

# Apple Pest Control Schedule for New Jersey Home Orchards

Fact Sheet FS112

## Cooperative Extension

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| Timing of Spray                                                                                                       | Pests                                                  | Materials to Use <sup>1</sup>                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Delayed DORMANT</b><br>(Silver tip to green tip-just prior to bud-break); copper can be applied up to ¼ inch green | Fire blight                                            | Basic copper sulfate<br><b>-OR-</b><br>Copper octanoate                                                                                                                  |
| <b>HALF-INCH GREEN</b><br>(When buds show 1/2" green leaf tissue)                                                     | Scab                                                   | All-purpose dormant fruit tree spray <sup>2</sup><br><b>-OR-</b><br>myclobutanil                                                                                         |
|                                                                                                                       | Aphids, Scales, Mite eggs                              | <b>-PLUS-</b><br>Superior-type oil – (follow label rate) (Do not apply oil if temperature will go below 35 °F during next 24 hours or injury may result)                 |
| <b>TIGHT CLUSTER</b><br>(At least 7 days after 1/2" green spray but before pink stage)                                | Scab, Powdery mildew                                   | All-purpose dormant fruit tree spray <sup>2</sup> + Wettable sulfur<br><b>-OR-</b><br>myclobutanil                                                                       |
| <b>PINK</b><br>(Flower petals visible, but not opened yet)                                                            | Scab, Powdery mildew,<br>Cedar apple rust              | All-purpose tree fruit spray <sup>2</sup> + Wettable sulfur<br><b>-OR-</b><br>Captan + Wettable sulfur<br><b>-OR-</b><br>myclobutanil                                    |
|                                                                                                                       | Aphids                                                 | <b>-PLUS-</b><br>Acetamiprid, or Gamma Cyhalothrin, or Permethrin, or Pyrethrins, or Pyrethrins+Piperonyl butoxide (PBO) (see notes), or Neem Oil extracts, or Malathion |
| <b>BLOOM</b><br>(When flowers are open)                                                                               | Scab, Powdery mildew,<br>Cedar apple rust, Fire blight | Captan + Wettable sulfur + Streptomycin sulfate<br><b>-OR-</b><br>Myclobutanil + streptomycin sulfate<br><br>(Do not apply insecticides during bloom)                    |

| Timing of Spray                                                       | Pests                                                                                            | Materials to Use <sup>1</sup>                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PETAL FALL</b><br>(After flower petals have fallen)                | Scab, Powdery mildew,<br>Cedar apple rust, Fire blight                                           | All-purpose tree fruit spray <sup>2</sup> + Wettable sulfur + Streptomycin sulfate<br><b>-OR-</b><br>Captan + Wettable sulfur + Streptomycin sulfate<br><b>-OR-</b><br>Myclobutanil + Streptomycin sulfate                                                                                               |
|                                                                       | Plum curculio, Aphids, Mites,<br>Leafrollers, Caterpillars                                       | <b>-PLUS-</b><br>Acetamiprid, or Imidacloprid, or Gamma Cyhalothrin, or Permethrin, or Pyrethrins, or Pyrethrins+PBO, or Spinosad, or Esfenvalerate or Malathion or B.t. (Dipel) materials (leafrollers and caterpillars only). Potassium salts of fatty acids (soaps) for aphids and mites.             |
| <b>FIRST COVER</b><br>(10 days to two weeks after petal fall)         | Scab, Powdery mildew,<br>Cedar apple rust, Fruit rots                                            | All-purpose tree fruit spray <sup>2</sup><br><b>-OR-</b><br>Captan + Wettable sulfur<br><b>-OR-</b><br>Myclobutanil                                                                                                                                                                                      |
|                                                                       | Plum curculio, Aphids, Mites,<br>Leafrollers, Caterpillars                                       | <b>-PLUS-</b><br>Acetamiprid, or Imidacloprid, or Gamma Cyhalothrin, or Permethrin, or Pyrethrins, or Pyrethrins+PBO, or Spinosad, or Esfenvalerate or Malathion or Sevin, B.t. (Dipel) materials (leafrollers and caterpillars only). Potassium salts of fatty acids (soaps) for aphids and mites.      |
| <b>SECOND COVER</b><br>(10 days to two weeks after first cover)       | Scab, Fruit rots                                                                                 | All-purpose tree fruit spray <sup>2</sup><br><b>-OR-</b><br>Captan                                                                                                                                                                                                                                       |
|                                                                       | Plum curculio, Leafrollers,<br>Codling moth, Caterpillars,<br>Aphids, Mites                      | <b>-PLUS-</b><br>Acetamiprid, or Imidacloprid, or Gamma Cyhalothrin, or Permethrin, or Pyrethrins, or Pyrethrins+PBO, or Spinosad, or Esfenvalerate, or Malathion, or Sevin, or B.t. (Dipel) materials (leafrollers and caterpillars only). Potassium salts of fatty acids (soaps) for aphids and mites. |
| <b>THIRD COVER SPRAY</b><br>(10 days to two weeks after second cover) | Scab, Fruit rots, Sooty blotch, Fly speck, Leafrollers, Codling moth, Apple maggot, Caterpillars | Same as second cover                                                                                                                                                                                                                                                                                     |

| Timing of Spray                            | Pests                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Materials to Use <sup>1</sup> |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>SUMMER SPRAYS</b><br>(Every 10-14 days) | Scab, Fruit rots, Sooty blotch, Fly speck, Leafrollers, Codling moth, Caterpillars, Apple maggot, Japanese beetles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as second cover          |
| <b>NOTES</b>                               | Bacillus thuringiensis (Dipel and other B.t.s) control only leafrollers and caterpillars. Spinosad materials are also primarily for leafrollers and caterpillars, but will also suppress apple maggot. Pyrethroids are broad spectrum and include Gamma Cyhalothrin, Permethrin and Esfenvalerate. Acetamiprid and Imidacloprid are neonicotinoids with Imidacloprid most effective on sucking insects and apple maggot, and Acetamiprid effective for most insect pests. Organic controls include Neem Oil, organic formulations of Spinosad, B.t.s, Pyrethrins (w/o PBO), and potassium salts of fatty acids (soaps). |                               |

<sup>1</sup>Active ingredients, not product names, are listed. Pesticide products and formulations may change. Always follow label instructions. Check label for: number of applications allowed per season, interval between sprays, and the number of days between last spray and harvest. Do not mix copper materials or captan with oil or plant injury may result.

<sup>2</sup>All-purpose home fruit tree sprays should contain a fungicide, insecticide, and miticides; if fungicide is captan, do not apply with oil as plant injury may result. Always follow label instructions.

## Apple Scab

Scab is the most important fungal disease of apple. The fungus overwinters in leaves on the orchard floor that were infected during the previous season. In spring spores from these leaves infect both fruit and foliage. Initial symptoms consist of olive green to velvety brown lesions. Fruit lesions become brown and corky and early infections often result in deformed fruit. Fungicide applications are necessary unless scab resistant cultivars are planted. Since the pathogen overwinters on leaves, removal of leaves during fall can help reduce disease pressure for the next season.

## Fire Blight

Fire blight is caused by a bacterial plant pathogen. Infection typically occurs through flowers, although shoots can also become infected, especially if injured. Both flowers and shoots become blackened, as if burnt by a fire. Although copper bactericides and the antibiotic streptomycin are available for managing fire blight, control is still difficult. Thus, the planting of less susceptible varieties is highly recommended for the home orchard.

## Cedar-Apple Rust

This disease is caused by a fungus that requires both red cedar and apple or quince to complete its life cycle. Infection on apple leaves and fruit produces bright orange spots. Infection can result in severe leaf drop. Myclobutanil is the only fungicide registered for control of rust by home gardeners. Galls on nearby red cedars should be removed to eliminate the source of inoculum for apple infection.

## Powdery Mildew

Powdery Mildew can be very troublesome on a number of apple varieties. Injury consists of a white powdery growth on the leaves and young twigs. Eventually the young terminals are killed by this fungus disease. Sulfur and myclobutanil are the best materials available for use by home gardeners.

## Plum Curculio

This is the earliest of the major fruit pests likely to be encountered. The curculio is a weevil, or type of beetle. It overwinters as an adult in protected sites or wooded areas. Adults move into fruit trees when temperatures warm in the spring. Any combination of three to four days between 55-60°F, several days above 60°F or two days above 75°F stimulates activity. Movement onto the fruit can occur any time just after petal fall, and lasts up to six weeks, peaking about two weeks after petal fall. Females deposit single eggs in crescent shaped scars on the fruit. One female may lay from 100-500 eggs. Eggs hatch and legless grubs feed internally in the fruit. The internal grubs are often killed by the internal pressure of the growing fruit, but expanded egg scars are a telltale sign of plum curculio damage.

### Control

Sprays are directed against adults as they migrate into fruit trees in the spring, in order to prevent egg laying. Under heavy populations, coverage should be maintained through June.

## Codling Moth

This “worm in the apple,” is one of the most common direct pests the homeowner is likely to encounter. The adult lays her egg on the surface of the fruit. Upon hatching, the young larva almost immediately enters the fruit and mines its way to the core and feeds on the seeds. It exits the fruit to pupate and mature into an adult. There are 2.5 to three generations per year in New Jersey

### Control

Most controls are directed to kill young larvae as they emerge from eggs, or at adults. Either way, timing is important. In southern counties, this generally falls from the third to fourth week in May for the first generation, and about mid July for the second generation. Timings in northern counties are about seven days later. Good coverage of both the leaves and fruit is important

## Apple Maggot

This insect is probably the most destructive pest, attacking backyard apples in New Jersey. Unless controlled, apple maggot can be counted on each year to injure apples and pears, especially if there are other unsprayed or abandoned apple trees nearby. Commencing in late June (South Jersey), or early July (North Jersey), adult maggots (flies) lay eggs just beneath the skin of developing apples. Soon the eggs hatch and tiny maggots tunnel through the apple flesh leaving brown, winding galleries. As the apple increases in size, the egg-laying sites fail to grow as fast so that the apple becomes dimpled and distorted by harvest time.

### Control

It is important to control maggot adults (flies) before they lay eggs. To do this, a spray should be applied to leaves and developing fruit when flies first become active in late June (South Jersey), or early July (North Jersey). Respray every 21 days through August so that late fly broods are controlled

## Important Suggestions for Best Control Results

- **Always follow directions on container label. Store container in a safe place.**
- **Follow the spray schedule.** One missed spray can result in wormy or diseased fruit.
- In addition to pest control, be sure fruit trees are pruned, fertilized, and watered properly.
- Be sure spray coverage is adequate. Don't spray in rain. If rain is expected, allow time for deposit to dry. Once dry, spray residue is normally effective for 10-14 days. Deposit often loses its effectiveness following heavy rain (after more than 1.5-2 inches of rainfall reapply).
- Mix only what is needed for the immediate spray job because many pesticides lose effectiveness when left several hours in water.
- After spraying, flush tank several times with clean water and force water through spray wand and nozzle until clear. Dispose of excess in accordance to manufacture's directions. To prevent corrosion, suspend tank upside down with lid removed to permit drainage and drying .

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