

# Development of Sustainable Strategies for Managing Bacterial Diseases and Improving Tree Health in the Peach Production System



Mahyla Nickens, Junaed Ahmed, Alec Sherratt, Hehe Wang  
Edisto Research and Education Center, Clemson University

## Background

Peach is one of the most important fruit crop in the US, especially in South Carolina. But growing peach in the Southeast region is very challenging due to its warm, humid climate that favors different diseases and negatively impacts peach production.

Bacterial spot caused by *Xanthomonas arboricola* pv. *pruni* (Xap), is one of the major diseases of peach which causes millions of dollar loss every year. The presence of bacterial spot on leaves causes premature defoliation and weakens the trees while infection on fruits makes them unmarketable.

Management of this disease is solely dependent on routine spray of copper and antibiotic but they lead to the development of resistant pathogens and have harmful effects on the environment. Copper sprays also cause serious phytotoxicity on the leaves and huge defoliation. So, this study focuses on evaluating field performance of different biopesticide treatments for integration into the current spray program to manage this disease more sustainably and improve tree health.

## Objective

Evaluate different biopesticide treatments to integrate into current spray program for managing bacterial spot in field condition.

## Methodology

### Field trial in commercial peach orchard:

- 'Zee Lady' peach trees received different biopesticide treatments over the growing season, each with four replicates.
- Trees receiving the growers' standard spray program served as the control.
- Disease incidence (% of leaves/fruits having bacterial spots) and severity (% of leaf/fruit area covered with bacterial spots) ratings of five randomly selected branches and 100 fruits per tree were collected biweekly.
- Area under disease progress curve (AUDPC) was calculated for bacterial spot incidence and severity on peach leaves.

### Data Analysis:

- Statistical analysis was conducted in MiniTab v20

## Results

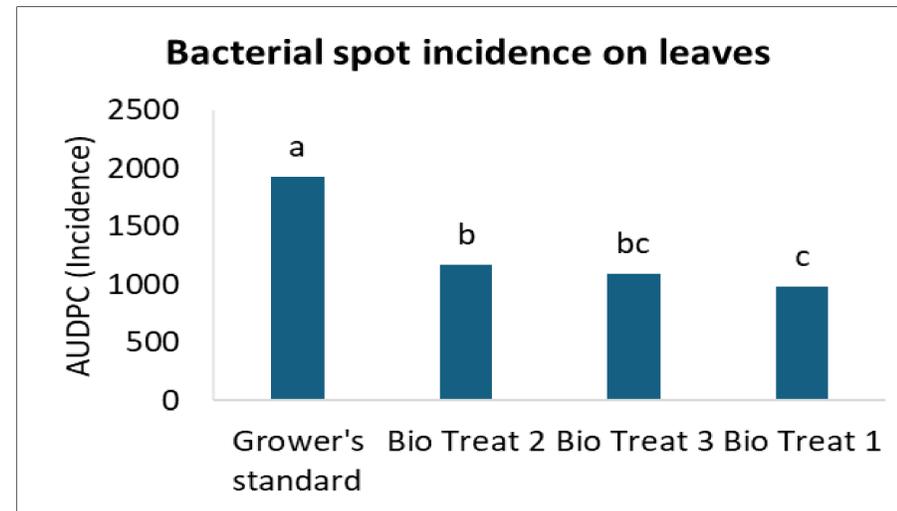


Figure 1: AUDPC of bacterial spot incidence on leaves per treatment

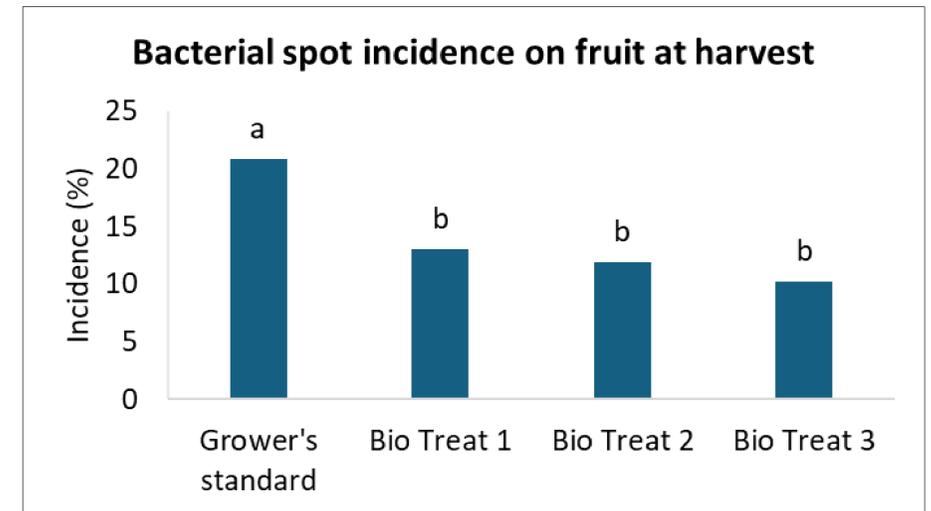


Figure 2: Incidence (%) of bacterial spot on fruit per treatment at harvest

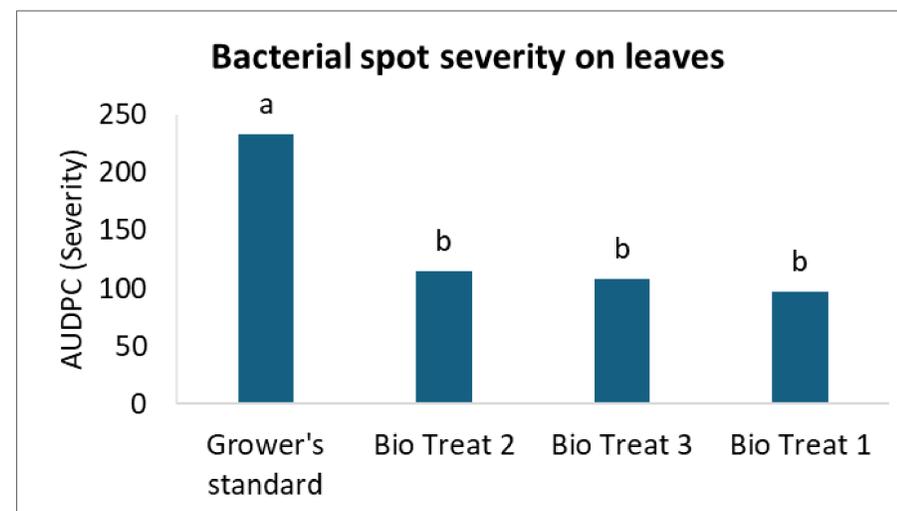


Figure 3: AUDPC of bacterial spot severity on leaves for each treatment

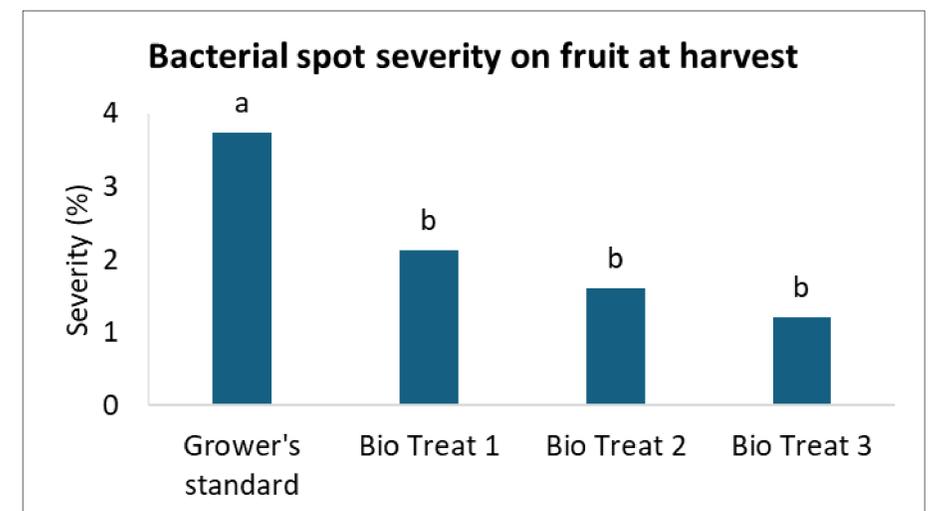


Figure 4: Severity (%) of bacterial spot on fruit for each treatment at harvest

## Conclusions

- Application of biopesticide treatments on top of the growers' standard significantly reduced bacterial spot progress over the growing season and reduced bacterial spot incidence and severity on fruit at harvest
- There was no difference among the three biopesticide treatments tested.

## Acknowledgements

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number (2021-38640-34724) through the Southern Sustainable Agriculture Research and Education program, under sub-award number (LS22-366, SUB00002851). USDA is an equal opportunity employer and service provider. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.



National Institute of Food and Agriculture  
U.S. DEPARTMENT OF AGRICULTURE