

Using *The Lodi Rules* PEAS model

The PEAS model was used to calculate pesticide environmental impact for each formulation of pesticide used in Lodi vineyards. Calculations were based on pesticide use in San Joaquin and Sacramento County vineyards; data on rates were obtained from the California Department of Pesticide Regulation's Pesticide Use Reporting database for 1999 to 2001¹. For those unfamiliar with this database, it is a full pesticide use reporting system. Pesticide use data were also obtained from LWWC's BIFS database which has monitored full pesticide use in 70 vineyards throughout California Crush District #11 from 1995 to present.

First, pesticide environmental impact units were calculated for one pound of each pesticide active ingredient. These values were then adjusted in accord with the applicable Use Pattern Adjustment Factor (UPAF), in order to make estimates of environmental impacts per acre treatment reflect the impacts on exposure of the specific formulation, treatment timing, method of application (such as soil-applied, ground-applied, aerially-applied), and the target site (foliage, soil, etc.). The results were then converted to impact indices for the commonly used unit of each formulated pesticide. For example, sulfur (a fungicide) is applied in lbs per acre so the impact index for a pound of sulfur was calculated. On the other hand, Pristine (a liquid fungicide), is applied in ounces per acre so the impact index for an ounce of Pristine was calculated.

The Pesticide Impact Unit Table contains the environmental impact index of the common unit of application for each pesticide used in Lodi vineyards. A calculation for one application of a pesticide is illustrated using sulfur dust as an example. The environmental impact index for one pound of formulated sulfur dust active ingredient is 0.154 ([The Pesticide Impact Unit Table](#)), so the total number of environmental impact units for an application of 15 lbs. of formulated sulfur is 15×0.154 or 2.31.

The table below presents the calculation of total environmental impact units for pesticides applied to a "representative" Lodi vineyard for the entire season of 2004.

¹ <http://www.cdpr.ca.gov/docs/pur/purmain.htm>

Pesticide Environmental Impact Units Calculation for a “Representative” Lodi Vineyard for 2004

Input Date	Chemical Name	Rate/Acre	Units	lbs AI* /Acre	Impact Index/lb AI	Impact Units/Acre
4/13/2004	Sulfur dust	15	lbs	14.70	0.157	2.31
4/22/2004	Sulfur dust	15	lbs	14.70	0.157	2.31
5/3/2004	Sulfur dust	15	lbs	14.70	0.157	2.31
5/13/2004	RoundUp Ultra Dry	0.92	lbs	0.66	0.328	0.06
5/16/2004	Sulfur dust	14	lbs	13.72	0.157	2.15
5/29/2004	Sulfur dust	15	lbs	14.70	0.157	2.31
6/2/2004	Rally 40W	3.88	ozs	0.10	3.137	0.30
6/24/2004	Provado Solupak 75% WP	0.63	ozs	0.03	116.28	3.44
6/24/2004	Acramite 50 WS	0.87	lbs	0.44	1.64	0.71
6/24/2004	Pristine	11.49	oz	0.26	0.75	0.20
7/28/2004	Gramoxone Max**	1	pints	0.52	0.32	0.05
7/31/2004	RoundUp Ultra Dry**	0.63	lbs	0.45	0.328	0.04
Total Impact Units for Season:						16.20

*AI = Active Ingredient

**Herbicide was applied to 1/3 of vineyard acres so Impact Units were calculated accordingly