Eggplant, Pepper, and Tomato

Nematodes

Howard F. Schwartz and David H. Gent

Identification and Life Cycle

Several species of nematodes can cause economic damage to tomato, eggplant, and pepper in the High Plains production region, including root-knot, sting, and stubby-root nematodes. The life cycles of different nematode species vary, and may include feeding on the outside of roots or penetration and development within roots. Some nematodes vector viruses (i.e., tomato black ring virus, tomato ringspot virus, and tobacco ringspot virus) or predispose plants to other diseases (i.e., Verticillium wilt). Nematodes survive between solanaceous crops by feeding on other crops and weeds, and are spread in contaminated soil on machinery, wind blown soil, and irrigation water.

Plant Response and Damage

Nematode injury varies among species, but can include galls on roots (root-knot), necrosis of roots (root-lesion), a “rat-tail” appearance (sting nematode), or a subtle stubby-appearance (stubby-root). Aboveground plant symptoms may range from no apparent injury to less vigorous growth to stunting, yellowing, wilting, and death. Nematodes reduce tomato yield by an estimated 15% in the southeastern US, but accurate estimates of crop loss are not available in the High Plains.

Management Approaches

Biological Control

Incorporation of green manure crops such as sudangrass, sesame, rapeseed, white mustard, or perennial ryegrass the season before solanaceous crops are planted can reduce some nematode populations.
Cultural Control

Crop rotation may provide suppression or control of some nematode species, but most nematodes that attack solanaceous crops have host ranges that include many crops and weeds. Therefore, effective weed control is essential for reducing nematode populations. Adequate but not excessive irrigation and fertilization will help plants tolerate some nematode feeding. Flooding fields can reduce nematode populations.

Chemical Control

Nematicides and soil fumigation effectively suppress many nematode species, but are most effective when combined with cultural practices that reduce nematode populations. Nematode injury often only occurs in localized areas in fields, and these areas can be effectively managed by spot-treatment with nematicides.

Product List for Nematodes:

<table>
<thead>
<tr>
<th>Pesticide/Insecticide</th>
<th>Product per acre</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>Vydate L</td>
<td>2-8 pints depending on crop</td>
<td>Restricted use; Maximum of 3-4 gallons per season depending on crop; May be applied by drip irrigation; 3 day PHI for tomato; 7 day PHI for eggplant and pepper</td>
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<tr>
<td><strong>Fumigants</strong></td>
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<tr>
<td>Telone II</td>
<td>9-15 gal</td>
<td>Restricted use; Preplant application, aerate 7-14 days.</td>
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<tr>
<td>Telone C-17</td>
<td>10-17 gal</td>
<td>Restricted use; Preplant application, aerate 7-14 days.</td>
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<tr>
<td>Vapam</td>
<td>40-100 gal</td>
<td>Restricted use; Preplant application, aerate 7 days.</td>
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