

## Early Season Tree Fruit Pest Control for 2022

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**Dormant Oil Sprays:** The first pest control applications in tree fruit usually consist of oil and copper sprays. These are long standing standard recommendations that are not without special considerations. Oil is generally recommended at rates of 2%, or 2 gals. per 100 gallons of water for dormant applications. Traditionally this has translated to 4 gallons of oil per acre for stone fruit based on a dilute volume of 200 gallons per acre: the amount generally considered to cover a mature peach tree to the point of drip. For pome fruit the recommendation has been 6 gallons of oil per acre based on a dilute volume of 300 gallons per acre: the amount generally considered to cover a mature semi dwarf apple to the point of drip. The use limitations and application rates vary by product and growth stage so be sure to read and adhere to the product label.

Oil acts by suffocating overwintering scale insects and mite eggs as they begin to respire in the spring. Coverage has always been challenging and is increasingly so in recent years as weather extremes have increasingly been the norm. Mite eggs and overwintering scale can be found on any part of the surface area of the canopy, and can multiply rapidly during the growing season. Since a single female [san jose scale](#) can produce up to 400 crawlers per generation it's important to try to get as close to 100% coverage of the scaffold and trunk surface area as possible. It's worth mentioning that opening up canopies with [proper pruning](#) can go a long way toward accomplishing that goal. The key takeaway is that since fruit tree architecture includes many cracks and crevices as well limbs and twigs that exponentially increase surface area, coverage to the point of drip is the most important consideration regardless of the products applied.

Dormant oil can be safely applied up to the [pink stages](#) of peach, apple and pear. Delayed dormant applications applied for mite suppression should provide good control of scale and suppress early season aphids. Multiple applications are often recommended in apple and may be beneficial where both scale and mites are a concern in peaches. Since conditions are seldom optimal for good coverage in the spring, multiple applications also help to get closer to the goal of 100% coverage. Where multiple applications are made the rate is generally dropped the closer an application is made to bloom. A application in apples for example might consist of a 2% application up to ½" green, and a 1% application up to tight cluster. An application of 0.5% at pink is an option that may provide additional insurance. Growers that have been having difficulty controlling scab may consider control programs that shift to materials like captan in pre-bloom or bloom sprays. This type of program would not be compatible with split oil applications since captan applied within 10-14 days of an oil application can injure fruit trees. Refer to the product label for crop specific safety precautions. In the event that oil is in short supply or not readily available, mite suppression might be achieved by making a single application of a reduced rate of oil in combination with Apollo, Onager, or Savey.

One sees many recommendations for mixing materials efficacious for scale such as insect growth regulators (Centaur; Esteem) with delayed dormant oil applications. The general consensus from data review seems to be that the addition of scale insecticides to oil do not significantly improve control over oil applied alone, however some of the newer products are compatible with oil and have efficacy on their own when applied at the delayed dormant stage of growth. Recent tests performed

by Dr. Neilsen's lab indicate that both Sivanto Prime and Centaur when applied alone in the pre-bloom period are comparable to dormant oil for scale control. Esteem has good efficacy for scale when applied up to to 1/2" green. Esteem, Closer, Sivanto Prime, and a new product: Versys, applied either alone or with oil at 1/4" to 1/2" green all have good to excellent ratings for rosy apple aphids. See the Cornell Tree Fruit Guidelines for more information.

On pears dormant petroleum oil applications are a standard practice for early season pear psylla control. Unlike applications made for scale control and mite suppression, oil acts less as an insecticide and more as a method of exclusion since pear psylla adults tend not to lay eggs on oily surfaces. Therefore, oil needs to be applied as early as weather and soil conditions permit. Usually the first applications are made in southern counties from mid to late March when oviposition begins.

These applications are useful throughout early bud stages and are generally long lasting; about 2 -3 weeks. In the dormant or delayed dormant stages apply a 2 % solution of oil (2 gals/100 or 6 gals/acre), or two applications of 1% through the green bud stage (when buds are swollen and green tissue is present). At this stage a pyrethroid is generally also recommended to knock down adult populations. Adjust rates downward for later stages: 1% (1 gal/100) from swollen bud through green bud, or 2 applications of 0.5% (0.5 gals/100) from green bud through white bud (flower parts are visible). During the delayed dormant stages, the addition of an insect growth regulator such as Centaur or Esteem may improve control. Sivanto Prime combined with oil in the delayed dormant timing is an also an option. Surround, a clay product, may also be applied with oil at a rate of 25-50#/acre in the delayed dormant stages. Surround applications without oil can be applied through bloom to disrupt the entire oviposition period and has shown to provide good control of the first generation nymphs. Surround alone is also useful in the delayed dormant period when temperatures are too cold to safely apply dormant oil.

**Dormant season copper Sprays:** Coppers are early season fungicides recommended for early season scab control and fire blight suppression in apples and pears. Coppers, Ziram, and Bravo (Chlorothalonil) are also used for [peach leaf curl control](#), and should be applied before or at bud swell. Many different copper formulations are available and it's often difficult to decide which one is best, and is also labeled for the crop and season of application. See the following detailed discussion's at [Michigan State](#), and [Penn State](#) about the different forms of copper and their use for disease control.

Care must be taken when applying copper to prevent unintended consequences. Copper phytotoxicity takes the form of leaf damage on stone fruit and leaf and fruit injury on pome fruit. We recommend season-long copper applications at very low rates in peach for bacterial spot suppression. But significant phytotoxicity can occur from tank mixes, especially when applied after a long period of overcast weather, and/or the [spray water ph is less than 6](#). It's recommended to have some ph strips and buffer on hand to test the finished spray mixture and adjust the ph to lessen acidity if necessary. On apples and pears, coppers should not be applied much past green tip unless fruit finish is not a concern. Copper ions present after half inch green can cause russet, especially on sensitive varieties. The risk of fruit injury is increased in years with little rainfall between bud break and pink, because more copper will be present when the fruit is fully exposed.

**Dormant season urea sprays:** One final early spring chore is to get a jump on apple scab in orchards that have high inoculum from the previous season. Here [orchard sanitation](#) using urea and/or by shredding leaves is of benefit. Last season's leaves carry the overwintering inoculum of

the fungus. Urea works in two ways to reduce this season's inoculum: it helps organisms in the ground cover decompose the leaves quickly; it also suppresses the development of spores so that they are not released. Chopping the leaf litter with a flail mower will accomplish the same end, and if combined with a fall or early spring urea application will greatly reduce overwintering inoculum. This is useful for getting the upper hand on primary scab control and for resistance management.

Urea is applied at rate of 40# per acre in 100 gallons of water per acre. This can be applied with an airblast sprayer with the nozzles directed at the ground cover. It is best done after leaf drop in fall but can still be applied in the spring before bud break or as late as green tip. Applications made after bud break should be done with a boom sprayer since urea drifting onto green tissue may make it more susceptible to phytotoxicity from copper or oil sprays.