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2026–2027 Florida Citrus Production Guide: Alternaria Brown Spot[1]

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Application Timing Recommendations

- Alternaria brown spot (ABS) is a disease of tangerines and tangerine hybrids.
    - Grapefruit is very rarely affected.
- Start applications before disease development when spring flush is ¼–½ of full expansion.
    - If ABS is severe, a second application may be needed near full expansion.
- Plan a petal fall application.
    - Strobilurin-containing fungicides may be a good choice here because they are effective against citrus scab as well.
- In April and May, the goal of applications is to maintain a protective coat on the fruit.
    - Time applications with the ALTER-RATER (Tables 1 and 2).
    - Get leaf wetness estimates from the Citrus Advisory System (CAS) under the daily summary tab.
    - Copper is a good choice during this period. Assess copper residue with the Citrus Copper Application Scheduler.
- Because fruit growth slows in June, usually only 1 to 2 applications are needed. The fruit are considered resistant by mid-July.

Fungicide Resistance

Alternaria alternata has been documented to be resistant to strobilurins (FRAC MOA 11) in most parts of the Florida tangerine production areas. The level of resistance varies from location to location and strobilurin use history. Amistar Top, Gem, Headline, Pristine, and Quadris are all strobilurin-containing fungicides. All single-site fungicides are at risk for resistance development. Strobilurin (FRAC MOA 11), DMI (FRAC MOA 3), or SDHI (FRAC MOA 7) fungicides should not be used for Alternaria control more than four times in a season; never use more than two applications of the same mode of action in a row. Gem is slightly less effective for control of this disease and should be used at the high rate where disease is moderate to severe. As of 2025, Ferbam is no longer registered for use. The only multisite fungicide remaining for use in citrus is copper, which is effective against ABS at higher rates. Keep this in mind when designing your rotation plans for ABS management.

DO NOT APPLY AMISTAR TOP, GEM, HEADLINE, PRISTINE, OR QUADRIS IN NURSERIES. Application of these fungicides in nurseries can result in selection of resistant strains, which are then distributed on nursery stock to groves.

Web Addresses for Links

Citrus Advisory System: http://agroclimate.org/tools/cas/

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

UF/IFAS publication PP289, "A Web-Based Tool for Timing Copper Applications in Florida Citrus": https://doi.org/10.32473/edis-pp289-2012

Recommended Chemical Controls

READ THE LABEL.

See Table 3.

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 125 gal of water. Calibrate and arrange nozzles to deliver thorough distribution, and treat as many acres as this volume of spray allows.

Table 1. The number of points assigned to each day with ALTER-RATER according to the environmental conditions on that day. Daily point scores are added until the selected spray threshold is reached.

Rainfall > 0.1 inch	Leaf Wetness > 10 hr[1]	Average Daily Temperature (°F)	Daily Points Assigned
+	+	68–83	11
+	+	> 83	8
+	+	< 68	6
+	–	68–83	6
+	–	> 83	4
+	–	< 68	3
–	+	68–83	6
–	+	> 83	6
–	+	< 68	4
–	–	68–83	3
–	–	> 83	0
–	–	< 68	0

[1]Daily leaf wetness estimations for FAWN stations can be found on the Citrus Advisory System website, under the daily summary tab for each station.

Table 2. Suggested threshold scores to be used in different situations with the ALTER-RATER.

Suggested Threshold Scores	Situation
50	Heavily infested Minneola, Dancy, Orlando, Sunburst; many flatwoods groves, east coast and southwest Florida
100	Moderately infested Minneola or Dancy, many Murcotts; ridge and north Florida groves
150	Light infestations, any cultivar; mostly ridge and north Florida groves

Table 3. Recommended chemical controls for Alternaria brown spot.

Pesticide	FRAC MOA[1]	Mature Trees Rate/Acre[2]
Copper fungicide	M 01	Use label rate.
Amistar Top[4]	11/3	15.4 fl oz. Do not apply more than 61.5 fl oz (0.8 lb azoxystrobin and 0.5 lb difenoconazole)/acre/season for all uses. Do not apply more than 0.5 lb a.i./acre/season of difenoconazole. Do not apply more than 1.5 lb a.i./acre/season of azoxystrobin. Do not apply more than 3 applications/season. Minimum retreatment interval is 7 days.
Gem 500 SC[3]	11	1.9–3.8 fl oz. Do not apply more than 15.2 fl oz/acre/season for all uses. Do not apply within 7 days of harvest.
Headline SC[3]	11	12–15 fl oz. Do not apply more than 54 fl oz (0.88 lb a.i.)/acre/season for all uses.
Pristine[4]	11/7	16–18.5 oz. Do not apply more than 74 oz/acre/season for all uses, which is equivalent to 1.17 lb a.i./acre/season of boscalid and 0.592 lb a.i./acre/season of pyraclostrobin. Up to 0.88 lb a.i./acre/season of pyraclostrobin can be used. Minimum retreatment interval is 10 days.
Quadris[3]	11	12.0–15.5 fl oz. Do not apply more than 90.0 fl oz (1.5 lb a.i.)/acre/season for all uses. Minimum retreatment interval is 7 days.

Pesticide	FRAC MOA[1]	Mature Trees Rate/Acre[2]

[1] Mode of action class for citrus pesticides from the Fungicide Resistance Action Committee (FRAC) 2025. Refer to chapter 4, "Pesticide Resistance and Resistance Management," for more details.

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

[3] Do not use more than 4 applications of strobilurin fungicides/season. Do not make more than 2 sequential applications of strobilurin fungicides. Do not use in citrus propagation nurseries.

[4] 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, non-SDHI, or non-DMI fungicide.

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Use pesticides safely. Read and follow directions on the manufacturer's label.

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