

## Evaluation of new herbicides

R. Bellinder, Department of Horticulture, Cornell University, Ithaca, NY

Cooperators: R. Dunst, A. Senesac, T. Martinson, T. Wiegler, Cornell University

Summarized by Bibiana Guerra

- Grape growers currently rely on three major herbicides for weed control: glyphosate, diuron, and simazine. To avoid developing resistance due to continuous use and to identify products that could enhance Integrated Pest Management (IPM) programs, it is important to test new products that are ‘tough on the weeds, gentle on the vines’.

- With this purpose in mind, the current authors from Cornell University launched an herbicide comparison trial at four different sites. These sites encompassed different types of soil (sandy loam, gravelly loam), different varieties (Chardonnay, Traminette, Concord), and different vine ages (newly-planted, one-year transplants, 3-year old, and 100-year old). The wide range of herbicides tested included both registered and unregistered products (Dual Magnum, imazosulfuron, Katana, Laudis, Reflex, Impact, Bandur), single or in combination, and applied at various doses and times throughout the season. *Round-Up* (glyphosate) was added to most treatments to kill overwintering weeds. (see original report for complete list of herbicides, doses, and application times at each location).

- Researchers then assessed herbicide performance by measuring the percentage of *ground covered by weeds*, as well as *weed biomass*. They also assessed young vine tolerance to the herbicide by measuring *vine shoot length*.

### • Results:

- 1) Herbicides did not damage or affect vine growth, with the exception of *Katana* (flazasulfuron), which resulted in significant vine stunting likely due to weed competition;

- 2) Across trials, the herbicide *Chateau* (flumioxazin) showed superior control of many weed species. *Chateau* tended to be more effective when split into two or three applications than if applied all at once. When *Chateau* was combined with imazosulfuron, or with *Dual Magnum* (metolachlor) and *Impact* (topramezone) combined, its performance was further improved;

- 3) *Bandur* (aclonifen), a new product, showed excellent weed control if applied later in the season (even if it did not control horseweed);

- 4) *Laudis* (tembotrione), another new product, offered both good pre- and post-emergence control, and can become a very effective tool in weed management;

- 5) Acetic acid had a poor performance, being ineffective at all sites;

- 6) In general, a post-emergence herbicide program was less effective in controlling weeds than the combination of a pre- and a post-emergence program.

In summary, **the existing product Chateau is very effective, and the new products Bandur and Laudis have great potential.** However, researchers want to evaluate the same treatments in the same plots an additional year to confirm these results. A minimum of a 2-year evaluation is required for an herbicide-to-be to move to the next level - the request for a residue trial. Once this step is cleared, the herbicide can be considered for federal registration.

| Trial site   | Most efficient herbicide program   | Least efficient herbicide program   |
|--|--|---|
| <b>Lansing, NY<br/>Chardonnay, 3-yr old</b>                            | <ul style="list-style-type: none"> <li>• Imazusulfuron</li> <li>• Laudis</li> <li>• Chateau + Dual Magnum + Impact</li> </ul>  | <ul style="list-style-type: none"> <li>• Acetic acid (20%)</li> </ul>                                     |
| <b>Riverhead, NY<br/>Chardonnay, newly-planted<br/>Sandy loam</b>      | <ul style="list-style-type: none"> <li>• Chateau</li> <li>• Chateau + Prowl H<sub>2</sub>O + Impact</li> <li>• Reflex + Prowl H<sub>2</sub>O + Impact</li> </ul>                     | <ul style="list-style-type: none"> <li>• Gramoxone Inteon</li> <li>• Katana</li> </ul>                    |
| <b>Portland, NY<br/>Traminette, 1-yr transplants<br/>Gravelly loam</b> | <ul style="list-style-type: none"> <li>• Many of the pre-emergents followed by post-emergents</li> <li>• Many of the pre-emergents followed by pre-emergents applied late</li> </ul> | <ul style="list-style-type: none"> <li>• Acetic acid (20%)</li> <li>• Katana</li> </ul>                   |
| <b>Portland, NY<br/>Concord, 100-yr-old<br/>Gravelly loam</b>          | <ul style="list-style-type: none"> <li>• Dual Magnum</li> <li>• Dual Magnum + Chateau</li> <li>• Dual Magnum + many of the post-emergents</li> <li>• Chateau + Rely</li> </ul>       | <ul style="list-style-type: none"> <li>• Acetic acid (20%)</li> <li>• Katana</li> <li>• Bandur</li> </ul> |

*Author: Bibiana Guerra, Technical Writer*