TOMATO (*Lycopersicon esculentum* ‘Mountain Merit’) Early blight; *Alternaria linariae (*syn*. A. tomatophila)*

Bacterial spot; *Xanthomonas perforans*

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**Evaluation of conventional and organic pesticides for control of early blight on fresh-market tomato, 2016.**

Eleven 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 6 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 plots. A non-treated buffer row was established on each side of a treated row. Kocide 3000 was applied weekly and Actigard was applied every 14d to control bacterial spot. 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 14 Jun to 8 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 seven weeks. On 13 Jul, five to seven tomato leaves that had been naturally infected with early blight were placed in the buffer rows. On 26 Jul, the lower leaves of the buffer rows were inoculated with a spore suspension. Disease assessments were made weekly using a modified Horsfall-Barratt scale. Vine-ripe fruit were harvested three times: 15 and 25 Aug and 7 Sep. Weights of marketable fruit were recorded. Rainfall for Jun, Jul, and Aug were 2.5, 5.2, 6.3, and 0.1 in, respectively; the average daily temperature was 72.4, 75.3, 74.4, and 71.2°F for Jun, Jul, Aug, and Sep, respectively. Analysis of variance was performed using the GLM procedure and means were separated by Fisher’s protected least significant difference test with SAS 10.4.

Disease pressure from early blight was very low despite disease-favorable weather and two inoculations. However, disease pressure from bacterial spot was moderate to high. None of the spray programs provided significantly different disease control for early blight or bacterial spot when compared to the non-treated control. Marketable yields were similarly unaffected by treatments. No phytotoxicity was observed.

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| --- | --- | --- | --- | --- | --- |
| Treatment, rate per A | Application timing (week) | AUDPCy | | | Marketable yieldz  (t/A) |
| Early blightz | | Bacterial spotz |
| Non-treated, control | N/A | 59 | 689 | | 2.5 |
| Manzate Pro-Stik 75DG1.5 lb  Quadris 2.08F 6.2 fl oz | 1-8  3,7,11 | 47 | 867 | | 2.2 |
| Endura 70WG 3.0 oz  Revus Top 4.17SC 7 fl oz | 9,13  10,12 |  |  | |  |
| Manzate Pro-Stik 75DG 1.5 lb  Fontelis 1.6SC 18 oz  Revus Top 4.17SC 7 fl oz | 1,2,4,6,8  3,5,7,9,11,13  10,12 | 46 | 998 | | 2.6 |
| Fracture 2.1SL 24.4 fl oz  Activator 90 2 fl oz | 1-13  1-13 | 49 | 959 | | 1.8 |
| Fracture 2.1SL 36.6 fl oz  Activator 90 2 fl oz | 1-13  1-13 | 27 | 995 | | 2.5 |
| Fracture 2.1SL 24.4 fl oz  Activator 90 2 fl oz  Manzate Pro-Stik 75DG 1.5 lb | 2,4,6,8,10,12  2,4,6,8,10,12  1,3,5,7,9,11,13 | 35 | 941 | | 1.7 |
| Fracture 2.1SL 36.6 fl oz  Activator 90 2 fl oz  Manzate Pro-Stik 75DG 1.5 lb | 2,4,6,8,10,12  2,4,6,8,10,12  1,3,5,7,9,11,13 | 47 | 1084 | | 1.7 |
| Rhyme 2.08SC 7 fl oz  Activator 90 2 fl oz  Manzate Pro-Stik 75DG 1.5 lb | 2,4,6,8,10,12  2,4,6,8,10,12  1,3,5,7,9,11,13 | 39 | 1029 | | 2.4 |
| Rhyme 2.08SC 7 fl oz  Activator 90 2 fl oz  Fracture 2.08SC 7 fl oz | 1,3,5,7,9,11,13  2,4,6,8,10,12  2,4,6,8,10,12 | 50 | 887 | | 1.4 |
| Zing 36 fl oz  Activator 90 2 fl oz | 1-13  1-13 | 48 | 967 | | 0.9 |
| Zing 36 fl oz  Activator 90 2 fl oz  Manzate Pro-Stik 75DG1.5 lb | 3,6,9,12  3,6,9,12  1,2,4,5,7,8,10,11 | 38 | 920 | | 2.3 |

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

yArea under disease progress curve