Weed Control in Grapes

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Weed Management Goals

• Absolute elimination of weeds?
• Beneficial mix of plant growth?
  – Limited competition for water, nutrients, sun.
  – Add nutrients and/or organic matter.
  – Sustain predators of pests & diseases.
  – Prevent erosion & support heavy equipment.

• Sustainability!
• Integrated approach.
Vineyard Weed Mngmt Stages

• Site preparation
  – 2 year procedure – 1 yr before planting.

• Young vineyard
  – Key to establishment

• Mature vineyard
  – Weed control is easier
Site Preparation

- Control perennials.
- Tillage.
- Control annuals.
- Plant annual cover crop in June.
- Till cover crop before going to seed.
- Control weeds.
New Vineyards

- 2nd most important time to control weeds.
- Limited # herbicides available.
- Potential injury from cultivation.
  - Root damage
  - Crown gall
  - Crown rot
- Hoeing – expensive
- Mulches
Herbicides for new plantings

• **Preemergence**
  – Devrinol
  – Surflan
  – Prowl
  – Gallery

• **Postemergence**
  – Basagran
  – Fusilade DX
  – Poast
  – Select (others)
  – Goal
  – Roundup (others)
  – Rely
Row-middle strategies

- No vegetation
  - Herbicides
  - Cultivation
- Grass
  - Mow
- Cover crops
  - Complex system not investigated in region.
New York row-middle study

- Examined 3 strategies
  - Mowing + Roundup
  - Mowing 4 times
  - Disking 3 times
- Yield differences were minimal in a wet year.
- In a dry year, the herbicide or disk had greater yields and vine size.
Established vineyards

• Easier
  – > chemical selection
  – < injury potential
  – Can withstand presence of some weeds.

• Need to monitor
  – Weed identification is essential.
  – Rotate herbicides.
  – Watch for escapes.
Figure 1. Seasonal change in growth rates of grapevine parts. Pool et al., 1998
Winter Annuals
Perennials
Herbicides for established grapes

• **Preemergence**
  – Princep
  – Karmex (others)
  – Solicam
  – Casoron
  – Devrinol
  – Surflan
  – Chateau

• **Postemergence**
  – Poast
  – Goal
  – Roundup (others)
  – Rely
  – Gramoxone Inteon
Under the trellis study - NY

• Compared no weed control to high-level herbicide treatment
• Herbicide treatment results:
  – Concord grapes pruning weights $\approx$ doubled.
  – Yield increased 67%
Herbicide Injury

- Main concern – herbicide drift
  - [http://oregonstate.edu/weeds/articles/em8860.pdf](http://oregonstate.edu/weeds/articles/em8860.pdf) (Preventing herbicide drift injury to grapes.)
  - [http://www.oznet.ksu.edu/library/hort2/mf2588.pdf](http://www.oznet.ksu.edu/library/hort2/mf2588.pdf) (Questions and answers about vineyard injury from herbicide drift.)
2,4-D Injury
KSU publication

Figure 1

Figure 2

Figure 3

Figure 4a

Figure 4b

Figure 5

Figure 6

Figure 7a

Figure 7b

Figure 8a

Figure 8b

Figure 9

Figure 10

Figure 11

Figure 12
Glyphosate Injury
Questions ?