AGRICULTURAL POLLUTION CONTROL
IN VENTURA COUNTY

SIGNIFICANCE

Though BMPs have been proven to effectively reduce pollutant concentrations in individual situations and case studies, there is little quantitatively defensible data demonstrating their effectiveness at a larger regional or watershed scale. It is therefore especially difficult to prove BMP implementation program efficacy at a countywide level.

Most studies evaluating BMP efficacy are model based, and there is little non-experimental data collected across an entire county. Data collected under the Ventura County CWP therefore presents a unique opportunity to statistically assess the specific impacts of BMPs on agricultural nonpoint source pollution.

This project constitutes a novel attempt to assess the overall usefulness of data gathered under the Ventura County CWP’s monitoring requirements. Evaluation of these products simultaneously represents a critique of Conditional Waiver requirements, and provides a constructive space to recommend further actions to both VCAILG and its regulating body, the Los Angeles Regional Water Quality Control Board. This research represents an original attempt to use the water quality and BMP implementation data collected under California’s CWP to provide a quantitative assessment BMP efficacy in Ventura County irrigated lands.

RECOMMENDATIONS

THE AG-VENTURA FOUR POINT PLAN

Augment and enhance the water quality monitoring program.

Increase BMP survey frequency and broaden survey scope.

Encourage development of nutrient management plans to decrease nitrogen pollution, estimate nutrient uptake efficiencies, and model pollutant fate.

Further explore increasing institutional capacity at the Farm Bureau, and apply for federal funding through Clean Water Act Section 319 and Environmental Quality Incentives Program grants.

DATA DEFICIENCIES

Despite the information available, data quality and quantity problems still hampered the analysis:

- Low sample size per farm
- High variance between farms
- High overlap in water quality

Data collected under the CWP is unable to provide the statistical confidence necessary to inform management decisions.

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THE PROJECT ACRONYMs

NPS - NONPOINT SOURCE
CWP - CONDITIONAL WAIVER PROGRAM
BMP - BEST MANAGEMENT PRACTICES
VCAILG - VENTURA COUNTY AGRICULTURAL IRRIGATED LANDS GROUP

THE CONDITIONAL WAIVER PROGRAM

Agriculture is the leading nonpoint source of waterway impairment in the United States. Over 120,000 miles of US waterways are contaminated by nutrients, pesticides, and sediments of agricultural origin.

To address agricultural nonpoint source (NPS) pollution in California, Regional Water Quality Control Boards work with stakeholders to develop voluntary pollution control programs in exchange for waiving pollutant discharge permit requirements.

This policy tool has become known as the Conditional Waiver Program. The requirements under the CWP are different in each State Water Resources Control Board region to address the individual needs of impaired waterways. In Ventura County, the Los Angeles Regional Water Quality Control Board waives pollutant discharge permit requirements in exchange for grower adoption of aggressive land management strategies. The 2010 – 2015 Conditional Waiver requirements involved three main components:

1. Grower attendance of mandatory field management education workshops.
2. An intensive water quality monitoring and reporting program.

IMPLEMENTATION OF BMPs

BMPs control pollutant migration in a number of ways:

1. Reducing excessive application of fertilizers and pesticides
2. Controlling erosion by keeping soil on farms during irrigation and storm events
3. Preventing over-watering and minimizing nutrient-rich irrigation runoff

RESULTS

The relationship between water quality and BMP adoption was explored via multiple regression analysis. Other variables controlled include:

- climate conditions
- crop type
- location

The NITRATE regressions showed no significant variables. It is therefore not possible to conclude that the considered factors have a detectable effect on either nitrate concentrations or fertilizer loading. Regression results suggest that water management BMPs are more likely able to control nitrate pollution than the fertilizer management practices employed.

Its BMPs were significant predictors of organophosphate PESTICIDE detection. Two sediment management BMPs were significant and showed an unexpectedly positive effect on organophosphate pesticide detection. Climatic variables were significant for both pesticides. Regression results are inconsistent with theory and are confounded by undetected factors. Based on these results, it is not possible to conclude that BMPs have an effect on pesticide detection.