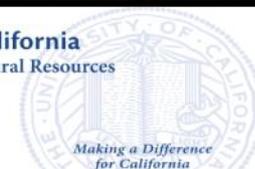


BMPs and Compliance with Ag Waiver Programs



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Nursery Runoff May Contain Pesticides

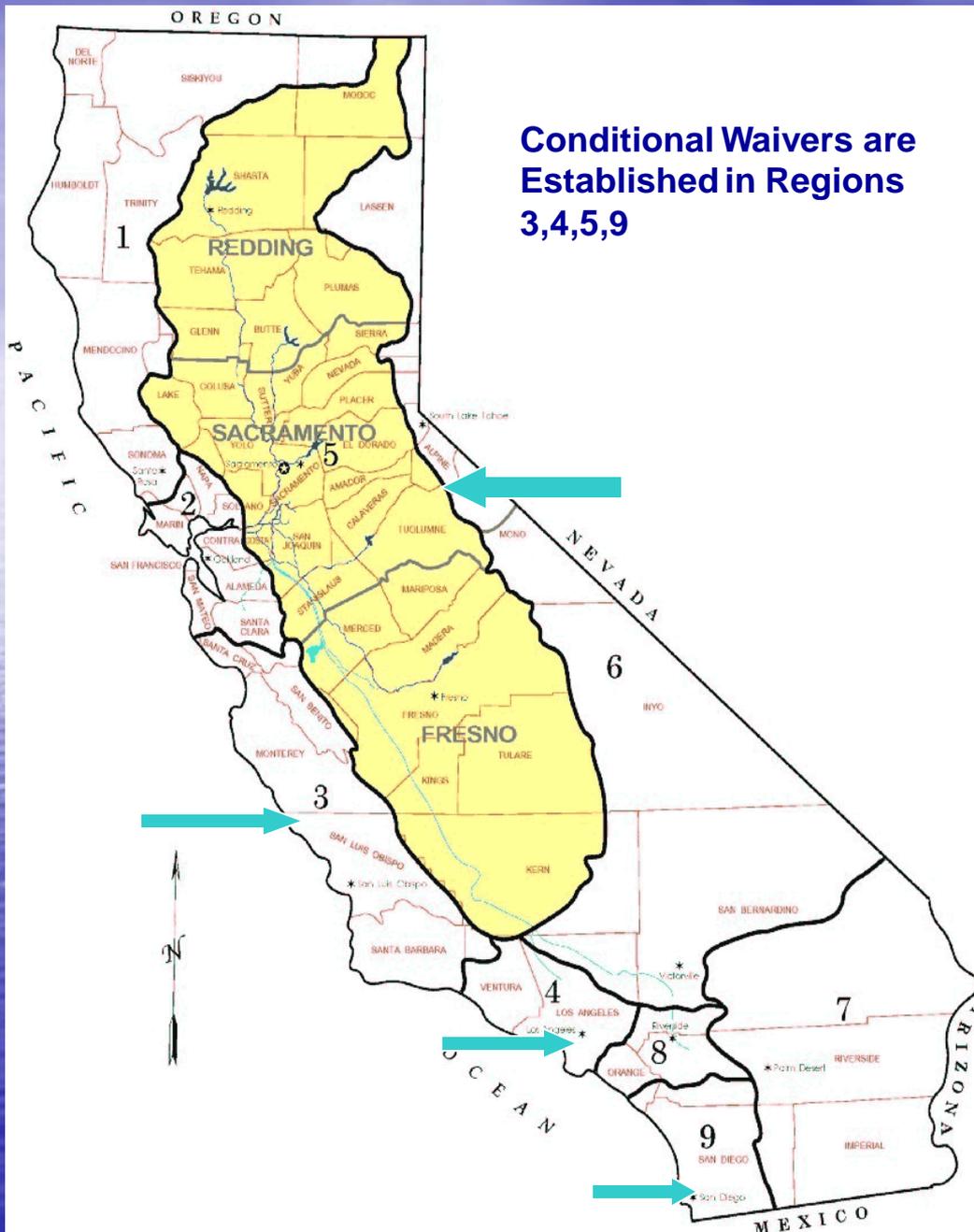


- Pesticide residues can be washed off of treated plants or leached by irrigation or precipitation.
- Inefficient irrigation or storm events can produce runoff water that picks up soluble pesticides and soil particles with adsorbed pesticides.

Agricultural Runoff Contributes to Degradation of Water Quality



- Storm and irrigation runoff that contains pesticides from agricultural operations – including nurseries – contributes to degradation of surface water.
- Soluble pesticides may also be leached and pollute groundwater.



Conditional Waivers are Established in Regions 3,4,5,9

Conditional Waivers

- To protect water quality from agricultural discharges, four water board regions have adopted conditional waivers of waste discharge requirements for irrigated lands.

Conditional Waivers

- The conditional waiver requires the owners of irrigated farmland to control both irrigation and stormwater discharges from their property.
- Growers are required to adopt Best Management Practices (BMPs) to prevent pollutants in discharges from entering water bodies.
- Documentation of implemented BMPs are required in Region 3 and 4.

Conditional Waiver

- Groups, watersheds, or individuals must monitor water where agricultural lands drain to assess the impacts of discharges from irrigated lands.



Water Quality Monitoring Results



- Ag monitoring results continuously show presence of pesticides and other ag pollutants that exceed ag waiver and TMDL benchmarks

Ag Waiver and TMDL Pesticide/Toxicity Monitoring

- Some of the pesticide treatments that are mandated in quarantine protocols for pests are known to impair water quality and some have been detected in ag monitoring programs



For example, light brown apple moth (e.g., chlorpyrifos, dimethoate, imidan, deltamethrin, lambda-cyhalothrin,)



Asian citrus psyllid (e.g., cyfluthrin, fenpropathrin, chlorpyrifos)

Monitoring by state regulatory agencies in California has documented the persistence of pesticides used in quarantine protocols in surface water



- Surface water monitoring conducted by California DPR in Orange County in 2002 found bifenthrin and other pesticides that are toxic to aquatics
- Some of these pesticides were used for quarantine treatment of fire ants in nurseries

Ag Waiver and TMDL Pesticide/Toxicity Monitoring



- It is critical that growers implement BMPs to prevent pesticides (including those used in quarantine protocols) from moving off production sites in irrigation and storm runoff

UC Cooperative Extension Ventura and Santa Barbara Counties

REGIONAL REPORT - Mitigating Pesticide Runoff While Managing Invasive Pests

by Julie Newman

In the past decade, invasive pests such as light brown apple moth (LBAM), Asian citrus psyllid (ACP) and glassy-winged sharpshooter (GWSS) have caused considerable economic hardship for certain flower and nursery growers in Ventura and Santa Barbara counties due to restrictions on the movement of potentially infested nursery plants. Moreover, some of the pesticide treatments that are mandated in quarantine protocols are known to impair water quality and have been detected in ag waiver and TMDL monitoring programs. The continued degradation of surface waters and documented exceedance of pesticide and toxicity benchmarks set by the Central Coast and Los Angeles regional water boards have led to increasing regulations. Meanwhile, there is a threat of new invasive species from neighboring counties (e.g., red palm weevil, red imported fire ant) that could potentially lead to more mandated pesticide treatments in the future. It is therefore critical that flower and nursery growers in Ventura and Santa Barbara counties implement BMPs to prevent pesticides, including those required in quarantine protocols, from moving off production sites in irrigation and storm runoff.

● Available from
ANR Catalog
<http://anrcatalog.ucdavis.edu/Items/3508.aspx>

Greenhouse
and Nursery
Management
Practices
To Protect
Water Quality

TECHNICAL EDITOR
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Reduce Pesticide Loads

- Regular scouting program
- Good sanitation
- Nonchemical Control
- Crop Rotation
- Pesticide Selection
- Use of Adjuvents
- Spot-spray Applications



Monitoring



- Monitoring (scouting) for early detection of pests is a key component of IPM programs



Scouting



- Scouting includes regular and timely inspection of incoming and outgoing shipments, propagation areas, the crop, and noncrop areas.

Scouting is Especially Critical When There is a Risk of Invasive Pest Establishment



- Some quarantine compliance agreements for pests such as LBAM require monitoring and written documentation of in-house inspections.

Upcoming UCNFA meeting focusing on scouting:

ABCs of Nursery/Greenhouse Pests (English and Spanish)

June 13, 2013

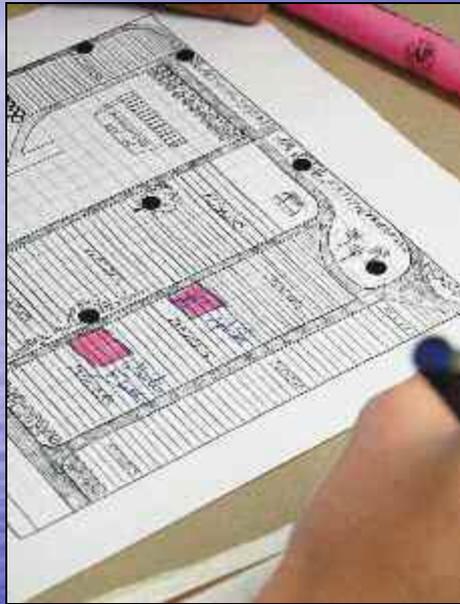
UC Cooperative Extension,
Ventura

Nonchemical Control

- Nonchemical control strategies limit pesticide use and slow the development of pesticide resistance.
- Two examples of nonchemical control strategies are screening greenhouses to exclude pests and the use of biological control.



Spot Spraying Reduces Pesticide Loads



- Areas where pests are found are flagged and located on a map.
- Only infested plants are spot-sprayed.
- However, spot spraying may not be an option in quarantine protocols.

Many good sanitation practices can be implemented to reduce overall pesticide use.



- For example, steaming media before use reduces fungicide applications for soil-borne diseases such as root rots.



- Eliminating weeds is important because many pests and plant disease vectors proliferate on them.

Using pesticides efficiently results in reduced pesticide loads and improved water quality

- Selecting pesticides that are effective in controlling the target pest
- Using adjuvants to enhance the efficacy of pesticides
- Using label rates and not exceeding them
- Rotating pesticides from different modes of action to avoid pesticide resistance



Reduce Pesticide Movement in Water



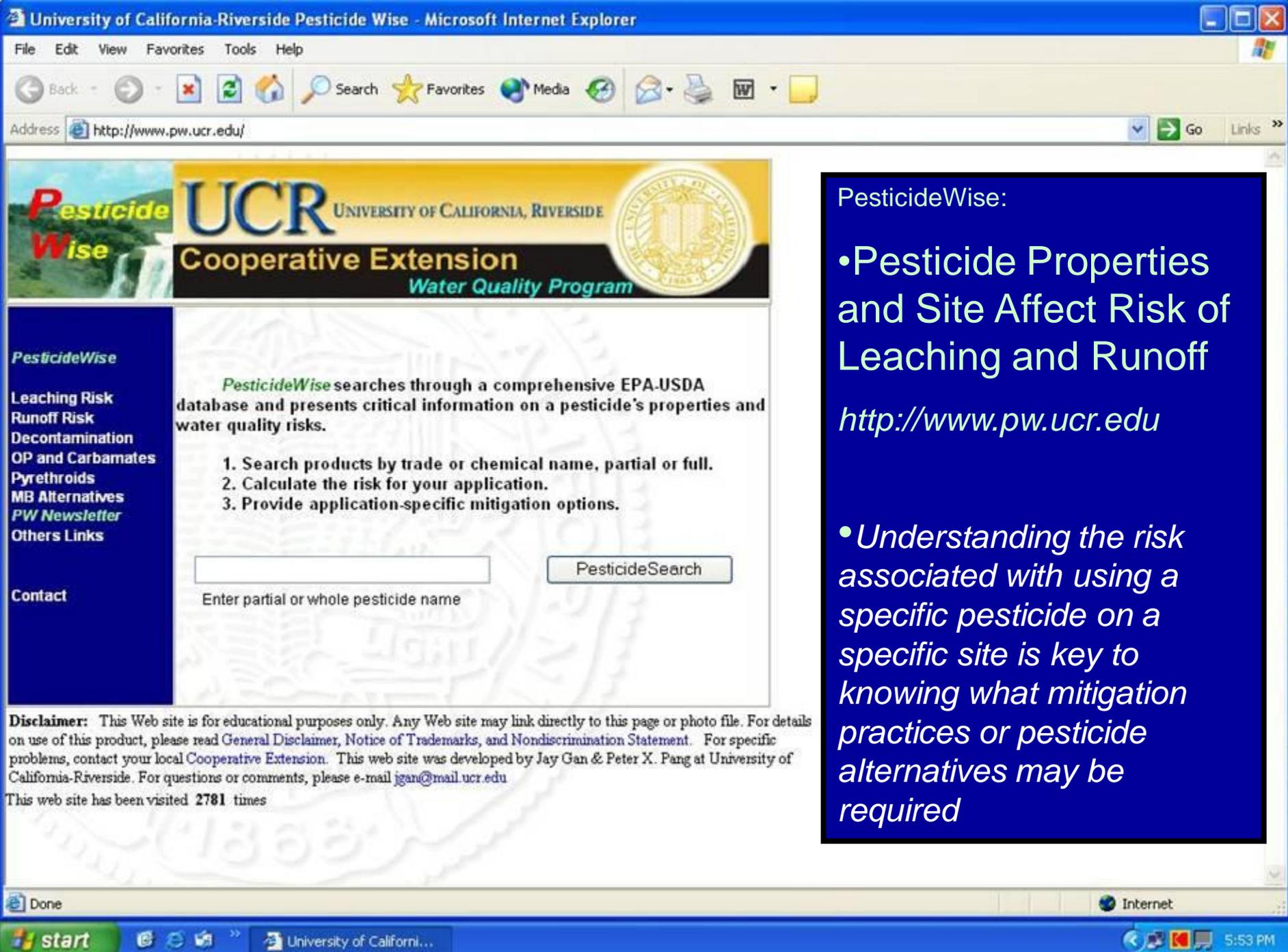
- Know site conditions where pesticides are applied
- When possible select pesticides with reduced runoff and leaching risk
- Design irrigation systems to ensure uniform irrigation distribution
- Regular irrigation system maintenance
- Irrigate based on environmental and plant water requirements, targeted to plant areas
- Calibrate sprayers
- Only mix up pesticide amount needed
- Clean up spills and leaks
- Properly dispose of pesticides

Know Site Conditions Where Pesticides are Applied that Affect Risk



- Are there water bodies located on or near the nursery?
- Are there erodible areas (e.g., hillsides, slopes) where pesticides may be required?
- Are there large, impervious surfaces where runoff can occur?
- Is there a shallow water table close to the soil surface that could be polluted by soluble, leached pesticides?
- Is the soil low in clay and organic matter so that leached pesticides can't easily bind to soil particles?

**When possible select
pesticides with reduced
runoff and leaching risk**



PesticideWise:

- Pesticide Properties and Site Affect Risk of Leaching and Runoff
<http://www.pw.ucr.edu>
- *Understanding the risk associated with using a specific pesticide on a specific site is key to knowing what mitigation practices or pesticide alternatives may be required*

Consider Site Conditions that Affect Risk of Runoff and Leaching

- Site-specific risks and applicable mitigation practices can be found for specific pesticides at the Pesticide Wise website by entering the site conditions of your nursery where pesticides are being applied.
- UC IPM Pest Management Guidelines also provides runoff and leaching risk information:
<http://www.ipm.ucdavis.edu/>



In the Dry Season, Irrigation is the Single Most Important Force Driving Pesticide Runoff



- Do not apply pesticides before irrigating, unless label instructions specify otherwise.
- Irrigation systems should be designed and maintained to ensure uniform irrigation distribution.
- Irrigation should be based on environmental conditions and plant water requirements, applying the required amount of water only to plants, and not to walkways or roads.

Pesticide Application Equipment



- Pesticide application equipment should be calibrated and nozzles regularly maintained to ensure the best pesticide coverage and accurate rates.

- Accurately measure pesticides to assure that you are within the label rate and to eliminate disposal problems associated with excess spray mix.



Avoid Spills and Leaks



- Avoid leaks or spills during pesticide transportation, application, and storage.
- Spills should be cleaned immediately based on the MSDS.

Pesticide Disposal



- Refer to pesticide labels for proper pesticide disposal methods for each pesticide used.

Reduce Pesticide Movement on Soil and Potting Mix

- Some pesticides bind tightly to particles of organic matter and clay in the soil and to potting mix
- These pesticides move on these particles by erosion and with runoff water.

Mitigate the Risk of Pesticides that Move on Soil Particles



- Clean up potting mix spills



- Protect slopes and roads from erosion



- Use concrete curbs or sandbags to isolate areas where potting mix containing incorporated pesticides is not washed away in runoff

Treat and Capture Runoff and Sediment



- Use of recycling systems



- Use of detention basins



- Use of biofilters

Questions?

