Tomato Pest Update

Scott Stoddard
UC Cooperative Extension
Merced & Madera Counties

Feb 2017
 Powdery Mildew

Leveillula taurica

Oidiopsis taurica
Powdery Mildew on FM tomatoes 2013

- UTC
- Luna Sensation 7 oz/A + NIS
- Fontelis 1.5 pts/A alt w/ Quadris Top
- Vivando 8 then 15 fl oz/A
- Priaxor 8 fl oz/A + NIS
- Quintec 4 oz/A + NIS
- Quintec 6 oz/A + NIS
- Quintec 12 oz/A + NIS
- Quadris Top 8 oz/A + NIS

Incidence

- 12-Nov
- 23-Oct
- 2-Oct
- 18-Sep
2015 PM incidence

The graph illustrates the percentage incidence of PM (Pest Management) for various treatments. The x-axis represents the different treatments, while the y-axis shows the percentage incidence, with a specific note for Oct 23. The treatments are labeled from top to bottom as follows:
- Mette 5 oz all Torino 3.4 oz
- Mette 8 oz all Torino 3.4 oz/A
- Phloxor 6 oz/Quintec 4 oz
- Phloxor 6 oz/Quintec 6 oz
- Phloxor 6 oz/Quintec 12 oz
- Quintec SC 3.4 oz
- Quintec Top 8 oz
- Quintec Top 16 oz
- CWM 10250 24 oz/A
- CWM 10250 16 oz
- UTC

Treatments are compared for their effectiveness, with some showing significant differences indicated by different letters above the bars.
Five Points-area trial
Effect of treatments on mildew severity over time

Area of lower leaves affected by mildew (%)

- Nontreated control
- Biweekly Jul-Aug
- Weekly Aug
- Weekly July-Aug
- Sulfur dust July-Aug
Tomato Powdery Mildew Control

• Sulfur dust effective when applied early and regularly (best material at all 3 locations)

• Most effective programs were those starting earlier and with close intervals

• Best registered fungicides
  • Quadris Top (also Quadris, Flint, Cabrio)
  • Quintec (quinoxyfen, Dow)
  • Priaxor (fluxapyroxad and pyraclostrobin)
  • Mettle + Torino
Blackmold (*Alternaria alternata*)

- Late season disease on ripe fruit.
- Enhanced by rain or dew — more of a problem on late fields.
- Fungus colonizes wounds, sunburn readily.
- Control
  - harvest early, don’t use sprinklers
  - fungicide applications 6 weeks prior to expected harvest
Black Mold

- Oval conidia produced in chains
- Primarily a saprophyte or weak pathogen
- UC IPM fungicides include chlorothalonil (Bravo), Quadris/Quadris Top, Fontelis, Mancozeb
- My trials: Bravo, Quadris Top, Priaxor, Luna Sensation very effective
Black Mold on Processing Tomatoes
Merced County 2013

Black Mold % by wt

Means separation using sq root corrected data.

UTC
Barno Weather Stick 2.75 pts/A
A18126 + Activator 90 5.3 oz/A
A19334 + Activator 90 13 fl oz/A
Phlox 8 fl oz A
Quadris Top 8 fl oz A
Luna Sensation 7 fl oz A

Forkeis alternated w/ Quadris Top 1.5 pts/8 oz/A
A18126 + Bravo A
A19334 + Bravo A
Phlox 8 fl oz A
Quadris Top 8 fl oz A
Luna Sensation 7 fl oz A
Tomato Black Mold Trial 2015
cv. H9663

Black Mold (%)

Oct 5

Oct 19
Fusarium

Fusarium Wilt I, II, III
Fusarium Crown and Root Rot
Fusarium Foot Rot
Fusarium spp in tomatoes

• Increasing problem over the last few years
• Resistance to race 2, race 3 is becoming more common
  ✦ common in Sac Valley and Delta, moving from the north
  ✦ very few commercial varieties with resistance “FFF”, but more are being developed
• Difficult to manage — disease can live in the soil for many years as saprophytes.
Main worm pests in California tomatoes

- Beet armyworm
- Tomato fruitworm
- Western yellowstripe armyworm
- Tomato pinworm
- Loopers
- Hornworms & cutworms
Beet Armyworm

(*Spodoptera exigua*)
Damage
Tomato Fruitworm
(*Heliothis zea*)
Control

Processing tomatoes:

- Leaf sampling (fruitworm): use chart, factor in parasitized eggs.

- Fruit sampling: at least 100 fruit at random, green, not too small (> 1 inch), 6 weeks before harvest.
  
  - 3.25% damage threshold before treating (5 - 10 larvae per plant).

- Treat based on total worm damage, so fruitworm and western’s impact results.
Control

- Fresh market tomatoes
  - No fruit sampling thresholds established.
  - Leaf sample instead, after flowering.
  - 5 minute timed sampling, > 1 egg mass/larvae, consider treating
# LEAF SAMPLING

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- **# black eggs**: The number of black eggs observed.
- **Number of white eggs**: The number of white eggs in each category.
Tomato Pinworm

*Keiferia lycopersicella*

Pheromone traps to monitor
Addl spray: Abamectin
Research Trials
2008

[Bar chart showing data for 2008 with treatment labels including UTC, Rimon 9 H2 02, Rimon 12 H2 02, Rimon + Proclaim sea, Proclaim 3.5 H2 02, Proclaim 3.0 H2 02, Coragen 3.5 H2 02, Coragen 5.0 H2 02 + MsQ, Incr 0 H2 02, Avantra 3.5 H2 02.]

[Bar chart showing data for 2008 with treatment labels including UTC, Rimon 9 H2 02, Rimon 12 H2 02, Rimon + Proclaim sea, Proclaim 3.5 H2 02, Proclaim 3.0 H2 02, Coragen 3.5 H2 02, Coragen 5.0 H2 02 + MsQ, Incr 0 H2 02, Avantra 3.5 H2 02.]

# larvae per 4 plants (corrected)

% leaf damage (corrected)

B
FM Tomato Worm Trial 2010 Graph

LSD 0.05 = 4.4
2015 Trial Results

![Worm Damaged Fruit Chart]

- Intrepid Edge 12 fl oz/A
- Radiant SC 6 fl oz/A
- Intrepid 2F 15 fl oz/A
- Coragen SC 1.67 5 oz/A
- Leverage 360 4.1 fl oz/A
- Synapse WG 3 oz/A
- Proclaim 3.2 oz/A
- Entrust 4.0 oz/A

% fruit damage:
- UTC
- a
- b
Insecticides

- Intrepid (methoxyfenozide)
- Coragen (chlorantraniliprole [rynaxypyr])
- Rimon (novaluron)
- Radiant (spinetoram)
- Success/Entrust (spinosad)
- Avaunt (indoxacarb)
- Proclaim (emamectin benzoate)
- Confirm (tebufenozide)
- Bt (Dipel, Xentari)
- Leverage 360 (imidacloprid + B-cyfluthrin)
- Intrepid Edge (methoxyfenozide + spinetoram)
- Lannate (methomyl)
- Danitol (fenpropathrin)
- Asana (esfenvalerate)