



SIM for

Weed control plot in young apricot orchard, Solano County. Note weed growth around untreated tree in foreground to left.

SIMAZINE (PRINCEP), a persistent pre-emergence herbicide, has given broad-spectrum weed control in orchard crops. Generally it has been used by orchardists with excellent results. As it depends on water to activate it and move it into the soil, simazine's effectiveness is dependent on soil environment and the cultural practices employed.

A summary of four years' work with simazine demonstrated annual weed control using 1 to 8 lbs per acre at many locations over varying lengths of time. Rates of 1 lb per acre showed excellent weed control in some trials more than six months following application (graph 1). In others the control was gone in a little over two months. Just how much long-term control is due to an initial kill with simazine, followed by conditions adverse to weed seed germination, is not known. Under field conditions the weed-free area in a strip along the tree row is important to orchard management. Breaks in weed control in some trials have been taken care of by repeat sprays of paraquat. Split applications have given some additional pre-emergence annual weed control where overhead water was available.

The 2-lb per acre rate controlled more weeds than the 1-lb rate (more points appeared above the 70 per cent level of control, as shown in graph 2). In some cases, lack of extended weed control reflected less than optimum conditions for the herbicide, i.e., insufficient rainfall, heavy adsorptive soil, resistant weed species (such as water-grass and some pig-weed species), or a disturbed soil surface.

An examination of the 4-lb per acre rate shows a greater concentration of the data above 80 per cent weed control (graph 3). For soils with high organic matter and clay content, this rate was more effective.

The 8-lb per acre rate was included in fewer tests and usually only on soils high in clay with organic matter well above 2 per cent. At this very high rate, weed control was generally above 90 per cent for the entire year (graph 4). Rates this high would generally not be safe for most orchard species.

The data summarized here suggest that low (1 to 2 lbs per acre) rates of simazine could be used around stone fruit and almond trees as long as the trees were well

established and growing in a loam or clay soil with organic matter levels above 1 to 2 per cent. Soils with more than 2 per cent organic matter are less likely to show injury symptoms on the foliage. Trees being grown with furrow irrigation showed very few symptoms in statewide uniform trials.

A summary of the 120 uniform trials showed a wide range in susceptibility among orchard species. The most sensitive species were prune and plum (as expressed by foliar symptoms) with data mostly from prune trials. Less is known about plum. Plum rootstocks were shown to be more sensitive to simazine than peach in work reported elsewhere.

Almonds were somewhat more tolerant than prune. A few symptoms were observed after applications as low as 2 lbs per acre. On light soils, considerably more symptoms were observed on young trees under sprinkler and flood than furrow irrigation. Under furrow irrigation, where no irrigation water was applied over the herbicide, generally no symptoms were observed.

Peaches and apricots were among the more resistant stone fruits. These crops have tolerated 1 to 2 lbs per acre of simazine with no apparent ill effects. Few cherries were tested. Cherries may be intermediate in resistance to simazine.

Pears, generally resistant (particularly in the heavy, high organic matter soils), showed symptoms in a few trials particularly on young trees growing in sandy, low organic matter soils.

Apples and walnuts were most resistant although fewer trials have been conducted. Apples, by and large, are grown in soils high in organic matter and may show greater tolerance for this reason.

Although such a summary of phytotoxicity based on foliar conditions is somewhat conservative, it offers some guidelines. Orchard trees and vines have been observed to recover from severe simazine-induced foliar chlorosis and leaf burn. Nonetheless, continually increasing the rate of simazine with increasing water

Typical symptoms of injury from root uptake following simazine applications are visible in this photo of plum foliage.



AZINE

weed control in orchards

can produce severe injury and reduction in growth. No trees have died from overdoses of simazine in any University of California trials to date, but a number of young trees have been severely injured by the use of excessive rates.

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PERCENTAGE OF WEED CONTROL IN ORCHARD CROPS WITH SIMAZINE AT 30 TO 240 DAYS FOLLOWING APPLICATIONS OF 1 LB PER ACRE (GRAPH 1), 2 LBS PER ACRE (GRAPH 2), 4 LBS PER ACRE (GRAPH 3), AND 8 LBS PER ACRE (GRAPH 4) (1964-67 TESTS STATEWIDE) EACH DOT REPRESENTS ONE OF 120 ORCHARD TEST PLOT WEED CONTROL RATINGS

