

# Dormant Sprays, Pear Fruit Sawfly

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## Dormant Oil Spray

The use of horticultural oil as a dormant spray can target many insect pests (see images below, and see more explanation about oil below under “Backyard”). Even though the term is “dormant oil,” the application is applied after trees break dormancy. In other words, the oil should be applied around bud swell or later. This timing matches up with the increasing activity of the overwintering insect stages, such as aphid eggs, scale nymphs, and peach twig borer larvae. If applied too early, the oil will not work as well on these insects.

In the warmest areas of Utah, the dormant oil may already have been applied. But in northern Utah, it is approaching time to apply the spray in some areas.

### Should I Spray?

If your trees are not affected by the pests in the image gallery shown below, you can forego a dormant oil application.

### When to Spray

There are **two factors** to consider for determining when to spray: the **bud stage** of your fruit trees (pictures of fruit bud stages), and **weather conditions**.

#### Bud Stages

The window for application extends from **bud swell** to when leaves just start emerging, usually a period of several weeks, depending on the tree.

The **last point** at which you can safely apply oil (at the recommended rate below) for each crop is:

- **apple**: half-inch green (ideally, application is made at green tip stage)

- **apricot:** just before first bloom
- **cherry:** white bud
- **pear:** green cluster
- **peach/nectarine:** just before first bloom (when the pink shows through the flower bud)
- **plum:** green cluster

## Weather Conditions

- Only apply oil if temperatures remain above freezing (ideally above 40°F) for 24 hours after application.
- Ideally, oil should be applied on a clear, non-windy day in the 50° to 70°F temperature range.
- Do not apply if rain is predicted within 24 hours. This will help give the oil time to work.

## How to Spray

### Commercial growers

- Oil should be applied at a rate of 2%, which is 2 gallons per 100 gallons of water.
- (*Optional*) Mix oil with an insecticide such as Warrior or Asana to help improve knockdown of overwintering pests.
- When spraying apple or pear trees, it is OK to mix in copper for fire blight.
- Thoroughly cover all cracks and crevices of the tree bark and buds.

### Backyard growers

- Oil should be applied at a rate of 2%, which is 5 Tbs in 1 gallon of water.
- If you are not growing organically, and aphids or scale have been a serious problem and oil alone has not worked in past years, consider mixing the oil with the appropriate rate of an insecticide, such as Spectracide Triazicide, GardenTech Sevin, or Malathion.
- When spraying apple or pear trees, it is OK to also mix in the proper rate of copper to help prevent fire blight bacteria from multiplying.
- Make sure you thoroughly cover all cracks and crevices of the bark and buds.

### More details about oil

- Oil is sold as a concentrate, so it must be mixed at the proper rate with water before application.
- There are plant-based oils and petroleum-based oils. For the dormant oil application, the petroleum-based oils work the best, although canola-based oil is another option.
  - *Petroleum-based oils* – There are many brands, and they all work the same. Examples include All Seasons Horticultural Oil, Monterey Horticultural Oil, Gordon's Dormant Oil Spray, Ortho Volk Spray Oil, Hi Yield Dormant Oil, etc.
  - *Plant-based oils* – One example is Natria Multi-Insect Control, and there are many others.

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## Dormant Copper Options

<b>Ingredient</b>	<b>Commercial Options</b>	<b>Residential Options</b>	<b>Comments</b>
basic copper sulfate	Cuprofix Ultra Disperss; Basic Copper Sulfate; C-O-C-S		Effective, but should only be used before leaf emergence or in the fall
copper oxide	Nordox		
copper hydroxide	Kocide; Champ; Badge SC; NuCop; Previsto		Previsto has a low copper concentration
copper diammonia diacetate complex		Monterey Liqui-Cop	
copper octanoate (soap)	Cueva	Gardens Alive Soap Shield; Bonide Liquid Copper Fungicide; Natural Guard Copper Spray; Espoma Copper Soap	Has lower metallic copper concentration; safer on plants; effective
copper sulfate pentahydrate	MasterCop; Phyton		Not as effective as a dormant application.

## Some Insects and Diseases Affected by the Dormant Spray

*Click on an image for caption information.*



Aphids overwinter as eggs near buds. Use oil alone or with an insecticide.



San Jose scale overwinters as a mix of nymphs and adults. Use oil alone or with an pyrethroid or pyriproxyfen (Esteem, for commercial use).



Peach twig borer overwinters as larvae in peach/nectarine tree crevices. Use oil alone or mix with an insecticide.



All the tiny specks on this bud are eriophyid mites. Blister mites, peach silver mites, and rust mites are all eriophyid mites. They overwinter in bud scales.





Brown mites overwinter as eggs in protected sites on trees (unlike spider mites, which overwinter on the ground).



Pear psylla eggs are laid near buds in early spring. If this was a problem last year, apply oil twice, spaced about 7 days apart.



For fire blight, apply copper to apple/pear between swollen bud and green tip stages. It is OK to mix with 2% oil for the insect treatment.



Peach leaf curl is only prevented by applying copper in spring, when green leaf tips emerge. Infections occur during cool, wet springs. The foliage becomes distorted, discolored, and swollen.

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## Pear Fruit Sawfly



Exit hole of pear fruit sawfly.

Pear fruit sawfly (*Hoplocampa brevis*) is a newer pest to Utah, affecting pear fruit. The adult is a small, fly-like wasp that is reddish-yellow in color. Females lay eggs inside flowers, and the hatched larva feeds exclusively within the developing pear for approximately six weeks from early to mid-spring. After this time, the insect goes into a dormant stage until the following spring.

Symptoms of pear fruits with affected by larval feeding within the fruit include:



• Pear fruit sawfly larva exiting a fruit.

deformed and swollen shape

- blemished skin
- round hole located near the calyx, accompanied by black decay and wet frass
- premature fruit drop

To distinguish pear fruit sawfly from codling moth, keep these factors in mind:

- symptoms of pear fruit sawfly will appear several weeks before codling moth
- sawfly frass is wetter and darker
- sawfly larvae are smaller, darker in color, and have 7 pairs of prolegs (as opposed to codling moth's 5)

To date, just a few Utah locations have been affected by this pest. The fruit injury will fluctuate from year to year. The insect population size and amount of damage depends upon the previous year's damage level, whether adult flight is synchronized with pear bloom, the level of fruit set, and overwintering conditions.

If the crop load is high, anecdotal evidence suggests that damage from pear sawfly will be "absorbed" by crop thinning, and therefore, intervention may not be necessary. If the crop load is light, the injury could cause a greater negative impact.

#### **Treatment**

- Utah pear growers have found success with a single treatment applied just before bloom.
- They reported that the use of horticultural oil (2% rate) mixed with a broad-spectrum insecticide (such as carbaryl, a pyrethroid, or diazinon) labeled for pear, have reduced losses.
- Do not spray too early, or the treatment will miss the arrival of the adults.