Use of Cultivation and Glyphosate During the Fallow Period and New Herbicide Registration in Tomato

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Introduction

- No “silver bullet” like methyl bromide for weed control currently on the market
- Methyl bromide alternatives for weed management requires multiple methods of control
● Nutsedge forms chains of tubers
● Cultivation will break the chains and apical dominance

Webster et al. 2008
• Glyphosate can translocate from the leaves to the tuber
• However, translocation is only to the first of second degree daughter tuber
<table>
<thead>
<tr>
<th>Wk. after initiation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tr>
<td>6</td>
<td>Cult.</td>
<td>Gly.</td>
<td></td>
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<td>13</td>
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<td>17*</td>
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<table>
<thead>
<tr>
<th>Treatment</th>
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<tbody>
<tr>
<td>Initial Cultivation</td>
</tr>
<tr>
<td>Final Cultivation</td>
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</tbody>
</table>

*Following final cultivation was fumigation at 21 WAI, PRETR herbicide at 25 WAI, transplanting at 26 WAI, and POSTTR herbicide at 29 WAI.
Effect of Sandea and No Sandea POST transplant.
Effect of Sandea and No Sandea POST transplant.
Effect of Sandea and No Sandea POST transplant.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Nutsedge/ft²</th>
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<tbody>
<tr>
<td>Nontrt.</td>
<td>3.1</td>
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<tr>
<td>Cult.</td>
<td>2.9</td>
</tr>
<tr>
<td>Gly.</td>
<td>2.7</td>
</tr>
<tr>
<td>Cult.-Gly.</td>
<td>2.6</td>
</tr>
<tr>
<td>Gly.-Gly.</td>
<td>2.5</td>
</tr>
<tr>
<td>Cult.-Gly.</td>
<td>2.4</td>
</tr>
<tr>
<td>Gly.-Cult.</td>
<td>2.3</td>
</tr>
<tr>
<td>Gly.-Gly.</td>
<td>2.2</td>
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</tbody>
</table>
Effect of Sandea and No Sandea POST transplant.

The bar chart shows the number of nutsedge per ft² for different treatments:
- Nontrt.
- Cult.
- Gly.
- Cult.-Cult.
- Gly.-Cult.
- Cult.-Gly.
- Gly.-Cult.
- Gly.-Cult.-Gly.

Red bars represent treatments without Sandea, and blue bars represent treatments with Sandea.
Effect of Sandea and No Sandea POST transplant.

![Bar chart showing the effect of Sandea and No Sandea on Nutsedge/ft²](chart.png)

- Nontrt. non-treated
- Cult. cultivated
- Gly. Glycine
- Cult.-Gly. cultivated-Glycine
- Gly.-Cult. Glycine-cultivated
- Gly.-Cult.-Gly. Glycine-cultivated-Glycine

The chart compares the effect of Sandea and No Sandea treatments on Nutsedge density per square foot. The x-axis represents different treatments, and the y-axis shows Nutsedge density.
Effect of fallow treatment and fumigant on nutsedge.
Effect of fallow treatment and fumigant on nutsedge.
Effect of fallow treatment and fumigant on nutsedge.
Effect of fallow treatment and fumigant on nutsedge.

![Graph showing the effect of fallow treatment and fumigant on nutsedge. The graph compares different treatments including None, PicClor, and Paladin. The x-axis represents different treatments while the y-axis shows the nutsedge density per square foot. Each treatment has three bars representing different fumigants. The bars indicate a significant reduction in nutsedge density with the use of fumigants compared to non-treated and untreated conditions.](image-url)
Effect of fumigants without Sandea on marketable yield.

[Bar graph showing the effect of different treatments on marketable yield. The treatments include Nontrt., Cult., Gly., Cult.-Gly., Gly.-Cult., and Gly.-Cult.-Gly. The y-axis represents pounds per acre.]
Conclusions

- A single cultivation or glyphosate application during the fallow provides poor control of nutsedge
- Gly.-Cult.-Gly. had the greatest nutsedge control across all fumigants
- Cult.-Gly. or Gly.-Cult. had excellent control when combined with Paladin
New herbicide registrations
League

- Active ingredient: Imazosulfuron
- 4 to 6.4 oz./A
- No more than application per year
- PRE & POST control: yellow nutsedge, purslane, pigweed (except livid)
- Use only in a tomato-tomato rotation
- Also pepper (bell & nonbell) label
Reflex

- Active ingredient: fomesafen
- Up to 1 pt./A
- Do not use in Dade County
- PRE under the plastic
- Control of pigweed, eastern black nightshade, and grass species
Spartan

- Active ingredient: sulfentrazone
- 2.25 – 3.0 fl.oz./A (<1.5% OM, coarse soil)
- Transplanted tomato only
- PRE under the plastic
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