Tomato Insecticide Screening Research  
Beaumont, TX  
2005

**Agronomic and Cultural Information**

**Land preparation:**  Disiked block and bedded into rows (10 rows, 5 ft wide) on Mar 14  
Rototilled beds and hipped up rows with a single row bedder on Mar 24

**Planting:**  *Transplanted 200 tomatoes (Variety = Better Bush)*  3 ft apart into League soil (pH 5.5, sand 3.2%, silt 32.4%, clay 64.4% and organic matter 3.8-4.8%)  
on Mar 24  
Plot size = 30 ft of row containing 10 plants, 5 ft row width with  
4 replications arranged in a randomized complete block

**Herbicide:**  Applied Glyphomax post-direct @ 2% v/v (mostly grasses) on May 18

**Fertilization:**  Applied 30-30-30 lb N-P₂O₅-K₂O/acre for each transplant on Mar 24, Apr 15, and May 6

**Cultivation:**  Cultivated and incorporated fertilizer applied on Apr 15 and May 6

**Irrigation:**  Hand watered each transplant on Mar 24  
Irrigated, held water briefly, and drained test on Mar 25, Apr 15, and May 2

**Treatments:**  Insecticide treatments were applied with a CO₂-pressurized hand-held spray boom (3-800067 nozzles, 50 mesh screens, 25 psi, 26 gpa final spray volume)  
on May 26 when large numbers of blister beetles were observed.  
Other insect pests such as cucumber beetles, stink bugs and hornworms were not observed in any significant numbers in the plots.

**Sampling:**  *The following pretreatment data collected from 2 plants/plot on May 25:*

- a. Defoliation (%)
- b. Number of blister beetles/plant (Density rating 0 = 0, 1 = 1-25, 2 = 6-50, 3 = 51+)
- c. Number of fruits per cluster
- d. Number of damaged fruits per cluster (probably due to *Helicoverpa sp.*)

*One day after treatment the following data collected from 2 plants/plot on May 27:*

- a. Defoliation (%)
- b. Number of blister beetles/plant (Density rating as above)

*Note:* Prior to analysis, defoliation (%) and damaged fruits/cluster (%) were subjected to angular transformation to degrees. No. blister beetles (density rating) was transformed using square root(x + 0.5). Tomatoes were not harvested for yield.
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Discussion

The variety selected for the insecticide screening test (Better Bush) grew vigorously and produced an abundance of fruits. Most typical insect pests of tomatoes in southeast Texas (aphids, cucumber beetles, stink bugs and hornworms) were not observed in any significant numbers as the plants developed and bore fruit. However, fruit damage (probably from Helicoverpa sp.) was relatively common throughout the test but was observed too late for proper timing of treatments. As the fruits were maturing the test area was invaded by large numbers of blister beetles, Epicauta temaka. The beetles began to rapidly defoliate the plants. Defoliation and fruit damage data were recorded just prior to insecticide treatments which targeted the blister beetles.

The blister beetles congregated on the soil surface in the shade of the plants when not feeding but would become highly mobile if disturbed or sprayed with an insecticide treatment. Due to the large numbers and mobility of the beetles, the density rating (as described above) proved to be the most feasible way to assess insect populations. Prior to treatment, a significant amount of damage occurred to the tomatoes (Table 1). One day after treatment, Prolex and Karate Z (both the low and high rates) dramatically reduced the number of blister beetles present on and under treated tomato plants. Populations of beetles in untreated plants remained about the same (Table 1). Due to the approximate nature of assessing the large numbers of beetles, the density ratings across the entire test were not significant. Visually, however, the Prolex and Karate Z applications appeared to control to some degree and possibly disperse the beetles away from the tomato plants.

Table 1. Tomato insecticide screening research. Beaumont, TX. 2005

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate lb (Al)/acre</th>
<th>Damaged fruit/cluster</th>
<th>% Defoliation</th>
<th>No. blister beetles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PRE</td>
<td>1 DAT</td>
</tr>
<tr>
<td>Prolex 0.0039</td>
<td>41</td>
<td>PRE</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Prolex 0.0125</td>
<td>32</td>
<td>PRE</td>
<td>24</td>
<td>31</td>
</tr>
<tr>
<td>Karate Z 0.0078</td>
<td>19</td>
<td>PRE</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>Karate Z 0.0250</td>
<td>25</td>
<td>PRE</td>
<td>29</td>
<td>24</td>
</tr>
<tr>
<td>Untreated</td>
<td>28</td>
<td>PRE</td>
<td>25</td>
<td>31</td>
</tr>
</tbody>
</table>

a Pretreatment data collected on May 25; damage primarily from Helicoverpa sp.
b Density rating: 0 = no blister beetles, 1 = 1-25, 2 = 26-50, 3 = 51+
c PRE = pretreatment
d DAT = days after treatment