Update on Weed Control in Tomatoes

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New or Potential Tomato Herbicides

- Sulfentrazone (Spartan) – Submitted to EPA
- Carfentrazone (Shark) – registered
- Pendimethalin (Prowl H₂O) - registered
Spartan (Sulfentrazone)

- Submitted to the EPA by IR-4
- Applied PRE-transplant 0.15 to 0.25 lb/a – (4.8 to 8 oz/a Spartan 4F)
- Excellent broadleaf weed control and fair grass control – long residual activity
- Slight injury to transplants and moderate to severe injury to direct seeded tomatoes
- Sensitive to soil and water pH – high pH = more potential activity
Spartan 0.375 lbs/a
Weed Control @ 4 Weeks
Spartan 0.15 lbs/a

- Nightshade: 100%
- Witchgrass: 60%
- Pigweed: 90%
- Purslane: 100%
Weed Control @ 4 Weeks
Spartan 0.25 lbs/a

Weed Control (%)

Nightshade, Witchgrass, Pigweed, Purslane
Spartan PRE
0.25 lb/a
Spartan - Recrop Intervals

- Alfalfa - 12 months
- Corn - 10 months
- Cotton - 18 months
- Limas - Anytime
- Sunflower - Anytime
- Wheat - 4 months
- All others - 12 months
Shark (Carfentrazone)

- Applied PRE or POST @ 0.008 to 0.032 lb/a – (0.33 to 1.33 oz/a of Shark)
- Excellent velvetleaf, nightshade, pigweed, and lambsquarters control
- No residual activity
- No recrop restrictions
- PRE – 1 day before transplanting
- POST – hooded sprayer
Weed Control @ 4 Weeks
Shark 0.016 lbs/a Post-shielded

- Nightshade: 100%
- Witchgrass: 20%
- Pigweed: 100%
- Purslane: 100%
Shark 0.016 lbs/a
Post-shielded
Prowl H₂O (Pendimethalin)

- Applied PRE @ 0.95 to 1.42 lb/a (tomatoes)
- Less volatile than Treflan
- Moderate residual activity – 70 day PHI
- Good pigweed and grass control – also may be good for dodder (based on alfalfa studies)
- Currently registered PRE in Transplant tomatoes or POST-directed in established tomatoes
# Weeds in Prowl H₂O plots 3 months after treatment

<table>
<thead>
<tr>
<th>Prowl H₂O plots</th>
<th>Untreated Plots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purslane (0.75)</td>
<td>Purslane (0.75)</td>
</tr>
<tr>
<td>Puncture vine (0.50)</td>
<td>Puncture vine (0.75)</td>
</tr>
<tr>
<td>Black nightshade (0.25)</td>
<td>Black nightshade (1.0)</td>
</tr>
<tr>
<td>Tumble pigweed (0.25)</td>
<td>Tumble pigweed (1.0)</td>
</tr>
<tr>
<td>Lambsquarters (0.50)</td>
<td>Prostrate pigweed (0.75)</td>
</tr>
<tr>
<td></td>
<td>Lambsquarters (0.75)</td>
</tr>
</tbody>
</table>
Weed control (%) after treatment in Processing Tomato

<table>
<thead>
<tr>
<th>Date</th>
<th>Spartan 0.25 lb/a</th>
<th>Matrix PRE 0.03 lb/a</th>
<th>Matrix POST 0.03 lb/a</th>
<th>Prowl H20 1.42 lb/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Jun</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14-Jun</td>
<td>90</td>
<td>100</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>26-Jun</td>
<td>90</td>
<td>100</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

Ingredients:
- Spartan 0.25 lb/a
- Matrix PRE 0.03 lb/a
- Matrix POST 0.03 lb/a
- Prowl H20 1.42 lb/a
Late Season Weed Control (%) in Processing Tomato - August 9

- Spartan 0.25 lb/a
- Matrix PRE 0.03 lb/a
- Matrix POST 0.03 lb/a
- Prowl H20 1.42 lb/a
- Untreated
Hand Weeding Time (sec./50ft) in Processing Tomato

- Spartan 0.25 lb/a
- Matrix PRE 0.03 lb/a
- Matrix POST 0.03 lb/a
- Prowl H20 1.42 lb/a
- Untreated
Yield of Processing Tomato (tons/ac) following PRE Herbicides

- Spartan 0.15 lb/a
- Spartan 0.25 lb/a
- Matrix PRE 0.03 lb/a
- Matrix POST 0.03 lb/a
- Prowl H2O 0.95 lb/a
- Prowl H2O 1.42 lb/a
- Untreated

Direct seeded tomatoes
Matrix PRE 0.03 lb/ac
Fresh Tomatoes
Transplanted trial
Tomato Yield (lbs/5 plants)

- Spartan
- Matrix Pre
- Matrix Post
- Prowl
- Untr

[Bar Chart]

Yield (lbs/5 plants)

- Hand weeded
- No hand weeding
Matrix PRE – 4 WAT
Tomato Herbicide Summary

- **Spartan** – Excellent transplant tomato tolerance and excellent weed control
- **Prowl H₂O** – Excellent transplant tomato tolerance and fair direct seed tolerance. Good weed control – controls dodder
- **Matrix** works best as a preemergence treatment when watered in with irrigation. Excellent weed control Preemergerence and Good weed control early Postemergence
Crop Rotation??

Susceptible crops
• Alfalfa
• Asparagus
• Carrot
• Onion
• Safflower
• Sugarbeet
• Melon
Dodder Resistant Tomatoes

• Processing tomato varieties shown to have resistance to dodder: C D X 233, H9492, H9553, H9888, H9992, H9997, H1100, and PX 665
Dodder Conclusions

• Use transplants and plant late (after May 15th)
• Tolerant varieties reduce dodder attachments and growth
• Matrix (rimsulfuron) and Sandea (halosulfuron) only marginally effective
• Combination of tolerant varieties and Prowl H₂O applied preemergence is the most effective option