Evaluation of Reduced Fall-Timed, Tillage Operations

Gene Miyao, UC Farm Advisor, Yolo, Solano & Sacramento counties
Jeff Mitchell, Veg Crops Specialist, UC Davis
Tim Hartz, Veg Crops Specialist, UC Davis
Shrini Upadhyaya & Leroy Garciano, Ag Engineering Dept, UCD
Approaching No-Till: Fresh Market tomatoes w/ buried drip irrigation

Major Challenges for Processing tomato growers:
- ✓ Furrow irrigation w/ high residue
- ✓ Weed control w/out cultivation
- ✓ Mechanical harvest w/ residue & minimally disturbed soils
Fall-Timed, Primary TILLAGE
FALLOW (Conventional)

STANDARD TILLAGE

CHISEL BED CENTER

COVER CROP TRITICALE

Fall-Timed TILLAGE

REduced TILLAGE
FALLOW (Conventional)

CHISEL BED CENTER

COVER CROP TRITICALE

FALLOW (Conventional)

CHISEL BED CENTER

COVER CROP TRITICALE

Fall-Timed TILLAGE

STANDARD TILLAGE

REDUCED TILLAGE

A

B

C

A

B

C
# Reduced Fall Tillage Comparison, UC Davis, 2007

<table>
<thead>
<tr>
<th>Treatment Tillage</th>
<th>Net Yield (Tons/A)</th>
<th>Probability</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Till</td>
<td>Chisel Center</td>
<td>23.8</td>
<td>Similar yield between tillage systems</td>
</tr>
<tr>
<td>Standard Till</td>
<td>none</td>
<td>25.2</td>
<td>Bed chisel – no response in 1st year</td>
</tr>
<tr>
<td>Reduced Till</td>
<td>Chisel Center</td>
<td>24.5</td>
<td>Slight reduction in PTAB color, brix, and early plant growth</td>
</tr>
<tr>
<td>Reduced Till</td>
<td>none</td>
<td>24.1</td>
<td></td>
</tr>
<tr>
<td>Standard till</td>
<td></td>
<td>25.9</td>
<td></td>
</tr>
<tr>
<td>Reduced till</td>
<td></td>
<td>24.3</td>
<td></td>
</tr>
<tr>
<td>Probability</td>
<td></td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Chisel Center</td>
<td></td>
<td>24.2</td>
<td></td>
</tr>
<tr>
<td>none</td>
<td></td>
<td>24.6</td>
<td></td>
</tr>
<tr>
<td>Probability</td>
<td></td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td></td>
<td>NS</td>
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<tr>
<td>%CV</td>
<td></td>
<td>11</td>
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</tbody>
</table>
## Reduced Fall Tillage Comparison

**Effect on Yield (tons/A)**

UC Davis, 2008

<table>
<thead>
<tr>
<th>Tillage Method</th>
<th>Conventional</th>
<th>Reduced</th>
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</thead>
<tbody>
<tr>
<td>Chisel (bed center)</td>
<td>33.5 z</td>
<td>40.1 a</td>
</tr>
<tr>
<td>Triticale</td>
<td>32.4 z</td>
<td>27.5 b</td>
</tr>
<tr>
<td>Fallow</td>
<td>30.9 z</td>
<td>31.1 b</td>
</tr>
<tr>
<td>LSD (@ 0.05)</td>
<td>5.0</td>
<td>7.5</td>
</tr>
</tbody>
</table>
Results: Tillage Trials, UC Davis 2007 & 2008

✓ Comparable fruit yields between standard vs. reduced fall tillage.
✓ Benefit of single chisel in bed center w/ reduced tillage system?
Future Plans:

- Continue on UC Davis campus field site
- Expand testing into grower fields
Funding Support: California Tomato Research Institute
Field Assistance:
Mark Kochi, Yolo County field assistant
Jim Jackson, Fred Stewart, Franciso Rodriguez & crew,
Plant Sciences Department, UC Davis
Students Sara Pearson (Chico) & Margaret Lloyd (UCD)
E & J Farms
Supplies:
T S & L
Ag Seeds Unlimited
Strip-tilling cover crop ahead of transplanting tomatoes
Sano Farms, Firebaugh, 2006
Strip-till planted processing tomatoes
Firebaugh, CA 2006
PROCESSING TOMATOES
STRIP-TILL PLANTED INTO TRITICALE COVER CROP
FIREBAUGH, CA 2005
Tomato Yield (tons/A)
UC Westside Research & Extension Center

Conservation Tillage

Standard Tillage

Year
The End