–12 fl oz. Do not apply more than 54 fl oz (0.88 lb a.i.)/acre/season for all uses. Best applied with petroleum oil.
Pristine ^{4,5}	11/7	16–18.5 oz. Do not apply more than 74 oz/acre/season for all uses.

¹ Lower rates can be used on smaller trees. Do not use less than minimum label rate.

² Mode of action class for citrus pesticides from the Fungicide Resistance Action Committee (FRAC) 2018. Refer to ENY624, Pesticide Resistance Management, in the *2018–2019 Florida Citrus Production Guide* for more details.

³ No resistance potential exists for these products.

⁴ Do not use more than 4 applications of strobilurin-containing fungicides/season. Do not make more than 2 sequential applications of strobilurin fungicides.

⁵ Do not make more than 4 applications of Pristine or Amistar Top/season. Do not make more than 2 sequential applications of Pristine or Amistar Top before alternating to a non-strobilurin, SDHI or DMI