Weed control, plantback, and crop phyto concerns with tomato herbicides

Scott Stoddard
UCCE Merced County

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Perennial weeds

Yellow nutsedge *Cyperus esculentus*

Johnsongrass *Sorghum halepense*

Field Bindweed *Convolvulus arvensis*
Annual weeds

Wright groundcherry
Physalis acutifolia

Redroot pigweed & lambsquarters
Amaranthus & Chenopodium spp

Barnyardgrass
Echinochloa spp
Notes on Perennial Weeds

- Present in any tillage system, but often more of a problem with no-till/min-till.

- Vegetative parts can be a source of reinfestation even when the tops are gone.

- Effective management needed over multiple years (rotation, cultivation, herbicides).
Extensive Root System

> 10 ft underground horizontal stems (rhizomes)
Notes on Annual Weeds

- Single largest category of agriculturally important weeds
- Normally reproduce only from seed; often heavy seed producers
- Summer annuals germ in the spring and grow through the summer
- Control. Cultivation and herbicides before flowering, prevention (certified seed, sanitation), rotation
Amaranthus spp.

> 100,000 seeds per plant.
Herbicide Development in Tomatoes

• **Limited. Trickle down from other crops 15 yrs**
  - Dual Magnum (metolachlor)
  - Sandea (halosulfuron)
  - Matrix (rimsulfuron)
  - Select Max (clethodim)
  - Shark (carfentrazone)
  - Zeus (sulfentrazone)

• **Know the rotation and residual cautions**
Herbicide Trials

- Pre & post application of Sandea and Matrix
- PPI Sprinkle incorporated
- Fresh Market and processing tomatoes
Conclusions

- Matrix + Dual Magnum provided good control for both spp.
- Matrix + Sandea:
  - Excellent weed control
  - Significant yield increase
  - Better with NIS
- Sandea did not cause crop phytotoxicity in this variety
Sandea phyto.
Field Bindweed Management for Processing Tomatoes

Scott Stoddard, UCCE Merced and Madera Counties

Tom Lanini, UC Davis, Emeritus
Lynn Sosnoskie, UCD
Putting it all together

Only 6 treatment combinations > 40% control
trifluralin (Treflan)
Tomato Herbicide Trial 2013

Dual Mag 1.5 pts/A + Treflan 2 pts/A PPI + Matrix POST 2X
Zeus 6.0 fl oz PPI + Matrix 2 oz/A POST 2X
Zeus 6.0 fl oz + Treflan 2 pts/A PPI
Zeus 4.5 fl oz + Treflan 2 pts/A PPI
Zeus 6.0 fl oz + Dual Magnum 1.5 pts/A PPI
Zeus 4.5 fl oz + Dual Mag 1.5 pts/A PPI
Zeus 6.0 fl oz/A PPI
Zeus 4.5 fl oz/A PPI
UTC

weed pressure (0-10) July 12
Trelfan PPI fb Matrix POST 2 apps fb clethodim
POST + COC

NOTE: plantback > 10
months for many crops
after Matrix
<table>
<thead>
<tr>
<th>Rotation Crop</th>
<th>Interval (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans</td>
<td>10</td>
</tr>
<tr>
<td>Field corn</td>
<td>anytime</td>
</tr>
<tr>
<td>Cotton</td>
<td>10</td>
</tr>
<tr>
<td>Wheat</td>
<td>4</td>
</tr>
<tr>
<td>Garlic</td>
<td>6</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>anytime</td>
</tr>
<tr>
<td>melons</td>
<td>12</td>
</tr>
</tbody>
</table>

Where drip irrigated tomatoes are grown, rotate only to tomatoes, potatoes, or corn as crop injury may result.
Factors affecting herbicide efficacy

- Application timing relative to growth of weeds/crop.
- Soil type.
- Moisture stress and overall vigor.
- Air and soil temp.
- Herbicide rate, adjuvants, and calibration.
An excellent method to incorporate herbicides .... that’s going away.
2012. No incorporation for 5 days after application.
out-of-crop herbicides

- Pre-plant applications of glyphosate, paraquat, carfentrazone, 2,4-D, etc., to burn down emerged weeds.
- Post crop glyphosate to weeds when at flowering stage in the fall.
- Rotation with other crops, especially Roundup Ready.
- Cultivation.
moving
past 40%

Lynn Sosnoskie, UCD
glyphosate - Roundup
Herbicide-Resistant Weeds

- Serious problem of rice for ~20 yrs (11 spp)
- Becoming an important concern in other cropping systems (roadsides, ditch banks, trees & vines)
- Glyphosate resistance (5 species confirmed, others under investigation)
- Concerns about multiple-resistance and non-target site resistance
  - Tolerance to other non-herbicidal stresses?
Summary

New a.i.s for tomatoes move slowly. Mixed herbicide programs combined with good cultural management can be an effective method of weed control.