

Presence of Bromacil, Diuron, and Simazine in Surface Water Runoff from Agricultural Fields and Non-crop Sites in Tulare County, California. Braun, A.L. and L.S. Hawkins. PM 91-1. 1991

Abstract

A number of wells in Tulare County have been found to contain residues of the agricultural herbicides bromacil, diuron, and simazine. A better understanding of the possible role of surface runoff water from agricultural fields in transporting pesticides to ground water is needed. Insufficient information is available on the amounts of pesticides present in surface water runoff during winter rain or irrigation. To determine the presence and concentrations of herbicides in runoff water following a rain or irrigation, the Pest Management Analysis and Planning Program (PMAP) of the California Department of Food and Agriculture conducted a survey in Tulare County with the cooperation of the County Agricultural Commissioner, DuPont, and Ciba-Geigy. Such information is crucial in order to design an effective ground water protection strategy.

The herbicides bromacil, diuron, and simazine were detected in surface runoff water from agricultural fields and non-crop sites following a rain or irrigation event. The concentration means and ranges for simazine and diuron in runoff rain water were 367.3 ppb (2.4 ppb to 1,130 ppb) and 219.8 ppb (3.1 ppb to 890.5 ppb), respectively. The mean concentration and range of bromacil detected in runoff rain water was 8.5 ppb (non-detectable to 47.2 ppb). Diuron, simazine, and bromacil concentrations in runoff rain water collected at sites suspected to be dry wells varied from 139.3 ppb to 890.5 ppb, 280.0 ppb to 934.0 ppb, and non-detectable to 8.1 ppb, respectively. Water was running into the suspected dry well at the time of sampling.

When a rain event occurred shortly after pesticide application, surface runoff water usually contained high concentrations of diuron and simazine. Lower concentrations of bromacil (non-detectable to 4.7 ppb), diuron (non-detectable to 19.1 ppb), and simazine (non-detectable to 25.2 ppb) were detected in runoff water following an irrigation event. Why these concentrations were lower than those detected in runoff rain water is unknown.

To reduce off-field movement of these herbicides, PMAP is currently investigating citrus orchard floor management practices.