NC State Extension Vegetable Pathology
Meadows team annual summary of pesticide evaluations on various diseases of fruiting vegetables in western North Carolina, 2023

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Industry partners:
ADAMA
AgBiome
Certis Biologicals
FMC Corporation
Nichino America
Stepan Company
SummitAgro USA
Syngenta

This report was prepared as a brief summary. All trials were maintained according to standard practices (fertilization, herbicide, and insecticide applications). When interpreting results, the values followed by the same letter in graphs indicate not significantly different from each other.



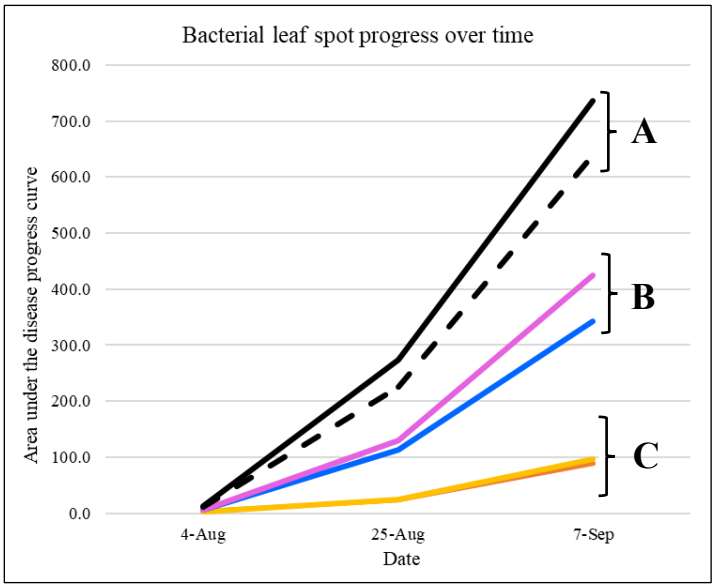
Bacterial spot on tomato, Mills River, NC

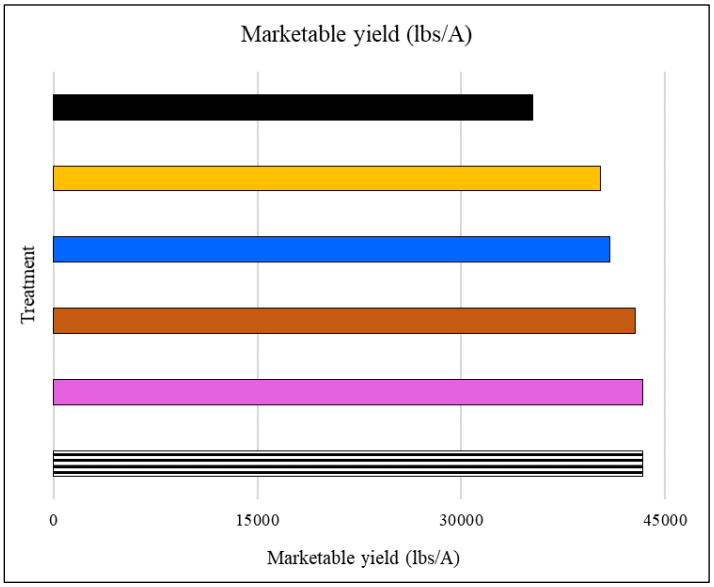
Planting date: 5 Jun
Variety: Mountain Gem
Inoculation: Foliar spray of guard row plants on 6 Jul with 10^8 cfu/ml suspension of *X. perforans*
Applications: 1= 5 Jul, 2= 12 Jul, 3= 19 Jul, 4= 26 Jul, 5= 2 Aug, 6= 9 Aug, 7= 16 Aug, 8= 24 Aug
Harvest: 23 Aug, 30 Aug, and 6 Sep

Key	Product evaluated, rate per acre	Weeks applied
	Water control	1-8
	No water control	-
	Miravis Prime, 10 fl oz Manzate Pro Stik 75DG, 1.5 lb	1,3,5,7 1-8
	Manzate Pro Stik 75DG, 1.5 lb + Actigard 50 WG, 0.3 oz	1-8
	Manzate Pro Stik 75DG, 1.5 lb + Kocide 3000, 1.75 lb Actigard 50 WG, 0.3 oz Actigard 50 WG, 0.5 oz	1-8 1-3 4-8
	Manzate Pro Stik 75DG, 1.5 lb + Kocide 3000, 1.75 lb Actigard 50 WG, 0.5 oz	1-8 1,3,5,7

The grower standard treatments including Manzate Pro Stik + Kocide 3000 + Actigard reduced disease severity more than treatments that did not include Kocide 3000 (the bacterial spot pathogen in this study was susceptible to copper). Treatment with Miravis Prime + Manzate and Manzate + Actigard reduced disease compared to the nontreated controls.

There were no differences in marketable yield between treatments.



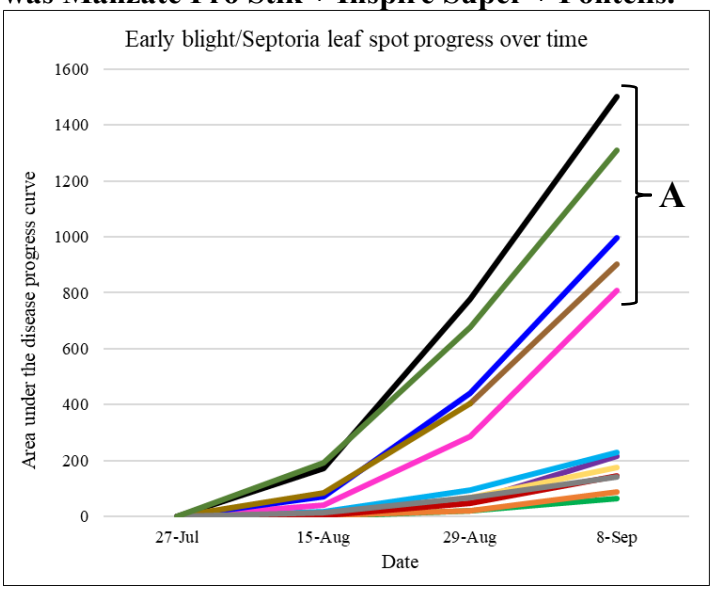


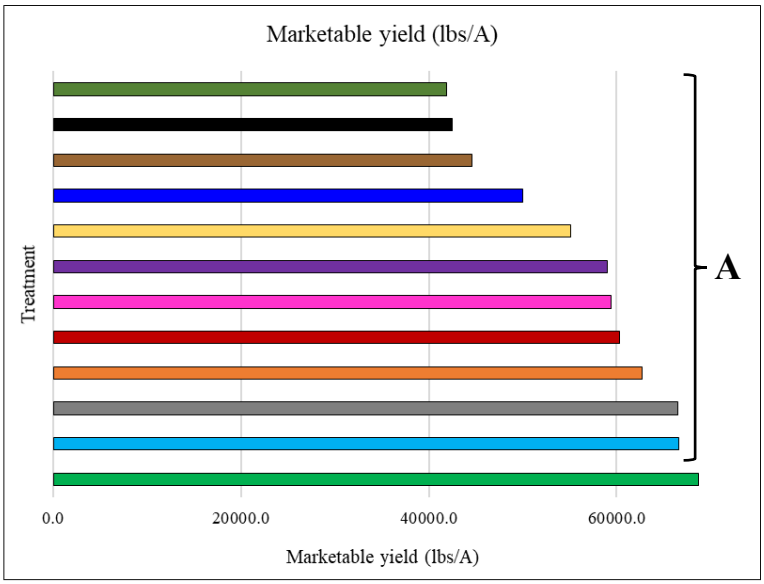
Early blight and Septoria leaf spot on tomato, Waynesville, NC

Planting date: 15 Jun
Variety: Mountain Fresh Plus
Inoculation: Placed early blight-symptomatic leaf tissue in guard rows on 7, 14 Jul
Foliar spray of treatment plants on 21, 26 Jul with 10^3 spores/ml suspension of *A. linariae*
Applications: 1= 29 Jun, 2= 6 Jul, 3= 13 Jul, 4= 24 Jul, 5= 28 Jul, 6= 4 Aug, 7= 11 Aug, 8= 17 Aug, 9= 25 Aug
Harvest: 8 Sep

Key	Product evaluated, rate per acre	Weeks applied
	Water control	1-9
	LifeGard WG, 4.5 oz/100gal	1-9
	Serenade Opti, 20 oz	1-9
	Quadris, 6.2 fl oz	1-9
	Howler EVO, 1.25 lb + Dyne-Amic, 0.38% Actigard 50 WG, 0.3 oz	1,3,5,7,9 2,4,6,8
	Theia, 1.5 lb + Dyne-Amic, 0.38% Inspire Super, 18 fl oz Fontelis, 16 fl oz	1,3,5,7,9 2,6 4,8
	Howler EVO, 1.25 lb + Dyne-Amic, 0.38% Inspire Super, 18 fl oz Fontelis, 16 fl oz	1,3,5,7,9 2,6 4,8
	Howler EVO, 1.75 lb + Dyne-Amic, 0.38% Inspire Super, 18 fl oz Fontelis, 16 fl oz	1,3,5,7,9 2,6 4,8
	Howler EVO, 1.25 lb + Dyne-Amic, 0.38% + Quadris, 5 fl oz Inspire Super, 18 fl oz Fontelis, 16 fl oz	1,3,5,7,9 2,6 4,8
	Regev, 8 fl oz	1-9
	Manzate Pro Stik 75DG, 1.5 lb Quadris, 6.2 fl oz Fontelis, 16 fl oz	1-9 2,6 4,8
	Manzate Pro Stik 75DG, 1.5 lb Inspire Super, 18 fl oz Fontelis, 16 fl oz	1-9 2,6 4,8

Regev and all treatments containing Inspire Super or Fontelis reduced disease compared to the nontreated control. The only treatment to increase marketable yield compared to the nontreated control was Manzate Pro Stik + Inspire Super + Fontelis.



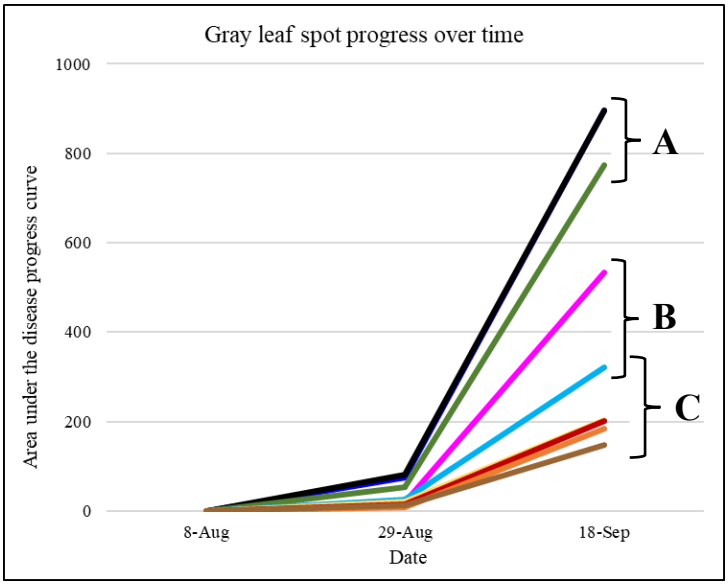


Gray leaf spot on tomato, Waynesville, NC

Planting date: 3 Jul
Variety: Mountain Heritage
Inoculation: Foliar spray of treatment plants on 7 Jul with 5 x 10^3 suspension of *S. lycopersici*
Applications: 1= 6 Jul, 2= 13 Jul, 3= 24 Jul, 4= 28 Jul, 5= 4 Aug, 6= 11 Aug, 7= 17 Aug, 8= 25 Aug
Harvest: None

Key	Product evaluated, rate per acre	Weeks applied
	Serenade Opti, 20 oz	1-8
	Water control	1-8
	LifeGard WG, 4.5 oz/100gal	1-8
	Manzate Pro Stik 75DG, 1.5 lb Kocide 3000, 1.75 lb	1-8 2,4,6,8
	Manzate Pro Stik 75DG, 1.5 lb Inspire Super, 20 fl oz	1-8 2,4,6,8
	Manzate Pro Stik 75DG, 1.5 lb Fontelis, 20 fl oz	1-8 2,4,6,8
	Manzate Pro Stik 75DG, 1.5 lb Luna Tranquility, 11.2 fl oz	1-8 2,4,6,8
	Manzate Pro Stik 75DG, 1.5 lb Quadris, 6.2 fl oz	1-8 2,4,6,8
	Manzate Pro Stik 75DG, 1.5 lb Aprovia Top, 12 fl oz	1-8 2,4,6,8

All treatments excluding Serenade Opti and LifeGard reduced disease compared to the nontreated control. Fruit were not harvested from this trial due to low disease pressure for the majority of the season.

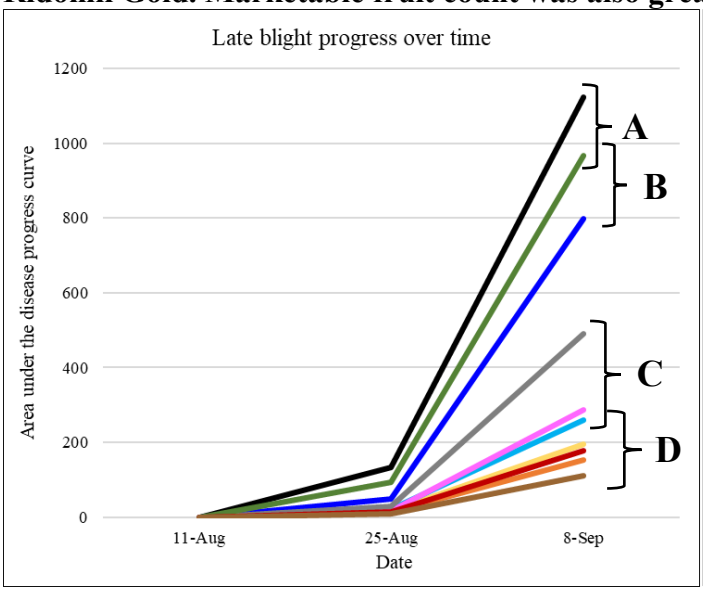


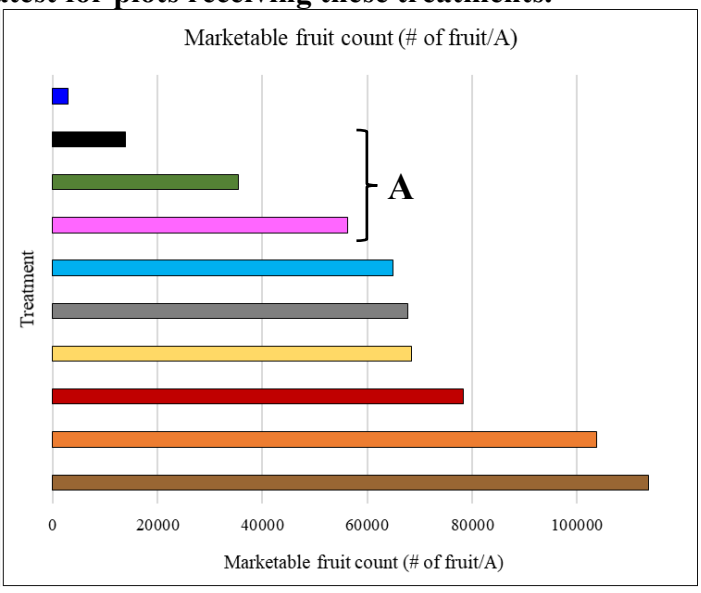
Late blight on tomato, Waynesville, NC

Planting date: 28 Jun
Variety: Mountain Fresh Plus
Inoculation: Inoculum came into the field naturally via airborne spores
Applications: 1= 11 Jul, 2= 18 Jul, 3= 25 Jul, 4= 1 Aug, 5= 8 Aug, 6= 15 Aug, 7= 23 Aug, 8= 30 Aug
Harvest: 14 Sep

Key	Product evaluated, rate per acre	Weeks applied
	Water control	1-8
	Curzate, 4 oz	1-8
	Actigard 50 WG, 0.3 oz	1-8
	Presidio, 4 fl oz	1-8
	Bravo Weather Stik, 1.5 pt	1-8
	Rampart, 4 qt Bravo Weather Stik, 1.5 pt	1,3,5,7 1-8
	Orondis Opti, 2 pt Bravo Weather Stik, 1.5 pt	1,3,5,7 2,4,6,8
	Revus Top, 7 fl oz Bravo Weather Stik, 1.5 pt	1,3,5,7 2,4,6,8
	Ridomil Gold SL, 1 pt Bravo Weather Stik, 1.5 pt	1,3,5,7 2,4,6,8
	Orondis Opti, 38.4 fl oz Bravo Weather Stik, 1.5 pt	1,3,5,7 2,4,6,8

The best disease control was provided by Bravo Weather Stik rotated with Orondis Opti, Revus Top, or Ridomil Gold. Marketable fruit count was also greatest for plots receiving these treatments.





Bacterial spot on pepper, Mills River, NC

Planting date: 27 Jun
Variety: Aristotle\
Inoculation: Foliar spray of guard row plants on 13 Jul with 10^8 cfu/ml suspension of *X. euvesicatoria*
Applications: 1= 12 Jul, 2= 19 Jul, 3= 26 Jul, 4= 2 Aug, 5= 9 Aug, 6= 16 Aug, 7= 24 Aug
Harvest: 30 Aug

Key	Product evaluated, rate per acre	Weeks applied
	Water control	1-7
	Miravis Prime, 10 fl oz Manzate Pro Stik 75DG, 1.5 lb	1,3,5 1-7
	Manzate Pro Stik 75DG, 1.5 lb Actigard 50 WG, 0.3 oz Actigard 50 WG, 0.5 oz	1-7 1-3 4-7
	Manzate Pro Stik 75DG, 1.5 lb + Kocide 3000, 1.75 lb Actigard 50 WG, 0.3 oz Actigard 50 WG, 0.5 oz	1-7 1-3 4-7
	Manzate Pro Stik 75DG, 1.5 lb + Kocide 3000, 1.75 lb Actigard 50 WG, 0.5 oz	1-7 1,3,5,7

The grower standard treatments including Manzate Pro Stik + Kocide 3000 + Actigard reduced disease severity more than treatments that did not include Kocide 3000 (the bacterial spot pathogen in this study was susceptible to copper). Treatment with Miravis Prime + Manzate and Manzate + Actigard reduced disease compared to the nontreated control. All treatments increased marketable yield compared to the nontreated control.