

Economic Considerations in Weed Control

Karen Klonsky, Dept. of Agricultural and Resource Economics, University of California, Davis, California, 95616, klonsky@primal.ucdavis.edu

Economic considerations in weed control include efficacy (impact on yield and quality) and efficiency (cost per unit of production). Weed management costs at the farm level include labor for hand hoeing and tractor operation, materials, and equipment. Equipment costs include fuel and lube for tractors, repairs, insurance and property taxes, and capital recovery on ownership. Weed control alternatives can be compared based on costs per unit of production, resource use, risk, and environmental impacts.

Factors external to the farm impacting the efficiency of weed control practices include the prime interest rate; the cost of materials, equipment, and labor, availability of labor, and the cost of compliance with regulations impacting the use of herbicides. The low interest rates of the past 25 years has encouraged investment in farmland, farm equipment, and perennial crops. Over the last five years the cost of fuel has about tripled and the cost of fertilizer has doubled. In marked contrast the cost of herbicides and insecticides has only increased about ten percent over the past 10 years. Therefore, looking at the relative changes in input costs, the cost of cultivation using heaving equipment is the most highly impacted weed control method followed by herbicide applications and lastly hand hoeing.

When we look at specific crops, weed control represents between 1 and 20 percent of total production costs. For winegrape production weed control is between \$50 and \$100 per acre and only one percent of total costs. Control typically consists of winter strip spray along the vines, mowing the centers between the vines, and strip spot spray in the summer. The equipment used includes an ATV with a weed sprayer and a small tractor and mower. The difference in costs among vineyards is primarily due to the choice of herbicides used in the strip spray. The cost of vine row weed control for an organic vineyard unable to use herbicides is about \$150 per acre using a small tractor and an in-row cultivator.

The cost of weed control in alfalfa in the Sacramento Valley is about \$36 per acre. It consists of winter spray of herbicide. Weed control represents about seven percent of total costs and is extremely important to maintain quality hay.

Weed control in high valued vegetables typically includes a combination of herbicide applications, cultivation, and hand weeding. For processing tomato weed control is about \$400 per acre and represents 17 percent of total costs. The tomatoes are sprayed about five times, cultivated seven times and hoed by hand between one and three times depending on the weed pressure. The size of the tractors used will vary depending on the size of the fields. For broccoli on the coast, weed control is only about \$100 per acre. There is typically only one herbicide application at planting, several cultivations, and one time over with hand hoeing. Organic broccoli cannot use the preplant herbicide and relies more on hand hoeing. Total weed control costs can jump to over \$250 per acre, two and a half times the cost for a conventional grower.