

Pest Management Strategies for Processing Tomatoes

Principal Researcher: Cheryl Trueman, M.SC.

Key Findings / Summary of Results

BACTERIAL DISEASE MANAGEMENT

1. Efficacy of Kasumin for the control of bacterial spot in tomato (p. 5 – 8)

Kocide 2000 + Kasumin had numerically the lowest number of bacterial lesions on fruit among all treatments; however, this value was not significantly different than the nontreated control, Kocide alone, or Kasumin alone. Kasumin alone and Kasumin + Agral 90 did not reduce the total incidence of bacterial spot and speck on tomato fruit as compared to the nontreated control; however the percent leaf cover was significantly higher than the nontreated control. Foliar disease ratings with Kasumin in combination with Kocide 2000 or Dithane were not significantly different than applications of Kocide 2000 or Dithane alone. Kasumin + Bravo resulted in significantly more leaf cover than Bravo alone.

2. Efficacy of copper formulations for the control of bacterial pathogens in processing tomatoes (p. 9 – 12)

There were no differences among treatments for bacterial spot and speck damage on fruit. Kocide 2000 and Kocide 3000 had higher percent leaf cover than other copper treatments (Parasol WG, Parasol FL, Copper 53W, Copper Spray) and the nontreated control. Parasol FL was not significantly different than the nontreated control in most assessments of bacterial disease throughout the growing season.

3. Serenade for the control of bacterial spot in tomatoes (p. 13 – 16)

There were no differences among treatments for bacterial spot and speck damage on fruit. During the growing season, applications of Serenade Max resulted in the same level of defoliation as the nontreated control. Percent leaf cover on Kocide 2000 treatments was not significantly different than Serenade Max alt. with Kocide, however Kocide 2000 alone resulted in fewer lesions earlier in the season than Serenade Max alt. with Kocide.

FUNGAL DISEASE MANAGEMENT

4. Efficacy of combinations of new fungicides with copper for control of fungal disease in tomato (p. 17 – 20)

The addition of Kocide 2000 to fungicide treatments, as compared to fungicide treatment alone, significantly improved percent leaf cover on Aug 21 and Sept 1 for Kasumin + Agral 90 only. Addition of Kocide 2000 to Tanos and Kocide 2000 to Acrobat did not increase leaf cover compared to Tanos alone or Acrobat alone. However, leaf cover for Kocide 2000 + Tanos and Kocide 2000 + Acrobat was significantly higher than the nontreated control on Aug 21 and Sept 1, respectively. There were no significant differences among treatments for any yield assessments, or the number of fruit with anthracnose.

The percent leaf cover on Sept 9 was significantly higher than the nontreated control for treatments Cabrio + Lance, Tanos, Kasumin + Agral 90 + Kocide 2000, Cabrio + Lance + Kocide 2000, and Tanos + Kocide 2000. A large portion of leaf loss on Sept 9 is attributed to late blight infection, however leaf loss from other fungal blights was not distinguished from late blight infection. There were no significant differences among treatments for any yield assessments, or the number of fruit with anthracnose.

5. Effective spray programs for control of anthracnose in tomato (p. 21 – 24)

With the exception of Polyram and Tanos, all spray programs significantly reduced the number of fruit with anthracnose as compared to the nontreated control. The number of fruit with anthracnose was numerically lowest for treatment Quadris + Bravo, and this treatment was significantly different than the nontreated control, Polyram, and Tanos. The addition of Bravo to spray programs with other fungicides in most cases did not result in significantly better control of fungal diseases. However, the application of more than one mode of action at one time is generally considered good resistance management. There were no significant differences among treatments for any of the yield assessments conducted.

The percent leaf cover on Sept 9 was significantly higher than the nontreated control for all treatments except Bravo + Tanos, and Quadris. A large portion of leaf loss on Sept 9 is attributed to late blight infection, however leaf loss from other fungal blights was not distinguished from late blight infection.

6. Evaluation of new fungicides for control of Septoria leaf spot, early blight, and anthracnose in processing tomato (p. 25 – 28)

All treatments except Acrobat and Kasumin + Agral 90 provided some level of control against fungal leaf blights. Percent leaf cover on Aug 21 was significantly higher than the nontreated control for treatments Lance, Cabrio, Acrobat + Dithane, and Tanos. On Sept 1, percent leaf cover was significantly higher than the nontreated control for treatments Cabrio, Lance + Cabrio, Acrobat + Dithane, Acrobat + Polyram, Acrobat + Bravo, Dithane, Polyram, Bravo, and Tanos. Late blight was first detected in this trial on Aug 31 and may have impacted percent leaf cover ratings on Sept 1. The percent leaf cover on Sept 8 was significantly higher than the nontreated control for all treatments except Lance, Acrobat and Kasumin + Agral 90. A large portion of leaf loss on Sept 8 is attributed to late blight infection, however leaf loss from other fungal blights was not distinguished from late blight infection. The late blight infection began on one side of the trial and moved across in a manner perpendicular to the direction of replicated treatments blocks (blocks).

INSECT MANAGEMENT

7. Application of insecticides through drip irrigation in tomatoes (p. 29 – 32)

The population of Colorado potato beetles was very low in this trial, and when present, the insects were not distributed evenly within plots, or the trial itself. The populations were too low to generate any relevant data.

8. Efficacy of new insecticides for control of Colorado Potato Beetle in tomato (p. 33 – 36)

The number of CPB beetle larvae for treatment Belt was significantly higher than all treatments except Intrepid and the nontreated control on June 29. On July 6, the number of CPB larvae for treatment Intrepid was significantly higher than all treatments except Belt and the nontreated control. Actara, Coragen, and Product 1 had significantly lower CPB larvae counts than the nontreated control, Belt and Actara on July 6 as well. Belt, Intrepid, and the nontreated control had significantly higher CPB larvae counts than all other treatments on July 9, and on July 16 Belt and Intrepid had significantly higher numbers than all treatments including the nontreated control. There were no differences among treatments in the number of mature fruit (*data not shown*). There were no significant differences among treatments for the number of CPB adults or egg masses.

The population of Colorado potato beetles was low this year, and when present, the insects were not distributed evenly within plots, or the trial itself. The data indicated that Belt and Intrepid may not be as effective as other tools, however, further study is required.