

DEMONSTRATION OF THE EFFECTIVENESS OF PRE-EMERGENCE HERBICIDES APPLIED THROUGH LOW-VOLUME IRRIGATION SYSTEMS

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Chemigation is a potential mitigation measure for both leaching and runoff, however, most of the pre-emergence herbicide residues detected in ground water are not labeled in California for application through low-volume irrigation systems. The objective of the first-year study was to develop data on the adoption of chemigation as a management practice for mitigation of pesticide movement to ground water. The study was conducted at three citrus orchards in Strathmore and Lindsay, CA Tulare County. Three treatments (Control-no herbicides, Growers' standard practices-tank mix of simazine and diuron, and Chemigation- tank mix of simazine and diuron) were applied at each citrus orchard, and data were collected on the effectiveness of the practice to mitigate ground water contamination, on the effectiveness of the pesticide under the new management practice, and on potential economic impacts. Soil herbicide concentration was significantly related to soil depth. Soil samples collected 1 and 45 days after application revealed that the majority of the herbicides remained in the upper three inches of soil, as was expected with the soil types (heavy clay). Soil samples collected 120 days after application revealed that simazine was undetectable at two of the three sites, and that very low concentrations of diuron were detectable at all three sites. The chemigation treatment was found to mitigate groundwater contamination, and the simazine and diuron effectively controlled weeds when applied by chemigation. Currently, chemical companies are interested in pursuing label amendments to allow chemigation as a mitigation measure, and part two of this study is underway.