



Pesticide Use in California Winegrapes since the enactment of the Food Quality Protection Act

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ABSTRACT

Public concerns about pesticides in the environment and their potential effects on human health have fueled increased regulation of pesticide use in agriculture. Pesticides under review pursuant to the Food Quality Protection Act (FQPA) that are commonly used in winegrape production are analyzed to understand trends in use since 1993. The Pesticide Use Record (PUR) database is the main data source of this study. Because the database contains every record of pesticide use at the field and grower level, it is possible to identify low use growers and further analyze the factors that allow successful low use of pesticides. Results show significant declines in the use of FQPA fumigants and insecticides in all three counties. Pounds of FQPA fungicides and herbicides applied per acre in Napa and Sonoma decreased slightly, but rose slightly in Madera County. The majority of growers do not use FQPA fumigants or insecticides. FQPA listed fungicides and herbicides, however are still widely relied upon. The results of this research are being disseminated to growers via industry group publications and meetings, agricultural commissioners, and grower targeted publications in an effort to emphasize grower to grower information exchange for increased knowledge of effective strategies to reduce pesticide use.

OBJECTIVES

1. Characterize Food Quality Protection Act (FQPA) Pesticide Use Trends in Winegrapes
2. Differentiate grower level PUR profiles to distinguish reduced risk pest management
3. Validate grower pest management practices
4. Share results to strengthen farmer-to-farmer exchange



Pounds of Active Ingredient (AI), acres with FQPA application, pounds FQPA AI applied per acre planted, and percent change of FQPA pesticides applied on winegrapes in Madera, Napa and Sonoma Counties by pesticide class from 1993 to 2001									
Pesticide Class	Lbs FQPA 1993	Lbs FQPA 2001	% change Lbs FQPA 1993 - 2001	FQPA application in 1993	FQPA application in 2001	% change of acres receiving FQPA application 1993 - 2001	Lbs FQPA/Acre planted 1993	Lbs FQPA/Acre planted 2001	% change lbs FQPA/Acre planted 1993 - 2001
MADERA COUNTY									
Fumigants	9,441	2,117	-78%	119	239	101%	79.33	9.88	-88%
Fungicides	12,842	18,812	46%	21,521	28,917	34%	0.80	0.85	9%
Herbicides	56,142	74,398	33%	33,101	42,784	29%	1.75	1.74	3%
Insecticides	29,144	39,959	37%	26,824	26,430	-2%	2.29	1.35	-41%
NAPA COUNTY									
Fumigants	273,750	12,064	-96%	4,725	343	-93%	57.94	35.17	-39%
Fungicides	12,873	12,153	-6%	26,422	29,153	10%	0.48	0.43	-10%
Herbicides	41,717	30,504	-27%	27,554	25,617	-7%	1.51	1.19	-21%
Insecticides	3,208	1,097	-66%	6,901	4,219	19%	0.45	0.13	-71%
SONOMA COUNTY									
Fumigants	234,984	137,814	-41%	4,574	8,053	-12%	51.39	34.10	-34%
Fungicides	41,816	48,200	15%	30,811	41,515	34%	1.38	1.15	-14%
Herbicides	44,291	56,030	27%	30,301	42,777	41%	1.48	1.31	-10%
Insecticides	5,555	8,854	59%	18,610	22,505	21%	0.85	0.39	-54%

Table 1. Change in pounds of active ingredient, acres planted that receive applications of FQPA pesticides, and lbs/Acre planted of FQPA pesticides from 1993 to 2001. Data broken down into pesticide categories of fumigants, fungicides, herbicides, and insecticides.

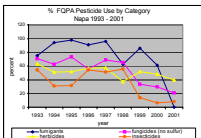


Figure 3. Percent of total pesticide use attributable to FQPA listed pesticides in Napa County Winegrapes from 1993 to 2001 according to pesticide type

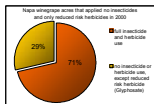


Figure 2. Percent of Napa winegrape acreage that used no insecticide and only used reduced risk herbicide vs. acreage with full insecticide and herbicide use in 2000

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METHODS

- Analyze Pesticide Use Records (PUR) for winegrape production using GIS (ArcView) - Oracle program interface
- Assess FQPA pesticide use using measures of total lbs., lbs. per acre planted, and % of acres receiving FQPA pesticides.
- Group pesticide active ingredients (AI) into four groups: fumigants, fungicides, herbicides, and insecticide
- Share results with winegrape growers via industry groups, farm advisors, agricultural commissioners, and publications



Cover crops with herbicide in vine row only (left). Sticky traps for field monitoring (far left)

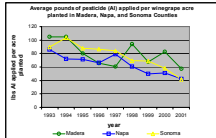


Figure 3. Average lbs. of pesticide applied per winegrape acre planted in Madera, Napa, and Sonoma Counties from 1993 to 2001

Grower practices allowing reduced-risk pest management in winegrapes

- eliminate pre-emergence herbicide use by planting cover crops and using reduced risk herbicide (Glyphosate ®) in vine row only
- reliance on mechanical weed control instead of preemergent herbicide
- increased pest scouting and field monitoring (sticky traps, etc.) so that pesticide applications occur only when a predetermined economic threshold is reached
- installation of owl and bat boxes for rodent, small vertebrate, and omnivorous leaf roller control
- use of reduced risk pesticides in place of highly toxic pesticides targeted for reduction under the FQPA
- alternating pesticides with different modes of action for resistance management

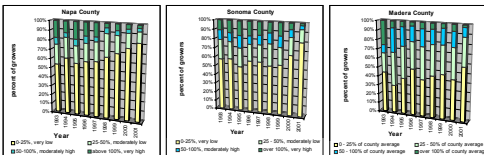


Figure 4. Changes in lbs. of FQPA pesticide applied per winegrape acre from 1993 to 2001 in Napa, Sonoma, and Madera Counties

CONCLUSIONS

- The trends in winegrape pesticide use and pest management practice in California and the factors contributing to these changes are complex and changing.
- The PUR allows analysis of the entire population of growers to understand pesticide management and to identify low - use growers who can serve as models for reduced risk pest management
- Use of pesticides under FQPA review has declined.
- Winegrape growers have demonstrated innovation in reducing pesticide use as demonstrated by their willingness to experiment with biological and cultural controls and by implementing principles of IPM.
- Grower innovation and experimentation with reduced risk farming practices may be promoted through increased collaborative research and education programs.
- Winegrape growers and their representing commodity organizations represent a successful model for increasing grower adoption of reduced risk farming practices.

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