TOMATO (*Lycopersicon esculentum* ‘Mountain Fresh Plus’) Bacterial spot; *Xanthomonas perforans*

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**Evaluation of conventional and organic pesticides for control of bacterial spot on fresh-market tomatoes, 2016.**

Seven 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 1 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 a 5-ft fallow section between plots. Mancozeb was applied on a 7-day schedule for fungal disease control. Treatments were applied using a CO2-pressurized backpack sprayer equipped with a handheld boom with one, two, or three hollow cone nozzle(s) (TXVS-26) at 45 psi. Treatments were applied on a 7-day schedule beginning 6 Jun and ending 24 Aug. Spray rate (gal/A) increased as plants grew: 45 gal/A for 3 weeks, 55 gal/ A for 3 weeks, then 65 gal/A for the final 6 weeks. On 9 Jun, artificially inoculated plants (8-wkold) were planted between the two center-most plants of each treatment plot. Disease assessments were made weekly using a modified Horsfall-Barratt scale. Vine-ripe fruit were harvested 11 and 23 Aug, and 1 Sep. Weights of marketable fruit were recorded. Rainfall for Jun, Jul, and Aug were 2.7, 5.2, and 6.3 in, respectively; average daily temperature (°F) was 72.3, 75.3, 74.4 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.

Disease pressure from bacterial spot was very low initially, but progressed rapidly and was very high at the end of the season. Four treatments provided the same level of control as the non-treated, inoculated control: Regalia + Cueva, Kocide, Kocide + Tanos, and Tanos; however, none of the treatments provided better control than the inoculated, non-treated control. Regalia + Cueva provided significantly better control than Cueva alone. Marketable yields were not significantly different among treatments; however, total yields varied. No phytotoxicity was observed. In the table, treatments are sorted by AUDPC.

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| Treatment, amount per Az | AUDPCy | Marketable yieldx(t/A) | Total yieldy(t/A) |
| Water, non-inoculated control | 259 | c | 21.8 | 63.8 ab |
| Water, inoculated control | 337 | bc | 18.4 | 58.8 abc |
| Regalia 2.0 qtCueva 2.0 galOxiDate 2.0x, 1 gal/100 galAquasil 0.07 gal/100 gal | 346 | bc | 22.7 | 70.6 a |
| Kocide 3000 46.1DF1.7 lb | 366 | bc | 18.1 | 57.0 abc |
| Kocide 3000 46.1DF 1.7 lbTanos 50DF 8 oz | 368 | bc | 18.3 | 53.4 bc |
| Tanos 50DF 8 oz  | 462 | ab | 19.0 | 59.5 abc |
| Cueva 2.0 gal/100gal | 568 | a | 18.0 | 56.4 abc |
| OxiDate 2.0x 1 gal/100 galAquasil 0.07 gal/100 gal | 576 | a | 14.9 | 45.0 c |
| LSDw | 156 | 6.4 | 14.8 |

zAmount applied per A unless stated as per 100 gal

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

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

wFisher’s least significant difference