TREE AND VINE CROPS

COVER CROPS FOR WEED CONTROL IN VINEYARDS

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Weeds are most often controlled in the vineyard row with preemergence or postemergence herbicides. There is some use of in-row cultivators such as row-plows and power tillers, and mowers. Since the greatest need for weed control is in the vine row to reduce competition with the vine, most of the herbicides are used in the row. There is very little use of herbicides between the vine rows; thus, no more than a quarter or at most one-third of the acreage is treated. However, vine rows are treated annually with one or more herbicides and sometimes with more than one application.

The objective of this work was to determine if weeds could be controlled in the vine row with biomass from cover crops grown between the vine rows or supplied from "greenwaste" (wood chips from the city). The effect of the cover crops on vine growth and yield and on other pests was evaluated over a three-year period in two vineyards; biomass comparisons were also made in four additional vineyards. An additional study was conducted for two years using herbicide, biomass, "greenwaste" and cultivation treatments. In this study there was also a comparison of standard boom-spraying of postemergence herbicides compared to the visual sprayer (Weedseeker). Economic evaluations of the management practices were compared in two studies.

Results

Results to date are extensive. Weeds can be controlled with mulches from biomass grown in the vineyard and moved to the vine row. There is not enough biomass produced at most sites for complete weed control in the first season, nor in most locations without the use of a postemergence herbicide to "clean out" the vine row before the first mulch is placed, because the mower cannot throw the material into the row uniformly. "Greenwaste" was applied to achieve ~3 inches of mulch; this required about 22 tons of chips per treated acre. It has given some weed control and has a long residual effect, but because of lack of uniform application, weed control does not look good. When the biomass applied equals about 4 to 5 tons using oat or rye (with or without vetch), winter weed control can be excellent. Summer annuals can also be controlled but the perennial field bindweed is not controlled. Nutsedge seems to be reduced, however we do not have enough data on this species yet. The weedseeker reduced herbicide amount and costs dramatically using paraquat in the vine row compared to a standard continuous boom spraying. The cultivation (Kimco) gave excellent control of young winter annual weeds, but weed numbers were increased later in the summer from only a single cultivation.

Publications in progress:

1) California Agriculture - Vegetation management systems in Vineyards (Lodi-Woodbridge study).

2) J. Vit. and Enol. - Napa and Sonoma Study.

3) Weed Science - Napa and Sonoma Study \rightarrow 4) J. Applied Ecol. - Napa and Sonoma Study