Organic Fresh Market Tomato Yield Response To Rye And Hairy Vetch Cover Crops With Or Without Compost

Ajay Nair And Mathieu Ngouajio
Michigan State University, East Lansing, MI, 48824.
Cover Crops

- Added organic matter
- Improved soil structure and tilth
- Nitrogen fixation by leguminous crops
- Recycling of nutrients
- Weed control and erosion control
- Cereal rye and hairy vetch
Cereal Rye
Hairy Vetch + Cereal Rye
Other components

- Nutrient management through compost @ 10 tons/acre
- Main crops: cucumber and tomato.
- Varieties:
  - Cucumber: ‘Cobra’ and ‘Dasher’
  - Tomato: ‘Mountain Fresh’ & ‘Big Beef’
- Monoculture and polyculture
## Treatment structure

<table>
<thead>
<tr>
<th>Level of Biodiversity</th>
<th>Compost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Biodiversity</td>
<td>+</td>
</tr>
<tr>
<td>• Monoculture</td>
<td></td>
</tr>
<tr>
<td>• Cereal rye</td>
<td>-</td>
</tr>
<tr>
<td>Medium Biodiversity</td>
<td>+</td>
</tr>
<tr>
<td>• Monoculture</td>
<td></td>
</tr>
<tr>
<td>• Cover crop mixture</td>
<td>-</td>
</tr>
<tr>
<td>High Biodiversity</td>
<td>+</td>
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<tr>
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<td></td>
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</table>
Dairy Compost @ 10 tons/acre
Over all view of the plot
Effect of cropping system on tomato yield

- Vetch without compost does not provide acceptable yield
- No significant difference between mono and polyculture
- Polyculture does not help in tomato. Monoculture with rye + compost performed equally good as polyculture with rye + vetch + compost
Tomato yield potential under organic production system

- **Marketable yield (tons/acre)**
  - 'Big Beef': 10.2 t/A
  - 'Mountain Fresh': 13.4 t/A

**Cultivars**
- 'Big Beef' from NC State; indeterminate; tastes good
- 'Mountain Fresh' from NC State; determinate; Blight and wilt resistant
<table>
<thead>
<tr>
<th>Tomato cultivar</th>
<th>Unmarketable fruits (number)</th>
<th>Unmarketable fruits (weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Big Beef’</td>
<td>21,451</td>
<td>3.9 t/A</td>
</tr>
<tr>
<td>‘Mountain fresh’</td>
<td>12,648</td>
<td>2.5 t/A</td>
</tr>
</tbody>
</table>
**Tobacco Horn Worm Control**

Applied Dipel (Bt formulation) @ 1 lb/A (2 teaspoons per gallon).

[www.dirtworks.net](http://www.dirtworks.net)
Acknowledgements
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Questions and suggestions!