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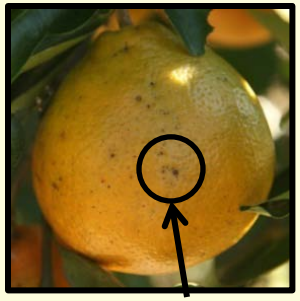
IFAS Extension

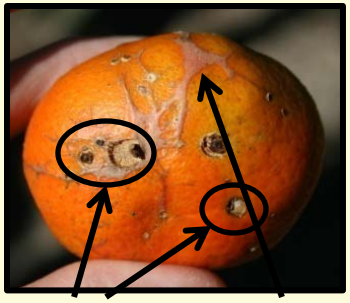
Foliar Fungal Disease Management for Commercial Citrus Groves

Alternaria Brown Spot



Alternaria lesions on mature fruit

Alternaria lesions on immature fruit



Alternaria lesions and wind scar on mature fruit. Note corky eruptions and craters

Young Alternaria lesion on leaf

Young Alternaria lesions on leaf; Note necrosis following veins

Late season Alternaria lesion on leaf

Scientific Name: *Alternaria alternata*
Leaf Symptoms: Initial small brown lesions develop yellow halos. Lesions expand into circular or irregular shapes that can cover a large portion of the leaves. Badly affected leaves fall off.
Fruit Symptoms: Start as small dark specks and develop into either large black lesions or corky eruptions. The eruptions can fall off leaving craters on the fruit surface. Badly affected fruit drops.
Varieties Affected: Minneola tangelos, Dancy tangerines, Murcotts, Orlando tangelos, Novas, Lees, Sunburst
Management: Clean nursery trees; good air drainage at planting site; prune in March; do not hedge severely; use moderately vigorous rootstock; do not over-fertilize or water; no over-head irrigation; 1st spray application spring flush ¼ - ½ full expansion; 2nd shortly after petal fall; remaining sprays are to maintain a protective coating on fruit; in dry weather, sprays can be infrequent, but if wet, applications can be as often as every 10 days in April and May; in June, 2 applications are likely; for more information on application timing, consult the Alter Rater: http://www.crec.ifas.ufl.edu/crec_websites/fungal/dmodel.htm

Citrus Scab

Corky or warty scab lesions on mature fruit

Scab lesions on mature fruit

Scab lesions on immature fruit

Late season scab lesions on leaves

Late season scab lesion

Young scab lesions forming finger-like structures on leaf

Scientific Name: *Elsinoë fawcettii*
Leaf Symptoms: Protruding lesions on leaves, especially on Temple with a tan-to-gray pustule at the tip.
Fruit Symptoms: Start with slightly raised pink-brown lesions which develop into warty or corky protuberances that can crack. The color changes to yellowish brown to dark gray.
Varieties Affected: Temples, Grapefruit, Murcotts, Tangelos and some other Tangerine hybrids
Management: Mainly necessary for fresh fruit; Clean nursery trees; prune out heavily infected sections of tree; use moderately vigorous rootstock; no over-head irrigation; fungus can infect with only 3-4 hours of leaf wetness and new spores are produced in 1-2 hours of wetness; in badly affected groves; 3 spray applications are generally needed: 1. ¼ expansion spring flush; 2. petal fall; and 3. 3 weeks later; groves with little disease can skip 1st application; fruit become resistant to disease in May; for pesticide recommendations and rates, consult pest management guide

Follow pesticide recommendations in the annual Florida Citrus Pest Management Guide **http://www.crec.ifas.ufl.edu/extension/pest/index.htm**

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Megan M. Dewdney and Jamie D. Yates[2]

Photo Credit: M.M. Dewdney, L.W. Timmer, J.D. Yates

PP270

Greasy Spot

Early Greasy Spot rind blotch on grapefruit

Greasy Spot rind blotch on mature grapefruit

Greasy Spot rind blotch on mature grapefruit

Young Greasy Spot lesions

Older Greasy Spot lesions

Scientific Name: *Mycosphaerella citri*
Leaf Symptoms: Initial yellow mottle pattern develops into reddish-brown blisters with yellow halos on the underside of the leaf. As the leaf ages, the lesions become darker brown with a greasy look. The yellow disappears leaving the brown lesions and badly affected leaves drop.
Fruit Symptoms: Symptoms appear as specks on rind between oil glands. Especially noticeable on grapefruit. Lesions are initially pink but become brown or black 3-6 months after infection and may coalesce, forming pink, sunken areas.
Varieties Affected: All citrus, but especially grapefruit, 'Pineapples', 'Hamlins' and tangelos.
Processed Fruit Management: Minimize leaf litter to reduce inoculum; sprays are aimed at fungal growth on leaves and fruit.
Valencias: single oil/oil+copper application mid May-June; a second application may be needed if grove was heavily infested previous season
Early-mid season oranges and grapefruit: 2 applications; 1st spray mid-May to June; 2nd application shortly after major summer flush expanded in July
Fresh Fruit Management: Minimize leaf litter; Rind blotch-same 2 spray timings as above; if disease pressure high previous year, potentially need 3rd application in August; oil alone not most effective for rind blotch; consult citrus pest management guide for further fungicide options and rates http://www.crec.ifas.ufl.edu/extension/pest/index.htm

Melanose

Tear stain Melanose

Mudcake Melanose

Melanose lesions

Late season Melanose

Early season Melanose

Late season Melanose

Scientific Name: *Diaporthe citri*
Leaf Symptoms: Early symptoms are small reddish-brown discrete spots that are surrounded by yellow halos. Later, the halos disappear but the raised pustules remain. The leaf surface feels like sandpaper.
Fruit Symptoms: If infected when fruit small, lesions can cover most of the fruit. The lesions are reddish-brown and rough. If infected later in the season, the lesions are small and discrete.
Varieties Affected: All citrus; grapefruit and lemons are most susceptible.
Management: Needs 10-24 hours of leaf wetness, any practice that promotes drying is helpful; minimize dead wood
Oranges and tangerines: 1st spray normally mid-late April: 1-2 applications at 21-day intervals sufficient unless a lot of dead wood
Grapefruit: susceptible from fruit set to 3 inches diameter (late June to July), start spray applications when fruit is ¼ - ½" diameter; continue at three-week intervals on fresh market fruit; to determine whether copper residues are sufficient for disease control consult copper model; early June spray can also be 1st Greasy Spot spray
Copper Model: For spray timings based on residue levels consult http://www.crec.ifas.ufl.edu/crec_websites/fungal/dmodel.htm

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