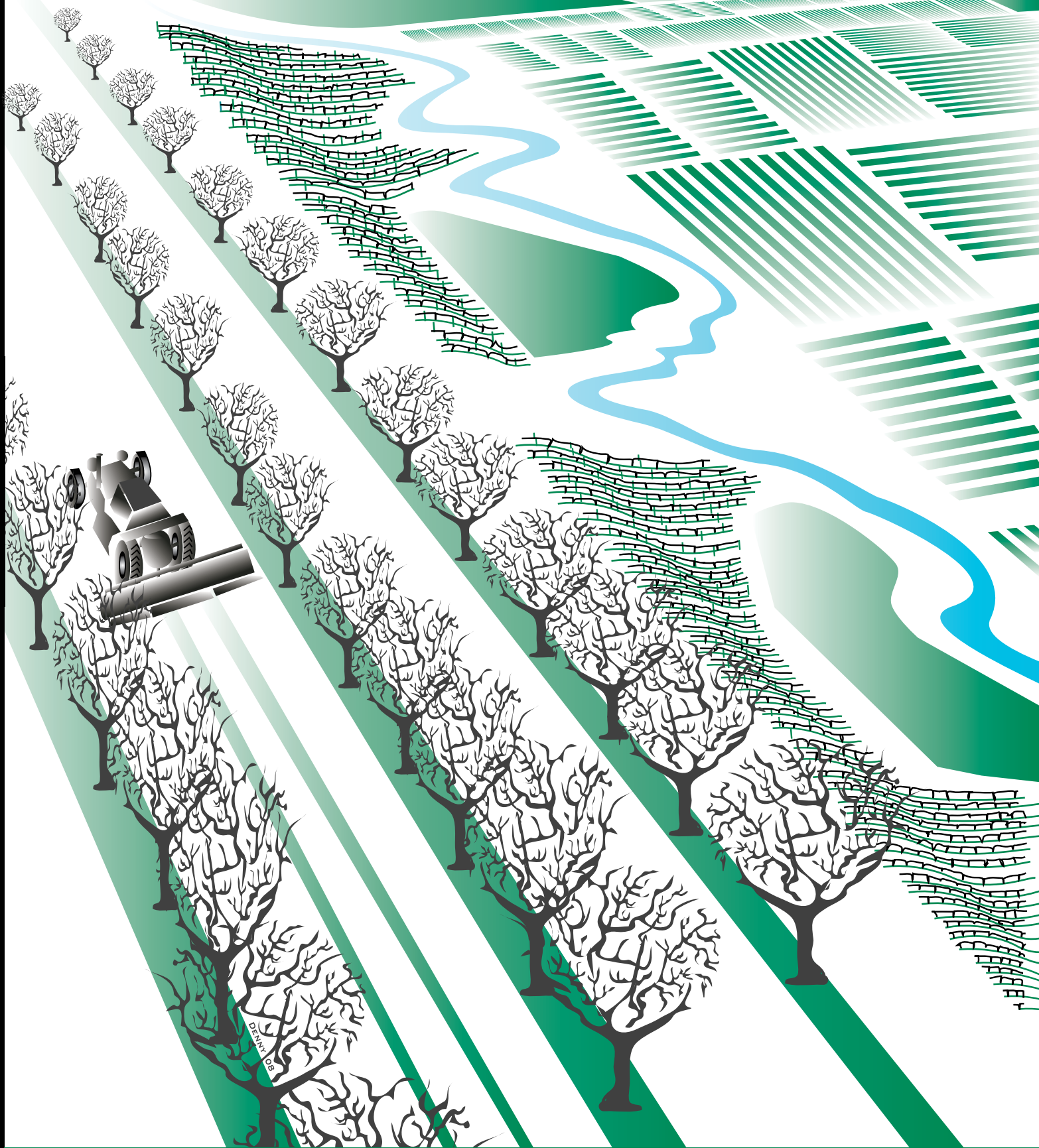


SIMAZINE/PRINCEP®



Management Practices for Protecting Surface Water Quality

SIMAZINE/PRINCEP®

Water Quality Stewardship

Watershed and water quality management continue to be priorities throughout the United States. Agriculture's role in developing and implementing stewardship practices that minimize runoff of sediment, nutrients and pesticides is an important component of effective watershed management programs. This guide provides useful, common sense techniques called Best Management Practices (BMPs) to help you enhance the effectiveness of your efforts to protect water quality.

Preemergence herbicides are important tools for the efficient production of fruit, nuts and grapes in California. Preemergent herbicides such as simazine (Princep), are usually surface-applied to orchards and vineyards and commonly incorporated into the soil matrix by irrigation or natural rainfall for activation. Whenever applications of simazine or other pesticides are made near waterways or other vulnerable areas, applicators should be aware of the potential for spray drift or runoff. Therefore, measures should be employed to minimize its offsite movement to areas where control is not intended.

Each individual who handles or uses any pesticides has the responsibility to take the appropriate precautions. Adhering to proper stewardship practices is good for the entire agricultural community and the environment.

Three Good Reasons to Use BMPs

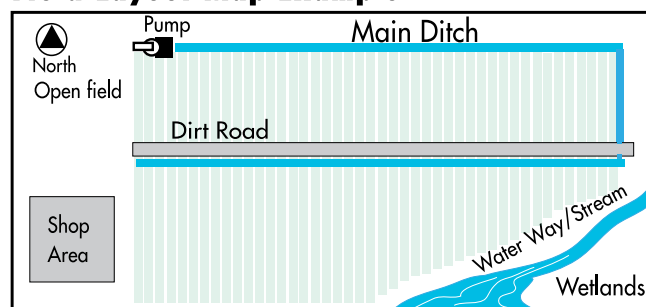
- It's the responsible thing to do.
- BMPs are both environmentally and economically beneficial.
- Voluntary water protection practices could lessen the need for mandatory government programs in the future.

General Best Management Practices

Field Evaluation

Review your orchards and vineyards for physical characteristics that can influence movement of pesticides and fertilizers. Pay particular attention to locations of surface water features (lakes, streams, etc.), shallow groundwater, sinkholes, abandoned wells, soil type and the relationship of field locations to residential areas and water supplies. Conduct your own field evaluation following the Site Evaluation Checklist (see back page) and use the information to develop a BMP plan that will work best for you.

Field Layout Map Example



Factors You Should Consider

Applicators must be aware of and comply with any county permit conditions and restrictions on simazine. Make sure the applicator always has any required county permit(s) and a Material Safety Data Sheet (MSDS) on hand during applications. Be aware that application conditions and restrictions can be periodically modified. Check with your County Agricultural Commissioner for details on updates or new regulations.

For more information on California restrictions and recommendations visit: <http://www.cdpr.ca.gov/docs/emon/ehap.htm>

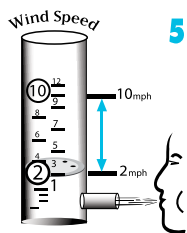
To further reduce the risk of herbicides moving offsite to waterways, you should always follow the product label concerning:

- **Product Rates**
- **Application Timing**
- **Product Placement and Setbacks**
- **Chemical and Soil Properties**
- **Irrigation Management Strategies**
- **Mixing and Loading Practices**
- **Container Handling**
- **Equipment Cleaning and Maintenance**

Application Considerations for Simazine

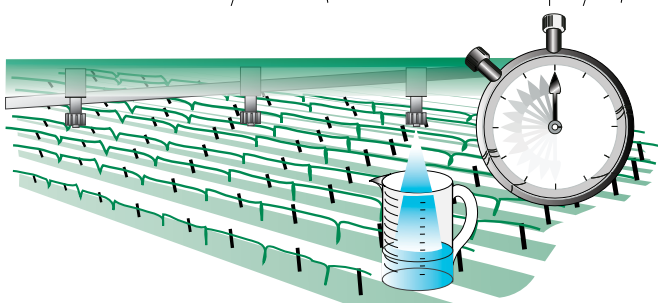
- 1** Do not apply within 66 feet of points where surface water enters an intermittent or perennial stream and river. Do not apply within 200 feet of the edge of a lake or reservoir.
- 2** When applied to highly erodible land, maintain a 66-foot buffer of vegetative cover from any point where runoff enters a waterway.
- 3** Do not apply prior to rain events when the forecast calls for significant precipitation in the treatment area. Check weather forecast services or website forecasts such as www.fieldwise.com & www.foxweather.com. Plan for an interval of 48 hours or more between applications and forecasted rainfall.

- 4 For late fall applications when using irrigation for incorporation, apply only enough irrigation to incorporate the product to a 1-2 inch depth, and never irrigate to runoff conditions.



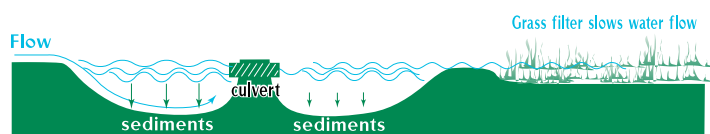
- 5 Avoid spraying when winds exceed 10 mph, or the air is completely calm. Start spraying only when nozzles are adjacent to the first vines or trees. Maintain a nozzle pressure range recommended by the manufacturer (typically 40 psi) to avoid non-uniform droplets.

- 6 To optimize application efficiency, a sprayer should be calibrated regularly. Check nozzles regularly and replace at least annually.
- 7 Always shut off nozzles at row ends.
- 8 Use the lowest boom height that provides uniform coverage.
- 9 Precision Applications: Use appropriate nozzles and drift reducing agents for your situation. Use nozzles that provide adequate coverage with the largest possible droplet size and the recommended droplet size spectrum to reduce drift while maintaining coverage. Target the spray swath at the base of orchard or vineyard row (shielded low volume sprayers).



Irrigation Management Strategies

- 1 Do not allow irrigation drainage water to leave a treated site shortly after an application of simazine.
- 2 Fix leaky irrigation systems and drainage problems which may contribute to irrigation runoff into waterways.
- 3 In flood irrigated orchards, use return systems that re-circulate runoff water or a storage and reuse system.
- 4 Precision irrigation can reduce the amount of drainage water leaving a field. Examples of these irrigation practices include:
 - Monitor soil moisture levels and schedule irrigations according to crop requirements rather than the calendar.
 - Use microsprinklers or drip irrigation to reduce the amount of tailwater runoff.



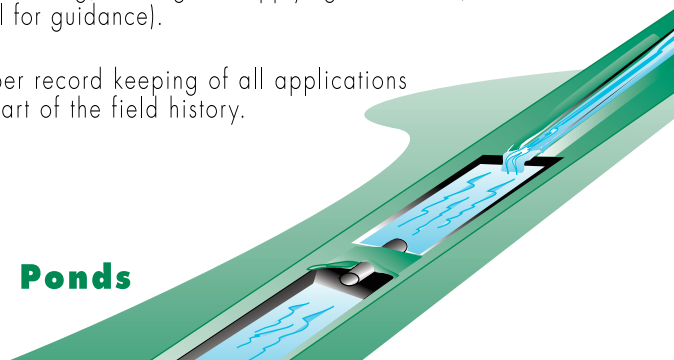
Field Site Practices to Reduce Runoff

- 1 Sediment control basins can be built to: trap sediment and pesticides adsorbed to soil particles; reduce and manage onsite and downstream runoff; and divert the flow of dissolved nutrients and pesticides. Sediment basins also improve the ability to farm sloping land, reducing gully erosion as well as improving downstream water quality.
- 2 Cover crops planted in the vineyard or orchard row can help prevent runoff and sediment transport during high rainfall. Growing cover crops or adding soil amendments can aid in improving soil permeability and reduce runoff. If a site is prone to runoff, design a drainage system to minimize offsite movement of silt, pesticides and fertilizers.
- 3 Vegetative filter strips placed between fields and water bodies provide localized erosion/runoff protection (i.e. grassed roadways or areas of vegetation). Depending upon the site, a full border around a field may not be necessary for mitigating impacts to surface water. Filter strips could be planted at field ends or along other sensitive zones.

Application Stewardship

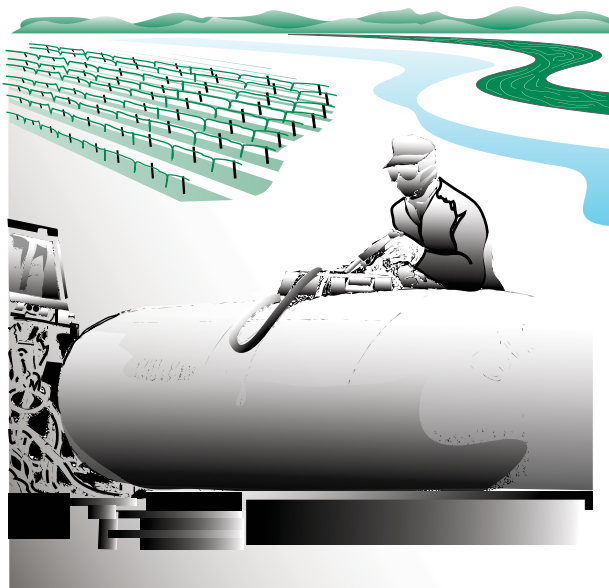
- 1 Evaluate each field to identify areas where sediment or surface water runoff might move offsite to waterways or other vulnerable areas.
- 2 Develop a field layout map and note the location of wells, sinkholes, highly erodible land, drainage ditches, streams and rivers.
- 3 Provide the field layout map to all sprayer operators or commercial applicators.
- 4 Document application date/timing and keep a historical record on hand.
- 5 Be a responsible operator. The individual responsible for the application must be aware of:
 - Wind condition (speed and direction) and whether rainfall is forecasted or an irrigation will occur within the next 48 hours.
 - Presence/absence of waterways and vulnerable sites in the area, especially downwind of the application site or connected to the site by drainage ditches, canals or sloughs.
 - The application equipment set up and calibration; proper use of any drift-reducing application equipment such as hooded sprayers.
 - Always wear the required personal protective equipment when mixing, loading and applying chemicals (check the label for guidance).
 - Proper record keeping of all applications as part of the field history.

Holding Ponds



Follow Proper Mixing and Loading Practices

- 1** Do not mix or load within 50 feet of any stream, river, or edge of a lake or reservoir.
- 2** Do not leave a sprayer unattended while filling.
- 3** Fill tank (1/4 full of water) prior to the addition of chemicals.
- 4** Do not overfill the tank: spills can wash away to vulnerable sites. Use an air gap to prevent tank overfilling.
- 5** Use a backflow valve on the fill tube.
- 6** Open paper chemical packages with scissors or a knife, rather than tearing.
- 7** Immediately triple rinse containers. Pour rinseate back into the tank prior to filling.
- 8** Apply rinse water back to the treated field. Never just drain out.
- 9** Never leave pesticides in a spray rig overnight.
- 10** Check with the county for proper disposal methods for empty plastic containers.



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Coalition for Urban/Rural Environmental Stewardship
www.curesworks.org

Site Evaluation Checklist

Before Spraying...

- ☐ Evaluate each field to pinpoint areas that are erodible where sediment might move offsite to waterways.
- ☐ Identify points where surface water runs off into waterways or other vulnerable areas. Get help with identifying these sites through local Natural Resource Conservation Service (NRCS) offices.
- ☐ Develop a field layout map and note the location of wells, sinkholes, highly erodible land, drainage ditches, streams and rivers.
- ☐ Flag or stake no treatment buffer zones.
- ☐ Provide the field layout map to all sprayer operators, commercial applicators, Pest Control Advisors or anyone involved with pest management decisions.

Additional reference information for California growers is available at:

<http://www.cdpr.ca.gov/docs/emon/ehap.htm>

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