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 wine grape 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 fungicides and insecticides in all three counties. Pounds of FQPA fungicides and insecticides applied per acre in Napa and Sonoma decreased slightly, but rose slightly in Madera County. The majority of growers do not use FQPA fungicides or insecticides. FQPA listed fungicides and insecticides, however, are still widely relied upon. The results of this research are being disseminated to growers via industry group publications and meetings, agricultural commission meetings, 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 past management practices
4. Share results to strengthen farmer-to-farmer exchange

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

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 management
• alternating pesticides with different modes of action for resistance management
• use of reduced risk pesticides in place of highly toxic pesticides targeted for reduction under the FQPA

CONCLUSIONS

• 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’ willingness to experiment with reduced risk farming practices may be promoted through increased collaborative research and education programs.

Figure 1. Changes in lbs. of FQPA pesticide applied per winegrape acre from 1993 to 2001 in Napa, Sonoma, and Madera Counties

Table 1. Change in pounds of active ingredient, acres planted that receive applications of FQPA pesticides, and pounds FQPA AI applied per acre planted from 1993 to 2000.

<table>
<thead>
<tr>
<th>County</th>
<th>Pesticide Class</th>
<th>1993</th>
<th>2000</th>
<th>% change</th>
<th>Acres with FQPA application</th>
<th>% change</th>
<th>Lbs FQPA AI/acre</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAPA COUNTY</td>
<td>Fumigants</td>
<td>234,994</td>
<td>137,514</td>
<td>-41%</td>
<td>4,574</td>
<td>-12%</td>
<td>51.38</td>
<td>-34%</td>
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<tr>
<td></td>
<td>Fungicides</td>
<td>41,816</td>
<td>48,200</td>
<td>15%</td>
<td>1.36</td>
<td>-14%</td>
<td>1.16</td>
<td>-10%</td>
</tr>
<tr>
<td></td>
<td>Herbicides</td>
<td>44,291</td>
<td>56,030</td>
<td>27%</td>
<td>1.46</td>
<td>-10%</td>
<td>1.31</td>
<td>-10%</td>
</tr>
<tr>
<td></td>
<td>Insecticides</td>
<td>59,144</td>
<td>35,969</td>
<td>-39%</td>
<td>2.20</td>
<td>-38%</td>
<td>1.36</td>
<td>-38%</td>
</tr>
<tr>
<td>SONOMA COUNTY</td>
<td>Fumigants</td>
<td>12,673</td>
<td>12,553</td>
<td>-1%</td>
<td>0.48</td>
<td>-10%</td>
<td>0.43</td>
<td>-10%</td>
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<tr>
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<td>Fungicides</td>
<td>26,422</td>
<td>29,133</td>
<td>10%</td>
<td>0.43</td>
<td>-10%</td>
<td>0.43</td>
<td>-10%</td>
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<td>Herbicides</td>
<td>30,811</td>
<td>42,777</td>
<td>41%</td>
<td>1.31</td>
<td>-10%</td>
<td>1.16</td>
<td>-10%</td>
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<td>Insecticides</td>
<td>26,834</td>
<td>26,430</td>
<td>-2%</td>
<td>1.36</td>
<td>-38%</td>
<td>1.36</td>
<td>-38%</td>
</tr>
</tbody>
</table>

Figure 2. Percent of growers using a certain pesticide as a percentage of için certain categories of Fumigants, Fungicides, Herbicides, and Insecticides.

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