



Strawberry Disease - Fruit Rot Protection Begins at Bloom

Our two main targets for bloom time protection of strawberries are gray mold/ Botrytis fruit rot, and, if you are growing susceptible varieties like Chandler, anthracnose fruit rot.

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Left: gray mold; right: anthracnose fruit rot.

Fungicide Efficacy

Most fungicides are labeled for both pathogens, but if your main target is gray mold, you need to consider that the fungus has become resistant to several fungicides. If you use fungicides that the pathogen is resistant to, you will have no protection--it's essentially like missing a spray. Based on the fungicide resistance tests that Guido Schnabel conducted with Botrytis from Maryland,

Topsin M is ineffective and at some sites, Scala is also ineffective.

Spray Guidelines to Manage Fungicide Resistance

Here's a strawberry spray guide that manages fungicide resistance, when your main objective is gray mold (Botrytis) protection:

Pre-bloom (crown rot protection)

Spray: Every 7-10 days

Rotating: Captan 50 WG or 80 WDG (group M)

With: Rovral 50 WG (Group 2) --this compound can only be applied once, and only pre-bloom

Early Bloom (10%) to fruit set

Spray: Every 7-10 days

Rotating: Elevate 50 WDG (group 17), CaptEvate (group M + 17), Switch 62.5 WG (group 9 + 12), Fontelis (group 7), Scala (group 12) and Pristine WG (group 7 + 11)

With: Captan, Thiram 24/7 or Thiram Granuflo (both group M)

An example: Captan+Fontelis, then Switch, then Captan, then Pristine, then Thiram, then Elevate, then Captan

After fruit set

Spray: Every 7-10 days

Rotating: Captan and Thiram (both group M)

With: CaptEvate (group M + 17), Elevate (group 17), or Fontelis (group 7) -each applied only once during this interval.

Rates

For every compound, there is a range in the rate you can apply. For fungicides at risk of resistance (Switch, Pristine, Rovral, Scala), the lower rate is always recommended. For fungicides that are not at a high chance of resistance (Elevate, Fontelis, Captan, Thiram), the amount you apply should be adjusted, in part, based on how high disease pressure is. If it rained at least once since your last spray, and temperatures are between 65 and 75° F, you will want to use the higher concentration. If, in contrast, it's been cooler than 65, warmer than 75 and / or dry, use the lower rate.

Timing

The same goes for how often you spray. We get a lot of rain this time of year, and every time it rains the fungus has a chance to infect plants. So long as it's raining about every week, plan to spray every 7-10 days.

Tips

- Control is improved when you rotate between Fontelis and Switch and when you tank mix Fontelis with Captan.
- One of the compounds in Pristine is the same FRAC group as Fontelis, so don't use these sequentially.
- Switch and Pristine are both highly effective, but are at high risk of resistance if they are used too often. Because of this, it is recommended that they are only used ONCE each year.

What about non-synthetic chemicals?

There is some interest in using non-synthetic chemicals for fruit rot control, as a rotation with synthetic chemicals, especially in post bloom control, and for organic management. One such compound is Regalia, a plant extract labeled for use on gray mold and anthracnose fruit rot in strawberry. Trials are lacking for strawberries, but in grape Regalia can be as effective as Pristine against *Colletotrichum*, and is moderately effective against *Botrytis*. In trials in California, disease control with Regalia is best when rotated with conventional compounds. We are doing work on strawberry starting this year to evaluate Regalia and other bio-pesticides / biologicals, so we should have more information on this in future years.

Some helpful resources

- [Fungicide Resistance Management Guidelines for Vegetable Crops Grown in the Mid-Atlantic Region - 2015](#) (This guide includes strawberries).
- [2015 Southeast Regional Strawberry Integrated Pest Management Guide](#). Louws et al.
- Dr. Cassandra Swett, Grape and Small Fruit Pathologist University of Maryland, provides extension support for growers in both Pennsylvania and Maryland through a cooperative agreement between the two land grant universities.