TOMATO (*Lycopersicon esculentum* ‘Mountain Majesty’) Late blight; *Phytophthora infestans*

Bacterial spot; *Xanthomonas perforans*

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**Evaluation of fungicides for control of late blight and bacterial spot on fresh-market tomato, 2016.**

Ten treatments were evaluated in a randomized complete block design with five replications at the Mountain Horticultural Crops Research Station in Mills River, NC. Six-wk-old tomato transplants were planted 17 Jun on beds previously fumigated (150 lb/A methyl bromide [67%] + chloropicrin [33%]) and covered with 1.5 ml polyethylene black plastic. Rows were established on 5-ft centers and plants were spaced 18-in apart. Each plot consisted of a row of 5 plants with 5-ft fallow section between each plot and a row of 5 untreated plants on each end. A non-treated buffer row was established on each side of a treated row. Treatments were applied using a CO2-pressurized backpack sprayer equipped with a handheld boom and a hollow cone nozzle (TXVS-26) at 45 psi. Treatments were applied weekly from 29 Jun to 16 Sep. Spray rate (gal/A) increased as plants grew: 45 gal/A for three weeks, 55 gal/ A for three weeks, then 65 gal/A for the final six weeks. The severity of late blight was evaluated weekly using a modified Horsfall- Barratt scale from 19 Aug to 26 Sep; severity of bacterial spot also was evaluated on the same scale from 9 Aug to 14 Sep. Vine-ripe fruit were harvested on 25 Aug and 7 Sep. Weights of marketable fruit were recorded. Rainfall for Jun, Jul, Aug, and Sep were 1.6, 5.2, 6.3, and 0.1 in, respectively; average daily temperature was 72.9, 75.3, 74.4, 71.2°F for Jun, Jul, and Aug, respectively. Analysis of variance was performed using the GLM procedure and means were separated by Fisher’s least significant difference test with SAS 9.4.

Despite favorable weather, late blight did not appear until late in the season. However, the plot was naturally infested with bacterial spot and disease pressure was high throughout the season, although none of the treatments provided control of this disease. All programs resulted in significantly less late blight than the non-treated control. Treatments with Orondis Opti + Bravo Weather Stik + Revus Top, at both rates, provided the best control. Orondis Ultra + Bravo Weather Stik + Revus Top, Bravo + Weather Stik + Endura, Bravo + Zampro + Revus Top, and Tanos + Revus Top also provided significantly better control than the non-treated control, and the Cueva + Double Nickel and Kocide + Manzate treatments. Marketable yields varied among treatments; the non-treated control and Cueva + Double Nickel provided the lowest yields. No phytotoxicity was observed in any of the treatments.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Treatment, rate per A | Application  timing (wk) | AUDPCx | | | | Marketable  yield (t/A)y | |
| Bacterial spotz |  | Late blighty | |
| Non-treated control (water) | 1-12 | 1438 |  | 325 | a | 1.6 | c |
| Cueva 2.0 qt  Double Nickel LC 1.0 qt | 1-12  1-12 | 1479 |  | 233 | b | 1.7 | c |
| Kocide 3000 46.1DF 1.7 lb  Manzate Pro-Stik 75DG 1.5 lb | 1-12  1-12 | 1574 |  | 103 | c | 1.9 | bc |
| Tanos 50DF 8 oz  Revus Top 4.17SC 7 fl oz | 1,3,5,7,9,11  2,4,6,8,10,12 | 1723 |  | 86 | cd | 3.4 | ab |
| Bravo Weather Stik 6SC 1.5 pt  Zampro 14 fl oz  Revus Top 4.17SC 7 fl oz | 2,4,6,8,10  1,3,5,7,9,11  6,12 | 1465 |  | 48 | cde | 2.9 | abc |
| Orondis Ultraw 5.5 fl oz  Bravo Weather Stik 6SC 1.5 pt  Revus Top 4.17SC 7 fl oz | 2,4,6,8,10  1,3,5,7,9,11  6,12 | 1588 |  | 45 | cde | 2.6 | abc |
| Endura 70WG 3.0 oz  Bravo Weather Stik 6SC 1.5 pt  Revus Top 4.17SC, 7 fl oz | 1,3,5,7,9,11  1,3,5,7,9,11  2,4,6,8,10,12 | 1446 |  | 41 | de | 3.4 | ab |
| Orondis Ultraw 6.84 fl oz  Bravo Weather Stik 6SC 1.5 pt  Revus Top 4.17SC 7 fl oz | 2,4,6,8,10  1,3,5,7,9,11  6,12 | 1570 |  | 37 | de | 4.0 | a |
| Orondis Optiw 2.14 pt  Bravo Weather Stik 6SC 1.5 pt  Revus Top 4.17SC 7 fl oz | 2,4,6,8,10  1,3,5,7,9,11  6,12 | 1771 |  | 17 | e | 2.6 | abc |
| Orondis Optiw 1.71 pt  Bravo Weather Stik 6SC 1.5 pt  Revus Top 4.17SC 7 fl oz | 2,4,6,8,10  1,3,5,7,9,11  6,12 | 1640 |  | 14 | e | 3.1 | abc |
| LSDv | N/A | N/A |  | 60 | | 1.6 | |

zMeans were not significantly different at *P*=0.05 and were not separated.

yTreatments followed by the same letter(s) within a column are not significantly different (*P*=0.05, Fisher’s least significant difference)

xArea under disease progress curve

wOrondis Opti (oxathiapiprolin + chlorothalonil) and Orondis Ultra (oxathiapiprolin + mandipropamid) were used as pre-mixed products

vFisher’s least significant difference