

How the New Ag Waiver Regulations Affect the Cultural Practices of Perennial Crops

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The Southern San Luis Obispo and Santa Barbara County Agricultural Watershed Coalition was formed in 2003 in response to an increasing emphasis on agricultural improvements to water quality. The Coalition is formed by a Memorandum of Understanding between five grower associations: The Central Coast Wine Growers Association, Santa Barbara County Farm Bureau, Santa Barbara County Cattlemen's Association, Flower and Nursery Growers Association of Santa Barbara County and the Grower-Shipper Vegetable Association of San Luis Obispo and Santa Barbara Counties. It is partially funded through an environmental settlement fund that was paid to the Region 3 Regional Water Quality Control Board and administered by the National Fish and Wildlife Association.

The Coalition's purpose is to assist landowners in Southern San Luis Obispo County and Santa Barbara County to: comply with the Conditional Ag Waiver for irrigated agriculture, attend water quality short courses, develop individual management plans, and implement and monitor progress of the plans.

Conditional Ag Waivers for Irrigated Lands are a relatively novel regulatory approach adopted by the California State Water Resource Control Board. The Conditional Waivers waive the requirement that growers obtain a Waste Discharge Requirement which is, in essence, a permit to discharge wastewater. The Intent of the Waivers is to ensure that discharges do not cause or contribute to water quality impairment.

The State Water Resource Control Board has nine Regional Water Quality Control Boards. Each of these has been authorized to implement the Conditional Ag Waivers for Irrigated Lands as best fits their unique region as long as certain conditions are met. Regions 3, 4, and 5 have adopted Conditional Ag Waivers. Other Regions have substituted other programs for the Conditional Waiver.

Region 5, the Central Valley Region, includes the Sacramento and San Joaquin Valleys. It is composed of more than seven million acres of irrigated cropland and an estimated 25,000+ individual growers and operations. Region 5 was the first RWQCB region to adopt a three-year Conditional Ag Waiver that is currently being renegotiated. Growers may participate as individuals or join various watershed-based Coalitions to address the discharges of wastewater and stormwater from irrigated lands. These Coalitions conduct ambient monitoring as per RWQCB approved phased Monitoring and Reporting Programs. Furthermore, these Coalitions have the potential for identifying and correcting water quality impairments by working with their members to implement relevant Management Practices.

Region 3 adopted the Conditional Ag Waiver in July 2004 for eight counties on the Central Coast. There are about 450,000 irrigated cropland acres and 2500 growers in the Region. The hydrogeology of the Central Coast is very different from the Central Valley and this difference is reflected in the Waiver. Landowners and growers must enroll with the RWQCB, take

Continuing Education water quality classes, write a Farm Water Quality Plan, implement Management Practices and participate in either an eight-county Cooperative Monitoring Program or individually monitoring their discharges. Watershed based Coalitions serve an education and outreach function, but not monitoring function under this Waiver. Very few growers have elected to monitor as individuals: most have selected the Cooperative Monitoring Program.

Region 4, the Ventura/LA County Region, very recently adopted a Waiver in November, 2005. It is a hybrid of the two previously adopted Waivers. Again, growers may participate as individuals or join a Discharger Group.

When one compares the Conditional Waivers one sees many similarities and many differences. For example, Reporting, Planning, Enrollment, Continuing Education, and Monitoring Programs vary dramatically. For example, the Region 3 Waiver addresses groundwater while the other Waivers do not. Region 4 has provided an incentive for proactive growers by reducing monitoring frequency in watersheds that have no detections.

All three Regions require toxicity testing using three aquatic species. The Toxicity Tests are bioassays that provide a more holistic view of water quality when considered together. The species are: *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum*. Percent survival (or conversely, percent mortality), growth and reproductive inhibition indicate potential water quality impairments. Significant mortality of *C. dubia*, a water flea, may possibly indicate the potential for the presence of organophosphates and *P. Promelas*, a fat-head minnow, may indicate the presence of pyrethroids, respectively. Statistically significant, dose-dependent inhibition in the growth of *S. capricornutum* indicates the possibility of the presence of herbicides.

It is important to note that data can be misleading and results should be questioned. Data can be influenced by sampling errors, episodic situations such as an herbicide application errors, Acts of Nature such as 200 year floods, and laboratory errors such as false positives. Other constituents may cloud results. Finally, other sources may be contributing to constituent load.

This information about the Waivers is pertinent because Regional interpretation and reaction to data dictate how quickly growers must respond to data, what types of responses will be required and whether those responses will be mandatory or voluntary. For example, both Region 4 and 5 utilize a trigger approach to additional monitoring and implementation of management practices whereas Region 3 has a weight of evidence approach that prioritizes the watersheds where follow-up monitoring will occur.

Region 5 has been collecting monitoring data over the past three years. There are situations in which various pesticides have been isolated. Typically, herbicide detection are not as frequent as other pesticide detections. In Stanislaus County, for example, there is one incidence of Trifluralin and Simazine detections. Where analyses indicate pesticide presence, growers must adjust existing or implement new Management Practices to mitigate impacts to water quality impacts. Management Practices enfold a wide variety of practices from highly sophisticated engineered water conveyance and storage projects to very simple and subtle adjustments to fertility, pesticide, irrigation or sediment management practices. Nevertheless, where mitigation efforts fail, regulators will step in.

For example, in Stanislaus County, where herbicides have been detected, the Ag Commissioner is examining the DPR database for crop use and herbicide use patterns in impacted watersheds. Next, he is working with the Watershed Coalitions to determine the best mitigation measures. If implementation of Management Practices does not mitigate the problem, then, the Ag Commissioner may be required to further restrict the use of the herbicides. Non-restricted herbicides may become restricted use materials which will require a Notice of Intent and County approval for use. Restricted Use Materials may be restricted completely from use in the County or in a watershed or localized basis.

Region 4 has initiated its Conditional Waiver Monitoring Program; therefore, data have not been collected to date. Impacts are conjecture at this time.

During the Region 3, 2005 Phase I Cooperative Monitoring Program, *no S. capricornutum* Toxicity Testing “hits” occurred. This could be a result of the crop mix of cool-season vegetables, strawberries, avocados and grapes that are found along the coast and/or the herbicides selected for those particular crops.

For perennial crops, herbicide use in Avocados was significantly lower in Region 3 than in Ventura County in Region 4. In both Regions, applications peaked during the late spring and summer months indicating the use of post-emergent herbicides. This is confirmed by the herbicide mix. Glyphosphate and its generics, Simazine and its generics, and Oxyflurfen comprised 91%, 8% and 1% all herbicides used, respectively.

More than 250,000 acres of grapes were treated in Region 3. Applications occurred during dormancy in the winter to prevent the potential for herbicide drift onto succulent new growth. There is a second application peak in May. Sixty-six percent of all herbicides used in grapes are used by the largest 25 growers in the Region. It could be interpreted that larger growers use more herbicides; or it could be that smaller growers do not accurately report herbicide usage. The composition of herbicides used were Glyphosate and its generics, Oxyflurfen, Paraquat, Simazine and its generics, Surflan and its generics and Diuron at 43%, 25%, 13%, 8%, 8% and 1% respectively. This information does not reflect the introduction of new herbicides that have proven to be effective on some resistant weeds.

In reality, to make sense of the Conditional Waivers, landowners and growers must put aside concerns about escalating regulation, disgust with increased paperwork, and arguments about the data. Growers and the resource agencies that support the growers must concentrate on what they can control! *The real goal of the Conditional Waivers is for growers to improve water quality through the Management Practice implementation.*

At present, growers have choices about what management practices they may employ. The regulators are not prescribing Management Practices. Instead, growers must be aware of the impacts of their cultural practices and make decisions about how they use management practices.

Examples of the impacts to herbicide use are:

- To avoid the use of herbicides known to cause water quality issues when alternative products are available

- To avoid the use of herbicides that bind to soil in areas where sediment movement may occur
- To eliminate the use of a herbicide if monitoring data indicates it is causing water toxicity
- To avoid the use of a formulation such as granules or crystals in areas where there is the potential for off-site movement in to waterways
- To plant crops that are appropriate for the growing conditions
- To rotate crops and herbicides to avoid the development of resistant weeds
- To avoid spraying during high winds to prevent herbicide drift into adjacent waterways
- To use drift control agents; and
- To avoid high-risk herbicide applications techniques such as aerial spraying near waterways

Most of these choices are not novel! Nevertheless, they will receive increasing emphasis as data are collected and herbicide impacts are better characterized. These will direct what and how herbicides are used in the future! Failure to improve water quality will only lead to greater regulation, greater restrictions on available herbicides and prescriptive management practices.