Botrytis leaf blight (BLB) was widespread and moderately severe in 2023

Efficacy of individual fungicides on Botrytis leaf Blight (BLB)

Treatments and rate per acre	Application frequency	AUDPC
Rovral 1.5 pt	4	585.0 b
Scala 18 fl oz	4	817.5 a
Luna Flex 12 fl oz	4	532.5 b
Omega 500 1 pt	4	547.5 b
Miravis Prime 11.4 fl oz	4	600.0 b
Merivon 11 fl oz	4	615.2 b
Cevya 10 fl oz	4	600.0 b
Non-treated check	-	862.5 a

- Scala has been consistently slipping since last three years.
- Luna Tranquility has Luna and Scala. Slipping of Scala may put pressure on Luna component of the fungicide (not good for fungicide resistance management)
- Luna Flex can be an alternative. This fungicide is labeled on onion; Luna+Difenoconazole. It has similar efficacy as Luna Tranquility.

Fungicide programs for Botrytis and Stemphylium should be initiated with premixes

Treatments and rate per acre	Application frequency	AUDPC
Luna tranquility 16 fl oz Inspire super 20 fl oz Miravis Prime 11.4 fl oz	2 2 2	843.5 b
Luna Flex 12 fl oz Inspire super 20 fl oz Miravis Prime 11.4 fl oz	2 2 2	1008.5 b
Merivon 11 fl oz Inspire super 20 fl oz Miravis Prime 11.4 fl oz	2 2 2	878.0 b
Cevya 10 fl oz Inspire super 20 fl oz Miravis Prime 11.4 fl oz	2 2 2	987.5 ab
Non-treated check		1201.2 a

Ranking of Fungicides with Respect to their Efficacy on Botrytis

Fungicides	Efficacy
Omega 500	High-to-moderate
Miravis Prime	Moderate
Luna Flex	Moderate
Inspire super	Moderate
Fontelis/Merivon	Moderate-to-low
Rovral	Moderate-to-low
Pristine	Moderate-to-low
Switch	Moderate-to-low
Quadris	Moderate-to-low
Quadris Top	Moderate-to-low
Scala	No efficacy/potential field resistance

Ranking of Fungicides with Respect to their Efficacy on Stemphylium

Fungicides	Efficacy
Luna Flex	Moderate
Inspire super	Moderate
Miravis Prime	Moderate
Quadris top	Moderate-to-low
Pristine	Moderate-to-low
Switch	Moderate-to-low
Quadris	Moderate-to-low
Rovral	Low-to-No efficacy
Omega 500	No efficacy
Scala	No efficacy

QUITE HARD TO CONTROL PAST SPRING 2023

REASONS: PLANTS WERE STRESSED EARLY ON DUE TO FROST IN DEC 2022

PRESENCE OR INTRODUCTION OF HIGHTLY AGGRESSIVE STEMPHYLIUM

Downy mildew was observed in 2023; Moderate, did not cause considerable yield losses

Onion Downy Mildew Fungicide Program Trial 2023

Fungicide and rate per acre	Frequency of application	AUDPC
Ridomil Gold Copper 2 lb	ABC	215.6 c
Bravo weatherstik 1.5 pt Zampro 14 fl oz	ABC ABC	229.3 c
Omega 500 16 fl oz Zampro 14 fl oz	ABC ABC	251.2 c
K-Phite 3 qt Bravo Weatherstik 1.5 pt Zampro 14 fl oz	ABC ABC ABC	363.2 b
K-Phite 3 qt Zampro 14 fl oz	ABC ABC	397.5 b
Bravo weatherstik 1.5 pt K-Phite 3 qt	ABC ABC	589.3 a
Non-treated		651.8 a

Ranking of Fungicides with Respect to their Efficacy on Downy Mildew

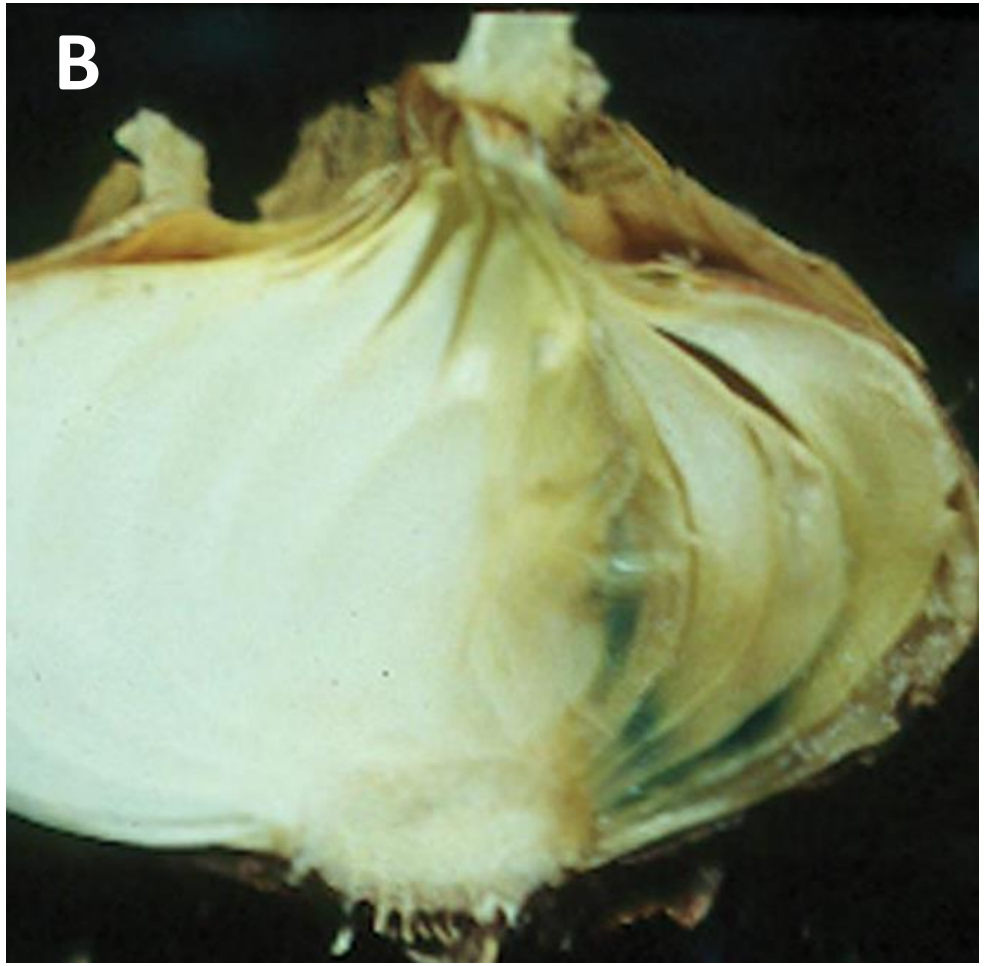
Fungicides	Efficacy
Omega 500	Moderate
Ridomil Gold Copper	Moderate
Orondis Ultra	Moderate
Zampro	Moderate
Bravo	Moderate-to-low
Phosphite	Low (but can help)
Previcur Flex	No efficacy
Ranman	No efficacy
Reason ??	??
Revus	No efficacy

"REASON" NEEDS TO BE RE-EVALUATED BASED ON GROWER'S RECOMMENDATION

At least 21 different bacterial pathogens are known to infect Vidalia onions

1. ***Pantoea ananatis* – center rot**
2. ***Pantoea agglomerans* – bacterial leaf necrosis**
3. ***Pantoea allii* – center rot**
4. ***Pantoea stewartii* subsp. *indologenes**- center rot**
5. ***Burkholderia gladioli* pv. *alliicola* – slippery skin**
6. ***Burkholderia cepacia* – sour skin**
7. ***Pseudomonas viridiflava* and *Pseudomonas allivorans**– leaf streak/bulb rot**
8. *Dickeya chrysanthemi* (*Erwinia chrysanthemum*) - soft rot
9. ***Enterobacter cloacae* – Enterobacter bulb decay**
10. *Erwinia rhapontici* – soft rot
11. *Eschericia* sp. – soft rot
12. *Klebsiella* sp. – soft rot
13. *Lactobacillus* sp. – soft rot
14. *Bacillus cereus* – soft rot
15. ***Pectobacterium carotovorum* subsp. *carotovorum* - soft rot**
16. ***Pseudomonas coronafaciens* – brown rot**
17. ***Pseudomonas marginalis* pv. *marginalis* – soft rot**
18. *Pseudomonas syringae* – bacterial leaf spot
19. *Serratia marcescens* – soft rot
20. *Xanthomonas axonopodis* pv. *allii* – Xanthomonas leaf blight
21. ***Rouxiella badensis **– bacterial bulb rot**

Center rot of onion: *Pantoea* spp.



Bacterial streak and bulb rot caused by *Pseudomonas viridiflava*

Sour skin of onion: *Burkholderia cepacia*

David B. Langston, University of Georgia, Bugwood.org

Yellow bud of onion *Pseudomonas coronafaciens*

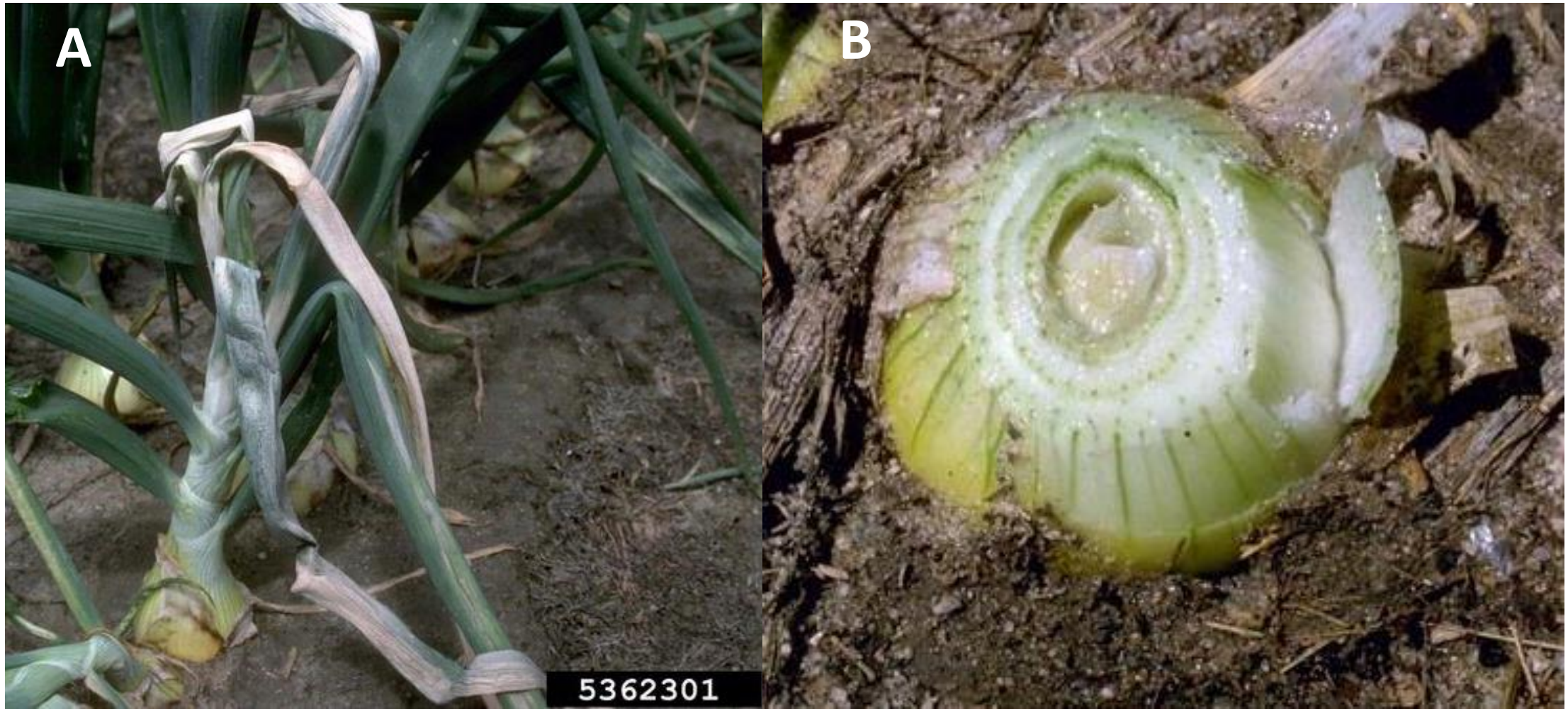
Ronald D. Gitaitis, University of Georgia, Bugwood.org

Bacterial leaf blight of onion caused by *Xanthomonas axonopodis pv. allii*.

Howard F. Schwartz, Colorado State University, Bugwood.org

Onion bulb decay: *Enterobacter cloacae*

Howard F. Schwartz, Colorado State University, Bugwood.org



Slippery skin: *Burkholderia gladioli* pv. *alliicola*

Howard F. Schwartz, Colorado State University, Bugwood.org

LifeGuard and Copper are effective in reducing onion center rot in bulbs but not sour skin

OMRI-LISTED PRODUCTS	Center rot (%) in bulb	Sour skin (%) in bulb
LifeGuard 2 oz wt (6 apps)	15.8 b	79.5 A
OSO 6.5 fl oz (6 apps)	28.7 ab	80.5 A
OSO 6.5 fl oz (6 apps) LifeGuard 2 oz wt (6 apps)	37.1 ab	100.0 A
Kocide 3000 (6 apps)	14.1 b	90.5 A
Non-treated check	63.6 a	89.5 A

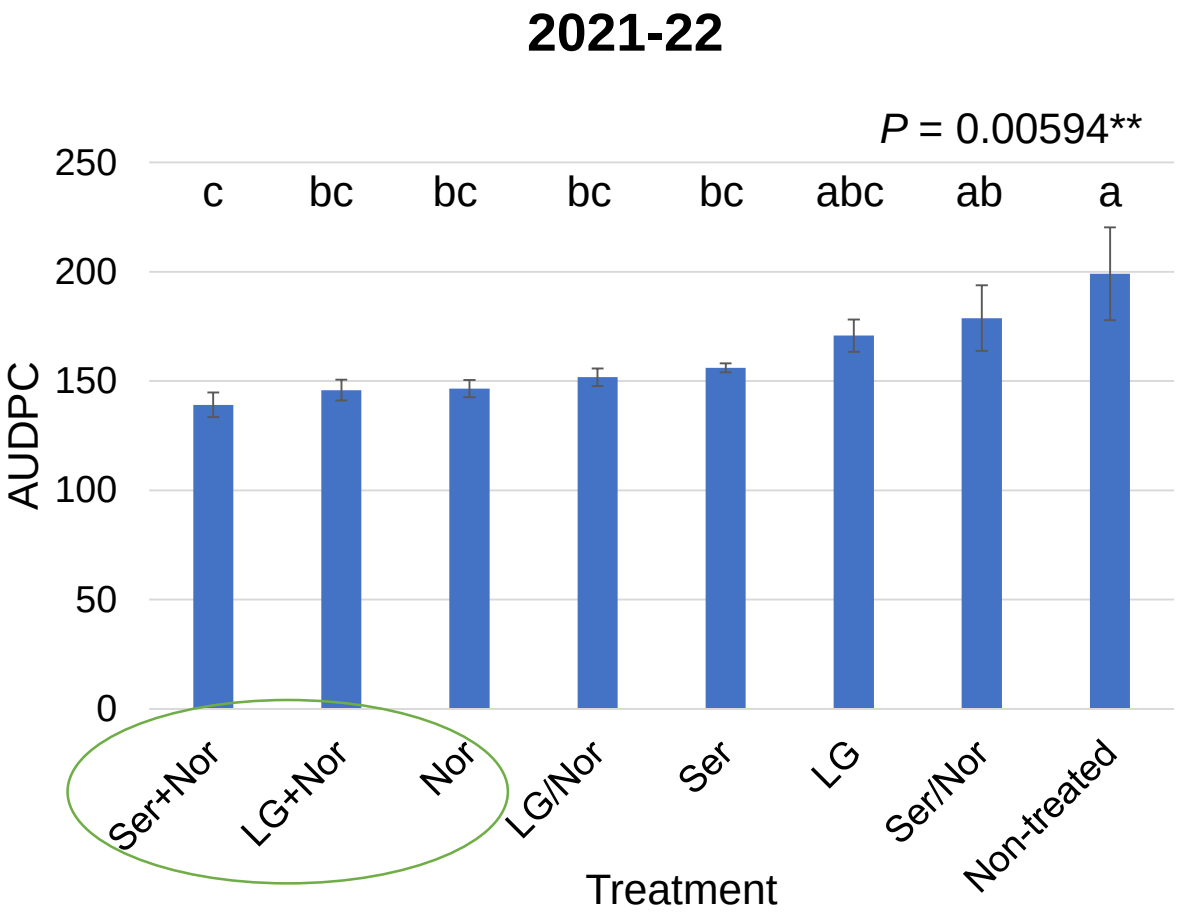
Copper-based bactericide rotated with LifeGuard significantly reduced center rot but not sour skin

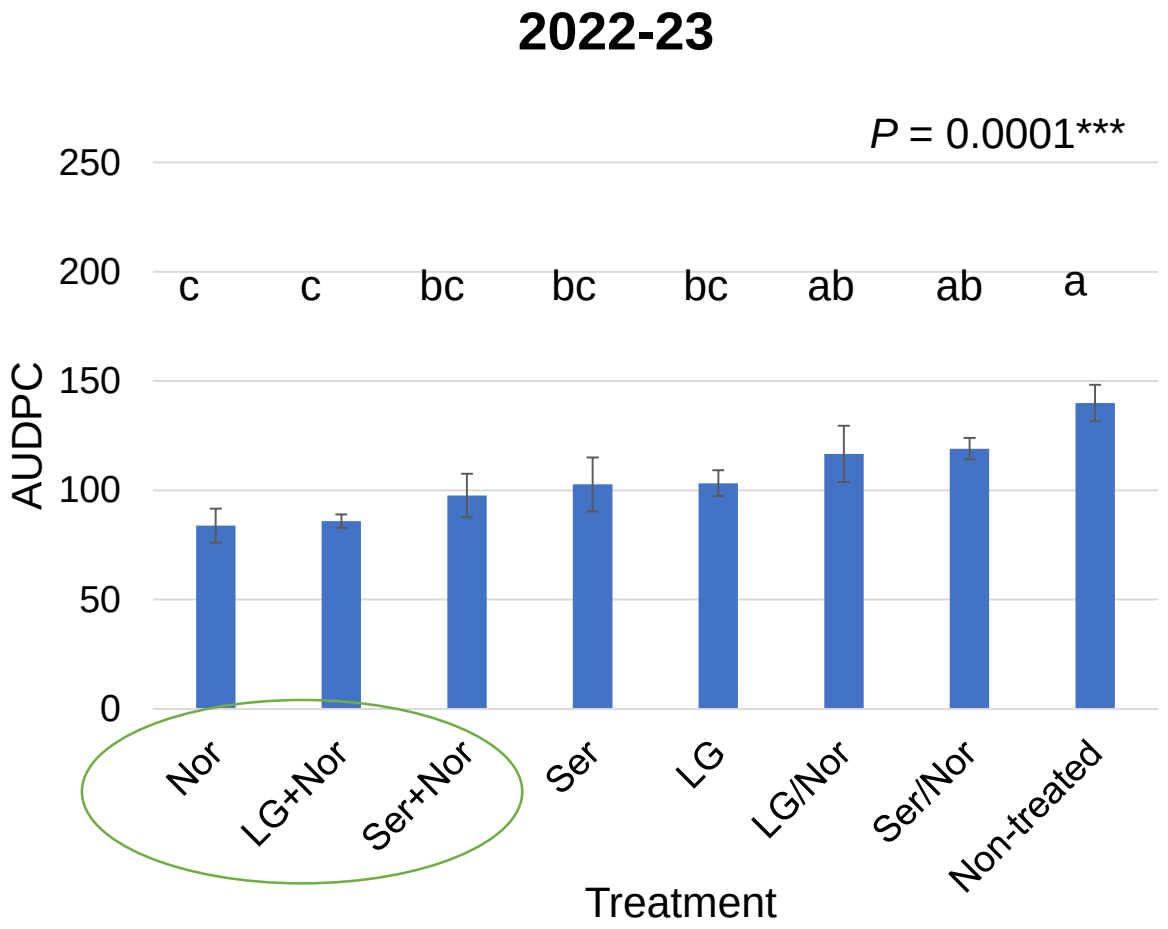
Copper-based program alternated with LifeGuard	Center rot (%) in bulb	Sour skin (%) in bulb
Mankocide 2.5 lb (3 app) LifeGard 2 oz wt (3 app)	13.5 b	55.0 AB
Nordox 1 lb (3 app) LifeGard 2 oz wt (3 app)	8.0 b	51.0 AB
Mastercop 1 pt (3 app) LifeGard 2 oz wt (3 app)	14.5 b	31.0 B
NUCop 1.5 lb (3 app) LifeGard 2 oz wt (3 app)	11.5 b	41.5 AB
Oxidate 5.0 1.28 fl oz (3 app) LifeGard 2 oz wt (3 app)	21.0 b	73.0 A
Champ 1.5 lb (3 app) LifeGard 2 oz wt (3 app)	20.0 b	59.5 A
LifeGard 2 oz wt (6 app)	14.0 b	51.0 AB
Non-treated check	35.5 a	48.5 B

Evaluate if tank-mix application of BCA and copper differs from solo application of BCA or copper in their efficacy for center rot management

Trt No.	Treatments	Sequence of Application	Type of Application	Interval of Application (days)
1	Serenade + Nordox	1 – 8	Tank mixing	7
2	LifeGard + Nordox	1 – 8	Tank mixing	7
3	Serenade Nordox	1, 3, 5, 7 2, 4, 6, 8	Alternate	7
4	LifeGard Nordox	1, 3, 5, 7 2, 4, 6, 8	Alternate	7
5	Serenade	1 – 8	Solo	7
6	LifeGard	1 – 8	Solo	7
7	Nordox	1 – 8	Solo	7
8	Non-treated	1 – 8	-	7

Tank-mixing LifeGuard with Copper provides significantly better control compared with solo or alternated application





- Non-treated plot had relatively higher foliar severity as compared to other treatments in both trial
- Solo application of Cu or its tank mix with Serenade and LifeGard relatively reduced foliar severity than other treatments

Evaluation of digging methods on post-harvest incidence of bacterial rot (2021 and 2022)

Methods of onion digging	Internal rot (%) (2021)	Internal rot (%) (2022)
Chain digger	9.0 B	1.3 B
Straight-blade undercutter	20.5 A	10.7 A
P-value	<0.001	<0.001

Dutta et al., 2022 and 2023 PDMR

Field Curing for at least 48 hours is recommended to aid in drying of neck

Evaluation of harvesting methods on post-harvest incidence of bacterial rot (2021 and 2022)

Methods of onion harvest	Internal rot (%) (2021)	Internal rot (%) (2022)
Mechanical harvest (Top Air Onion harvester)	4.5 B	3.0 B
Manual harvest	14.5 A	12.5 A
P-value	<0.001	0.002

Mr. Chris Tyson

Dutta et al., 2022 and 2023 PDMR

NECK CLIPPED CLOSER TO THE SHOULDER DECREASE STORABILITY (BACTERIAL AND OTHER DISEASES)

Optimized neck length that improves storability of onions (2022 and 2023) (Ross Greene)

Assessment of internal bacterial rot after 30 days of storage

Optimized neck length that improves storability of onions (2022 and 2023) (Ross Greene)

Neck length clipped	Bacterial rot (internal) (%) (2022)	Bacterial rot (internal) (%) (2023)
Clipped at the shoulder	18.5 A	14.5 a
Neck clipped after field curing (1”)	18.0 A	4.0 b
Neck clipped after field curing (2”)	13.0 B	5.5 b
Neck clipped after field curing (3”)	13.0 B	6.5 b

Dutta et al., 2023 PDMR

Impact of our study

Vidalia Onion Sold with 2-inches of dried neck in Publix (Tifton, GA) in 2023

Post-harvest bacterial rot

How does neck clipping length impact bacterial rot?

How does moisture content in neck impact bacterial rot?

Optimum moisture content in neck that improves storage quality?