

2012 Florida Citrus Pest Management Guide: Greasy Spot¹

M.M. Dewdney and L.W. Timmer²

Greasy spot is caused by the fungus *Mycosphaerella citri*. 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, and most tangerines and their hybrids. Greasy spot rind blotch (GSRB) is particularly problematic for fresh fruit grapefruit.

Airborne ascospores produced in decomposing leaf litter on the grove floor are the primary source of inoculum for greasy spot. These spores germinate on the underside of the leaves and 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, favor infection and disease development. Major ascospore release usually occurs 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, Gem, Headline, or

Quadris Top), as well as Enable 2F, are also suitable with or without petroleum oil. On early and mid-season oranges and grapefruit for processing, 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 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,

1. This document is PP-144, one of a series of the Plant Pathology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date December 1995. Revised February 2012. Visit the EDIS website at <http://edis.ifas.ufl.edu>.
2. M.M. Dewdney, assistant professor, and L.W. Timmer, professor emeritus, Plant Pathology Department, Citrus REC, Lake Alfred, Florida; Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee or warranty of the products named, and does not signify that they are approved to the exclusion of others of suitable composition.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations. U.S. Department of Agriculture, Cooperative Extension Service, University of Florida, IFAS, Florida A&M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Millie Ferrer-Chancy, Interim Dean

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, 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 (<http://www.agroclimate.org/tools/cudecay/>). Further details are available in EDIS PP289 'A Web-Based Tool for Timing Copper Applications in Florida Citrus' (<http://edis.ifas.ufl.edu/pp289>). 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, Gem, Headline, or Quadris Top) 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, Gem, Headline, or Quadris Top) 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. Addition of petroleum oil increases the efficacy of these products.

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	M1	Use label rate.
Copper Fungicide + Petroleum Oil 97+% (FC 435-66, FC 455-88, or 470 oil)	M1 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 2.08F ⁴	11	12.40-15.45 fl oz. Do not apply more than 92.3 fl oz/acre/season for all uses. Best applied with petroleum oil.
Enable 2F	3	8 fl oz. Do not apply more than 3 times per year; no more than 24 fl oz./acre. Minimum retreatment interval is 21 days.
Gem 25WG ⁴	11	4.0-8.0 oz. Do not apply more than 32 oz/acre/season for all uses.
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.
Headline ⁴	11	9-12 fl oz. Do not apply more than 54 fl oz/acre/season for all uses. Best applied with petroleum oil.
Quadris Top ⁴	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 difenconazole. Do not apply more than 1.5 lb ai/acre/season azoxystrobin.

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

²Mode of action class for citrus pesticides from the Fungicide Resistance Action Committee (FRAC) 2011. Refer to ENY624, Pesticide Resistance and Resistance Management, in the *2012 Florida Citrus Pest Management Guide* for more details.

³No resistance potential exists for these products.

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