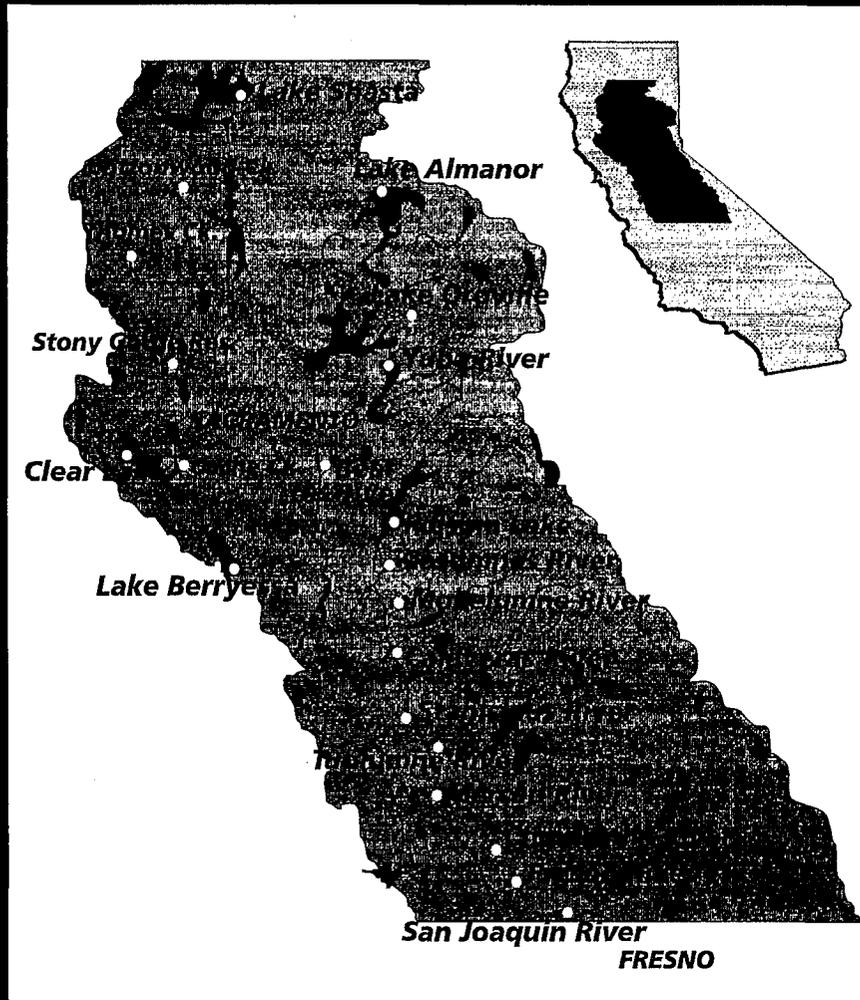


# BEST MANAGEMENT PRACTICES FOR PROTECTING WATER QUALITY IN CALIFORNIA



## DORMANT SPRAY MANAGEMENT PRACTICES

## BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are a significant part of an agricultural chemical management plan. BMPs include integrated pest management (IPM) practices, resistance management and pest management zones, which are designed to minimize the potential for adverse environmental impacts, while maximizing the beneficial effects of pesticide use. BMPs are economical and environmentally sound measures that, when followed, will aid in the protection of water resources and ensure the continued availability of crop production tools such as dormant sprays.

The goal of these dormant spray BMPs is to minimize off-site movement of these dormant spray materials. Off-site movement can be controlled by eliminating spray drift, orchard runoff and mixing/loading spills.

## THE VALUE OF DORMANT SPRAYS

As a general rule, many orchards receive a dormant spray each year to control peach twig borer, San Jose scale, aphids and mites that overwinter in orchards.

Dormant sprays provide the coverage necessary to control these pests before the trees' foliage develops and before major infestations occur. Dormant sprays are an important part of a good IPM program because they target pests at an ideal time for control, while preserving beneficials. Dormant sprays are applied when field activities are at a minimum, thus reducing the potential for worker exposure.

It has been recognized for many years that the best time to control peach twig borer and San Jose scale with an organophosphate and oil mixture is during dormancy. Beneficial arthropods are less affected during the dormant period. Aphids and mites can also be controlled during this time. Optimal control can be achieved at this time since the pests are immobile.

## PEST PROFILE

### Peach Twig Borer

Peach twig borer is a major pest in several tree crops. Overwintering larvae are sheltered in tiny cells (hibernacula), which they bore under the bark of limb crotches on one- to four-year-old wood. Pupae are dark brown with a cocoon and are found in tree crevices, between hull and shell, in curled leaves or in debris on the ground. There are four generations per year. Larvae damage both growing shoots and nuts, causing shallow channels and surface grooves on the nutmeat. In young trees, shoot damage complicates tree training for optimal shape. Control of peach twig borers will also help reduce in-season populations of navel orangeworm.

### San Jose Scale

Scales suck plant juices from twigs and limbs. They also inject a toxin that results in a loss of tree vigor, growth and productivity and eventual death of the limbs. A red halo is produced around a feeding site on one-year-old wood. Untreated infestations can kill fruit and scaffold wood within one to three years. After locating a feeding site, the crawler settles, begins feeding and becomes immobile. The males molt four times, whereas females molt only twice. The male emerges as a winged adult while the female remains wingless under the scale covering. There are three to four generations per season, taking about seven to eight weeks per generation.

# **GENERAL CROP PROTECTION BEST MANAGEMENT PRACTICES**

## *Know Your Fields and Farm*

1. Conduct your own farm site evaluation. Use this information to develop your BMPs and plan.
2. Maintain field records:
  - a. Monitor orchards during dormant season by inspecting prunings, fruit wood, tree crevices and loose bark on older trees for the presence of scale and peach twig borers.
  - b. Select insecticides, application rates and timing based on orchard history, insect pressure and tree size. Also consider types and populations of insects present or anticipated.
3. Use the most appropriate tillage and cultural practices for your crop and field characteristics.
4. Identify sensitive runoff areas near streams, canals, etc. and use BMPs to minimize potential contamination.
5. If you participate in a soil conservation or water quality program, follow prescribed recommendations.

## *Mixing and Loading*

1. Ideally, mix and load agricultural chemicals and rinse equipment on an impervious surface (containment pad).
2. Mix and load pesticides and rinse equipment in the field if you don't have a containment pad. Vary the location. Stay 50 feet away from any wells (including drainage wells and abandoned wells), streams, canals, irrigation ditches or sinkholes during mixing and loading operations. Follow any additional state requirements.
3. Do not mix or load agricultural chemicals within 200 feet of public drinking water supply wells unless you're using a containment pad. Follow any additional state requirements.
4. Clean up chemical spills (even small spills) immediately. Do not let the material soak into the ground. Have spill material (cat litter, sawdust, etc.) available when mixing and loading.
5. While filling your spray tank, make sure there's a fixed air gap (air break) between the water source and the tank, or an anti-backflow device on the fill hose. During filling operations, do not allow the water to be back-siphoned. Keep the end of the fill hose above the surface of the water/chemical solution in the tank at all times.

## *Containers and Equipment Cleansing*

1. Always start with a clean, calibrated sprayer that can provide appropriate agitation.
2. Be sure you properly dispose of rinsate. Clean containers and equipment at the application site if you do not have a containment pad. Put the rinsate in your spray tank and apply evenly over a field, or dispose of as the label specifies. Pay particular attention when cleaning the equipment. Check the pesticide label for any special instructions.
3. Rinse reusable containers immediately. Delay may result in residue drying and may become much more difficult to remove.
4. Pressure or triple rinse disposable containers immediately after emptying. Add the rinsate to your spray tank. Puncture the containers before disposing of them.
5. Participate in container recycling programs for empty disposable containers when offered in your area.
6. Properly dispose of rinsed pesticide containers that cannot be refilled or recycled. Do not burn pesticide containers.

## PROTECTING WATER QUALITY

The registrants, the Department of Pesticide Regulation, in cooperation with the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board, are working together to develop practices that protect water quality and the beneficial uses of water, while recognizing the need for pest control.

Recent surface water monitoring studies in the Sacramento and San Joaquin River watersheds have detected dormant spray residues. The pesticides diazinon, chlorpyrifos and methidathion have been found in surface water in concentrations that are believed to be high enough to cause acute toxicity to some aquatic organisms. During peak use season of these pesticides (January–February), concentrations in river systems have been found to be toxic to *Ceriodaphnia*, the invertebrate component of the U.S. Environmental Protection Agency's three-species bioassay test. Your help in following these voluntary BMPs will help ensure these valuable tools remain available for California's growers.

## VOLUNTARY BMPs

### Cultural Practices

- Provide a 20-foot minimum strip of vegetation along rivers, creeks and streams or on the downhill side of orchards where runoff could occur. (Consider cultivation if applicable.)
- Prepare land around orchards to contain runoff, proper leveling, etc. Contain as much water "on-site" as possible.
- Plant legumes or other cover crops for several rows adjacent to off-target water sites.

### Sprayer Technology

- Use dry locks on spray equipment.
- Attend UC Specialists/Industry sprayer calibration workshops and apply proper water volumes.
- Minimize drift to waterways by increasing droplet size, using drift retardants and avoiding applications in high winds.
- Turn the sprayer off at the end of each row.
- Check for proper maintenance of sprayer to avoid leaks and possible broken hoses.

### Mixing and Loading

- Avoid mixing loads on orchard roads since material may be lost due to splashing or spilling.
- Mix pesticides in areas not prone to runoff such as concrete mixing/loading pads, disked soil in a flat area, or graveled mix pads.

### Stewardship

- Do not let pesticides drift onto waterways or rivers.
- Mix/load away from point source areas and waterways.
- Do not apply dormant spray within 24 hours prior to a forecasted rain.
- Consult University of California Pest Management guidelines for additional information on IPM.

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Important: Always read and follow label instructions before buying or using any pesticide.

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