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## DORMANT SPRAYING

*By Nanette Londeree, Marin Master Gardener*

It's that time of year – you've nearly finished pruning your deciduous trees and shrubs, cleaned up the garden and are ready to sit back, relax and wait for spring's bounty. One more thing you may want to do before you hang up your gloves for the next month is dormant spraying. You say you don't spray your garden? You may want to consider this type of spraying - one that doesn't require harmful pesticides, as part of your overall pest management program. In order to decide if this is right for you, it's beneficial to know what dormant spraying is, why you may want to do it, what types of products you would use, and how and when to spray. Like any pest and disease control system, there are pros and cons to evaluate so you can decide whether dormant spraying is right for your garden.

### WHAT IS IT AND WHY DO IT?

Dormant spraying is spraying a plant when it has neither leaves nor any active growth. It can be an effective preventative measure to control insects and diseases in the garden as part of an overall pest management system. Dormant sprays control a broad spectrum of soft-bodied insects such as aphids, immature whiteflies, immature scales, psyllids, immature true bugs, thrips, aphid and caterpillar eggs, mites, major fungal diseases - powdery mildew, rust, blackspot, fireblight, peach leaf curl, even downy mildew, utilizing relatively safe materials compared to synthetic pesticides. It is generally safe to use on fruit trees, roses or deciduous trees and shrubs. Don't use a dormant spray on any plant that has any leaves (even baby ones) or is actively growing – they may be damaged by the spray due to the reflection of the sun off the oil causing leaf burn, or from the impurities in the oils.

### WHAT DO YOU SPRAY WITH?

Dormant spraying combines horticultural oil with an elemental chemical, either sulfur or copper. Written records of the use of oils as pesticides date from as early as the first century A.D. when the Roman scholar Pliny the Elder wrote that mineral oil controlled certain plant pests, and also noted that the oils could damage plant tissues. In the late eighteenth century, petroleum oil and turpentine were in common use as insecticides, followed by whale oil, and in the mid-nineteenth century, a mixture of kerosene, soap and water.

Oil is considered a "contact insecticide" - only the insects present at the time of application will be killed by the spray. The horticultural oil kills all stages of insects by blocking their breathing apparatus and smothering them. It kills eggs by penetrating the shells and interfering with metabolic processes, or by preventing respiration through the shells. Insects that migrate to the treated plant will not be affected by oil residues. This is good news for beneficial insects such as ladybugs which generally overwinter as adults in clusters, in leaf litter or other sheltered areas.

Oils break down quickly and are more toxic to pests than to beneficial insects. Older types of horticultural oil, considered "heavy" petroleum oil, can be toxic to plants with leaves so should be used only on truly dormant plants. Summer oils, also referred to as superior or supreme oils, are lighter petroleum oils that contain fewer impurities and can be used throughout the year.

Sulfur is an effective fungicide; direct contact with sulfur prevents the development of many fungal disease causing organisms. It is a key component of healthy soil, so any residue can be beneficial if not in too high a concentration. As powdered sulfur is almost insoluble in water, it is easier to use a wettable powder - sulfur that has been finely ground with a wetting agent. Adding horticultural powdered lime to sulfur increases its effectiveness as a fungicide, and allows the sulfur to penetrate leaves and kill recently germinated disease spores. The lime should be fresh; don't use left-over material from last season.

Copper is a powerful, nonspecific fungicide and bacteriocide that stands up to the fall, winter, and spring rains and adhere to plants making it an excellent choice for a winter fungicide. When used in high concentrations, it can damage beneficial soil microorganisms and beneficial insects and is more toxic than sulfur to plants. It is available as a powder or liquid, and for dormant spraying, the most common form called a "Bordeaux" mixture. The formulation for this mixture is 10 pounds of copper sulfate, 10 pounds of lime, and 100 gallons of water. A one gallon mixture contains 3-1/3 tablespoons of copper sulfate and ten tablespoons of hydrated lime in one gallon of water. A Bordeaux product colors the sprayed plants blue and may discolor house paint. The color will disappear with time and exposure to rainy weather.

All of these products are readily available in concentrate and ready-to use formulations at nurseries and home improvement centers.

#### **HOW DO YOU SPRAY?**

Sprays can be applied with a pump sprayer or hose-end sprayer that is sized appropriately for the number of plants you need to spray. Make sure the sprayer is clean, in good working order and hasn't been used for any herbicides. When using any chemical, make sure to follow the manufacturer's directions. Mix only what you can use - you can't save the prepared solution for use later. The oil is suspended in water, and as oil and water don't mix, a third material such as surfactant or soap can be added to produce an emulsion. To ensure complete blending of this oil based mixture, shake it, don't stir it.

When spraying any garden pesticide, wear appropriate protective clothing – long pants, long sleeves, a hat, chemical-resistant gloves (not your kitchen rubber gloves), and anti-splash goggles. Wash hands and face after use, and launder your clothes. All fungicides except sulfur are poisonous and should be handled with care. Don't get sulfur or other fungicides in eyes or on skin as they are eye and skin irritants.

It is important to spray the entire dormant plant plus the soil around it. Totally saturate each and every branch, stem or cane. Insects and the tiny dust like spores of fungal diseases hide in the smallest crevices.

#### **WHEN DO YOU SPRAY?**

Select a mild, clear day in mid-winter (January – February) when there is little or no breeze. The ideal temperature for application is between 40 and 70° F, and temperatures should remain over 50° F for at least 24 hours in order to get the oil to spread out over the plant and cover all crooks and crevices. The temperature is more critical for your own comfort than the effectiveness of the spray. Don't spray if there is any chance of frost overnight.

If you are plagued by diseases or insects, you may choose to do dormant spraying twice about four weeks apart, being careful that the last spraying is still while the plants are dormant. Once you're done, it's time to hang up your gloves and wait for spring!