Herbicides for Vineyard Weed Management
presented 17 April 2014 to NW Michigan growers

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PRE Herbicide Options for Newly Planted Vineyards

• PRE
  – Chateau
  – Oryzalin
  – Prowl H₂O
  – Goal
  – Trellis
• 6 to 12 oz/A
• **Use hooded application equipment when applied after flowering**
  • Do not tank mix with glyphosate after bud break
• 60 day PHI
• PRE and POST activity
• Broad spectrum – No activity on nutsedge
Chateau + Glyphosate Issue

- Movement of Chateau with glyphosate
  - Volatilization – NO!
  - Inversion – Yes!
- What causes an inversion?
  - Layer of cool surface air with warmer air in the immediate atmosphere
  - Most common occurrence
    - During calm periods
    - During the morning.

Prevention: *Tank mix Chateau with paraquat or Rely after vines leaf out. This problem has not occurred when these herbicides are used in place of glyphosate*
Surflan or Oryzalin

*oryzalin*

- 2 to 6 qt/A
  - Sequential applications
    - 2.5 months between application
    - Cannot 12 qt/A in 12 month period
- PRE tank mix partners
  - Simazine
  - Rimsulfuron
  - Goal
  - Trellis
- Extend residual control of annual grasses
- Orange label or Green label?
# Weed Response to Chateau and Oryzalin

<table>
<thead>
<tr>
<th>Weeds</th>
<th>Oryzalin</th>
<th>Chateau</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crabgrass</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Fall Panicum</td>
<td>G</td>
<td>G</td>
</tr>
<tr>
<td>Goosegrass</td>
<td>G</td>
<td>E</td>
</tr>
<tr>
<td>Pigweed</td>
<td>G</td>
<td>E</td>
</tr>
<tr>
<td>Lambsquarters</td>
<td>G</td>
<td>E</td>
</tr>
<tr>
<td>Tropic Croton</td>
<td>P</td>
<td>E</td>
</tr>
<tr>
<td>Florida Pusley</td>
<td>G</td>
<td>E</td>
</tr>
<tr>
<td>Morningglory</td>
<td>P</td>
<td>E</td>
</tr>
</tbody>
</table>
Chateau vs. Surflan
Weed Response to Chateau
August 1st

<table>
<thead>
<tr>
<th>Herbicide Treatment*</th>
<th>Palmer Amaranth Control</th>
<th>Morningglory Control</th>
<th>Large Crabgrass Control</th>
<th>% Bare Ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chateau 6 oz Fb</td>
<td>100 a</td>
<td>95 a</td>
<td>98 a</td>
<td>88 ab</td>
</tr>
<tr>
<td>Chateau 6 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chateau 8 oz Fb</td>
<td>100 a</td>
<td>98 a</td>
<td>100 a</td>
<td>94 a</td>
</tr>
<tr>
<td>Chateau 8 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nontreated</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3 c</td>
</tr>
</tbody>
</table>

*March 29th and June 13th were the two application dates. Gramoxone and X-77 were included at each application time for POST weed control.
Prowl H$_2$O

*pendimethalin*

- 2 to 6 qt/A
- Restrictions
  - Dormant application (prior to bud swell)
  - Allow soil to settle after transplanting
- PRE tank mix partners
  - Goal
  - Trellis
- Bearing vineyards
  - 90 day PHI
  - Apply any time after harvest through spring
Goal Tender or Goal 2XL
oxyfluorfen

- Goal Tender
  - 1 to 4 pt/A (PRE 2.5+)
- Goal 2XL
  - 2 to 8 pt/A (PRE 5+)
- Restrictions
  - Dormant application (prior to bud swell)
  - Henbit, redstem filaree, groundsel, nightshade, prostrate knotweed, horseweed
Trellis

*isoxaben*

- 0.66 to 1.33 lb/A
  - Use two applications so long as total use rate does not exceed 1.33 lb/A
- Can it be used in newly planted vineyards?
  - Use “in established non-bearing vineyards”
- 165 day PHI
- Must use in tank mix with Prowl or Oryzalin
- Galinsoga, henbit, Carolina geranium, horseweed, lambsquarter, nightshade, wild radish, ragweed, smartweed, spotted spurge, prickly sida, purslane, plantain, prickly lettuce, chickweed, eveningprimrose
Princep or Simazine

- 2 to 4 qt/A
- Make only one application per year.
- Vines established at least 3 years
- Fall or spring application
- Needs a partner for extended PRE annual grass control
  - Oryzalin
  - Prowl H₂O
Simazine Needs Oryzalin or Prowl H₂O

99 DAT

Large Crabgrass

Sur 2 qt + Sim 2 qt
Sur 4 qt + Sim 2 qt
Prowl 2 qt + Sim 2 qt
Prowl 4 qt + Sim 2 qt

Glyphosate was included for POST weed control

Rainfall within 3 days of application

LSD 0.05

Glyphosate was included for POST weed control
Karmex, Diuron, or Direx 4L

diuron

- 2 to 3 lb/A or 1.6 to 2.4 qt/A
- Use on vines established at least 3 years.
- Soils with 1 to 2% organic matter
- Crabgrass, barnyardgrass, horseweed, lambsquarter, nightshade, wild radish, ragweed, smartweed, purslane, prickly lettuce, chickweed, morningglory, sowthistle
Matrix, Purvin, or Solida

• 4 oz/A
  • “When applied as a banded treatment (50% band or less) Matrix SG may be applied twice per year. However do not apply more than 4 oz/A on a broadcast basis”

• Vines have to be established 1 year or more

• 14 day PHI

• PRE and POST

• Yellow nutsedge activity
  • PRE + Early POST
    • Apply prior to emergence followed by 2nd application when 2” to 4” tall
  • POST + POST
    • Apply when 2” to 4” tall followed by a second application 14 days later.
Weed Control with Matrix

August 30, 2005

Application Dates:
May 3 and June 22

LSD 0.05
Weed Control in Orchards with Rimsulfuron, Edgefield, SC.

<table>
<thead>
<tr>
<th>Herbicide1</th>
<th>% Control – Aug. 1, 2005</th>
<th>% Bare Ground Aug. 1, 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mat 4 oz + Kar. 2 lb + Gr. fb Gr.</td>
<td>Palmer Amaranth: 78 abc</td>
<td>Annual Morningglory: 76 abc</td>
</tr>
<tr>
<td>Mat 4 oz + Sur. 2 qt + Gr. fb Mat 4 oz + Sur. 2 qt + Gr</td>
<td>98 a</td>
<td>93 a</td>
</tr>
<tr>
<td>Mat 4 oz + Gr fb Gr</td>
<td>66 abc</td>
<td>68 abc</td>
</tr>
<tr>
<td>Sim. 2 qt + Sur. 2 qt + Gr. fb Gr.</td>
<td>66 abc</td>
<td>75 abc</td>
</tr>
</tbody>
</table>

1 Application dates were Mar. 29th and June 13th. Rates are in lb ai/A.

P < 0.05
### Horseweed Control with Matrix FNV applied POST

6 WAT

<table>
<thead>
<tr>
<th>Herbicide Treatment*</th>
<th>Horseweed Control</th>
<th>Crabgrass Control</th>
<th>% Bare Ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyphosate 1 qt</td>
<td>100 a</td>
<td>10 b</td>
<td>93 a</td>
</tr>
<tr>
<td>Chateau 12 oz + AMS 2.5 lb + X-77</td>
<td>7 b</td>
<td>100 a</td>
<td>38 b</td>
</tr>
<tr>
<td>Matrix FNV 4 oz + AMS 2.5 lb + X-77</td>
<td>94 a</td>
<td>85 a</td>
<td>92 a</td>
</tr>
<tr>
<td>Matrix FNV 3 oz + Chateau 3 oz + AMS 2.5 lb + X-77</td>
<td>93 a</td>
<td>100 a</td>
<td>93 a</td>
</tr>
</tbody>
</table>

*Mitchem, 2008*
POST Control of Winter Annual Broadleaf Weeds 4 WAT

- Henbit
- C. Vetch
- Cutleaf

LSD 0.05

Paraquat included for POST
Henderson Co., NC

March 22 Application
Alion….More than a New Herbicide

• Alion 1.67 SC
  – Bayer Crop Science
  – Indaziflam
  – Mode of Action
    • Cellulose biosynthesis-inhibitor (CBI)
    • Indaziflam is the first in this herbicide family

• Application Parameters
  – 5 fl. oz/A
    • Do not use on sand
    • Do not use on soils with a 20% gravel content
    • Vines have to be planted 12” deep or where there is soil between major portion of roots and soil surface
  – Grapes est. 5 years or more
  – 14 day PHI
Alion, Cont’d

• PRE Control ONLY!
• For Best Results
  – Apply a uniform spray to debris free soil
  – Requires 0.25” of rainfall w/in 3 weeks for activation
• Weeds Controlled
  – Broadleaf
    • Pigweed sp., c. chickweed, hairy fleabane, horseweed, lambsquarters, morningglory sp., prickly sida, purslane, c. ragweed, spotted spurge.
  – Grasses
    • Barnyardgrass, cheat, lg. crabgrass, foxtail sp., goosegrass, ryegrass, broadleaf signalgrass, bearded sprangletop, brome grass sp.
Glyphosate  1 Qt.
Winter

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Glyphosate  1 Qt.
Indaziflam  5 oz.
Zeus XC
sulfentrazone

- 8 to 12 fl. oz/A
  - If applying in a band (50% of less of vineyard floor) two applications can be made

- Restrictions
  - Vines have to be at least 3 years old
  - 60 days between sequential applications
  - Need ½ inch of rain within 2 weeks
  - Heavy crop trash (leaves, grass clippings, l pruning wood) can residual weed control activity
Zeus XC
sulfentrazone

- Yellow nutsedge control
- Tank mix with oryzalin for good PRE grass control
- Pigweed, curly dock, crabgrass, redstem filaree, groundsel, henbit, morningglory sp., nightshade, sida, sandbur, smartweed, spurge
August 1

Chateau
6 oz A\(^{-1}\)
Mar. 30 and June 9

Spartan + Solicam
8 fl. oz A\(^{-1}\) + 1.5 lb A\(^{-1}\)
Mar. 30 and June 9

Glyphosate was included for POST Weed Control
June 27

Spartan + Oryzalin
8 fl. oz A\(^{-1}\) + 1.5 qt A\(^{-1}\)
Mar. 17 and May 22

Spartan + Solicam
8 fl. oz A\(^{-1}\) + 1.5 lb A\(^{-1}\)
Mar. 17 and May 22

Paraquat was included for POST Weed Control
POST Herbicides

POAST
Glyphosate

- Rate depends on formulation
  - PowerMax – 1 to 1.5 pt/A
  - 41% generic – 0.75 to 1 qt/A

- Name Brand or Generic?
  - Let cost (per acre) be your guide
  - No difference in rainfastness (on the label)
  - Crop safety claims for glyphosate tolerant crops

- Suggestions
  - Avoid use first year
  - Grow tubes a must even in 2nd year
  - Limit use to 1 but no more than 2 applications
  - DO NOT apply after June
Glyphosate Resistant Weeds

- Palmer amaranth (NC, SC, and GA)
  - Chateau PRE is excellent!
  - Gramoxone POST

- Horseweed (NC, SC, TN)
  - Assume everything east of I-95 is infested with glyphosate resistant horseweed – Dr. Alan York, 2006.
  - Rely is excellent!
Rely.....What’s the Deal?

• Rely 280SL unavailable in 2013
  – Get use to it
  – 2015....Maybe

• The deal is...
  – Liberty Link Technology
  – Liberty 280 SL is the same as Rely...BUT
    • Liberty is not labeled for use in fruit crops
Reckon . . . An Alternative to Rely

- Reckon
  - 2.34 lb ai/gal of glufosinate
- 48 to 84 fl. oz/A
- 14 day PHI
- No surfactant needed
- Supply will be limited
- Reduced rate tank mix with Treevix
Gramoxone, Firestorm, Parazone, etc.  

*paraquat*

- Rate
  - 3 SL (generic formulations)
    - 1.75 to 2.5 pt/A
  - 2 SL
    - 2.5 to 4 pt/A
- Use with NIS
- Let price (per acre) be your guide
- Use grow tubes for 2 years
Poast

*sethoxydim*

- Rate
  - 1 to 2.5 pt/A
  - Do not exceed 5 pt/A per year
- COC @ 2 pt/A
- 50 day PHI

POAST
Fusilade DX

*fluazifop*

- **Rate**
  - 12 to 24 fl. oz/A
  - Do not exceed 72 fl oz/A per year
- **Surfactants**
  - COC @ 1% v/v
  - NIS @ 0.25% to 0.5% v/v
- 50 day PHI
Select Max and Various Generics

clethodim

- Rate
  - 2 L (generic formulations)
    - 1.75 to 2.5 pt/A
  - 1 L (Select Max, Intensity One)
    - 9 to 16 fl. oz/A
  - NIS @ 0.25% v/v