

2016 Florida Citrus Pest Management Guide: Ch.22

Postbloom Fruit Drop¹

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Postbloom fruit drop (PFD) must be controlled on processing and fresh market fruit. PFD, caused by the fungus *Colletotrichum acutatum*, affects all species and cultivars of citrus, but severity on a given cultivar varies according to the time of bloom in relation to rainfall. Navel and Valencia oranges have experienced the most severe damage in Florida.

Most spores of this fungus are produced directly on the surface of infected petals. Spores are splash-dispersed by rain to healthy flowers where they infect within 24 hours and produce symptoms in 4-5 days. The fungus survives between bloom periods as resistant structures on the surface of leaves, buttons, and twigs. Flowers are susceptible from the button stage (with white tissue present) until they are open.

A model has been developed to assist growers to determine the need and timing of fungicide applications. The model is based on 1) the amount of fungal inoculum present (i.e., the number of diseased flowers on a 20-tree sample, TD in the model); 2) the total rainfall for the last 5 days; and 3) the number of hours of leaf wetness greater than 10 hours for the last 5 days. The model predicts the percentage of the flowers that will be affected 4 days in the future.

$$y = 13.63 + 1.16\sqrt{TD} + 0.48\sqrt{Rx2500} + 1.77\sqrt{LWx5}$$

where:

y = Percentage of flowers infected 4 days in the future, however, if $y < 0$, then $y = 0$.

TD = Total number of infected flowers on 20 trees; however, if $TD > 75$, then $TD = 0$.

R = Rainfall total for the last 5 days in inches.

LW = Average number of hours of leaf wetness daily for the last 5 days – 10 hours.

Figure 1.

A fungicide application is recommended if these three criteria are met: 1) the model predicts a disease incidence of greater than 20%; 2) sufficient bloom is present or developing to represent a significant portion of the total crop; and 3) no fungicide application has been made in the last 10-14 days.

Groves with persistent calyxes (buttons) from the previous year should be closely examined once the bloom begins. If infected flowers are present on scattered early bloom, model recommendations should be followed once sufficient bloom is present. Groves with a history of PFD should be checked twice weekly during the bloom period. Ground and aerial applications are effective for control of PFD. Low volume application equipment can be used provided they

1. This document is PP-45, one of a series of the Plant Pathology Department, UF/IFAS Extension. Original publication date December 1995. Revised September 2013 and April 2016. This publication is included in SP-43, *2016 Florida Citrus Pest Management Guide*. Visit the EDIS website at <http://edis.ifas.ufl.edu>. For a copy of this handbook, request information on its purchase at your county Extension office.

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give good coverage of the flowers, but ensure that you are following the minimum volume levels on the label as it varies among products. The removal of declining trees such as those with HLB, blight, or Phytophthora, where off-season blooms may provide a site for fungal spore buildup, and a reduction in overhead irrigation during bloom should reduce disease severity.

An alternative to the PFD model, called the PFD-FAD system, has been developed and is also available. It is more complete in that it takes into consideration the disease history in the grove, the cultivar susceptibility, and the time of the last fungicide application. The PFD-FAD system is easy to use and requires less precise information than the PFD model. It can be found at <http://pfd.ifas.ufl.edu/> and is also available in Spanish and Portuguese.

Preventative fungicide programs are difficult to implement especially in groves with large number of declining trees which might bloom for an extended period since the number of fungicides available as as the number of applications for each fungicide is limited. Groves with a history of PFD should be checked twice weekly during the bloom period. If symptomatic flowers are found on scattered bloom, PFD-FAD recommendations should be followed once sufficient bloom is present to justify a fungicide application.

Of the products recommended for control of PFD, the strobilurin fungicides Abound, Gem, and Headline (FRAC group 11) are effective but do not have a long residual effect. Ferbam is less effective and should not be used alone but can be combined with low rates of other products to maximize protection and reduce the risk of resistance development. No resistance has been detected to date. Neither Abound, Gem, nor Headline should be used alone more than once per season, but can be used more than once if combined with Ferbam.

Recommended Chemical Controls

READ THE LABEL.

Rates for pesticides in Table 1 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 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 Postbloom Fruit Drop

Pesticide	FRAC MOA ²	Mature Trees Rate/Acre ¹
Abound ³	11	12.0-15.5 fl oz. Do not apply more than 92.3 fl oz/acre/season for all uses.
Abound ³ + Ferbam	11, M3	12.0 fl oz + 5 lb. Do not apply more than 92.3 fl oz/acre/season of Abound for all uses. Maximum 3 ferbam applications a year and do not apply more than 6 lb ai/acre in a single application.
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.
Gem ³ + Ferbam	11, M3	1.9 fl oz + 5 lb. Do not apply more than 15.2 fl oz/acre/season of Gem for all uses. Do not apply within 7 days of harvest. Maximum 3 applications a year and do not apply more than 6 lb ai/acre in a single application.
Headline SC ³	11	12-15 fl oz. Do not apply more than 54 fl oz/acre/season for all uses.
Headline ³ + Ferbam	11, M3	12 fl oz + 5 lb. Do not apply more than 54 fl oz/acre/season of Headline for all uses. Maximum 3 applications a year and do not apply more than 6 lb ai/acre in a single application.

¹Lower rates can be used on smaller trees. Do not use less than the minimum label rate.
²Mode of action class for citrus pesticides according to the Fungicide Resistance Action Committee (FRAC) 2015. Refer to ENY624, Pesticide Resistance and Resistance Management, in the 2016 Florida Citrus Pest Management Guide for more details.
³Do not use more than 4 applications of strobilurin fungicides/season. Do not make more than 2 sequential applications of strobilurin fungicides.