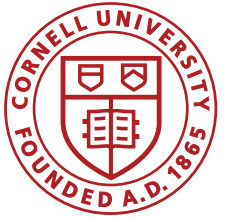


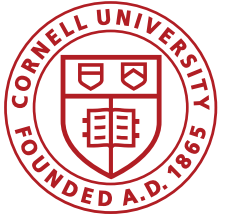
Cornell Cooperative Extension  
Cornell Vegetable Program



# **‘Stop the Rot’ Stakeholder Advisory Panel Meeting: Outreach & Extension Update**

Christy Hoepting, CCE Cornell Vegetable Program

Online meeting, March 27, 2024



# Executive Summary

## (January 2023 – January 2024)

**51 presentations at 36 grower meetings in 7 states in 3 countries reaching 2,291+ direct contacts:**

- **12 presentations at the NARC and Annual Stop the Rot Meeting in Savannah, GA, reaching 35 participants.**
- **4 presentations at Joint Meeting of National Allium Research Conference and National Onion Association, reaching 70-110 participants.**
- **21 presentations at Winter Educational Meetings in CA, CO, GA (8), NY (2), PA, OH, ID (2), OR, UT (2), WA and WI, reaching 1260+ participants.**
- **8 presentations at Summer Field Days including trial tours in GA, NY, ID (2), NM, WA (2) and TX reaching 351 participants.**
- **6 International Invited presentations in Australia and South Africa (5) by Lindsey du Toit reaching 225 participants**

*Lindsey du Toit*

*and the*

*Stop the Rotters*



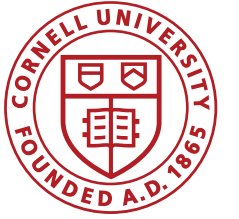
# Lindsey du Toit *and the* Stop the Rotters



## 2023-24 Rot Race Winter Tour:

<i>Kennewick, WA.....</i>	<i>November 15, 2023</i>
<i>Murray Bridge, Australia.....</i>	<i>November 27, 2023</i>
<i>San Antonio, TX.....</i>	<i>November 30, 2024</i>
<i>Mooketsi, South Africa.....</i>	<i>January 27, 2024</i>
<i>Kimberly, South Africa.....</i>	<i>January 29, 2024</i>
<i>Ceres, South Africa.....</i>	<i>January 30, 2024</i>
<i>Oudtshroom, South Africa.....</i>	<i>January 31, 2024</i>
<i>Oregon, OR.....</i>	<i>February 6, 2024</i>
<i>Stevens Point, WI.....</i>	<i>February 7, 2024</i>
<i>Columbus, OH.....</i>	<i>February 12, 2024</i>

# Executive Summary (January 2023 – January 2024)



- **4 articles** in international trade magazines, (**3** in **Onion World**)
- **4 Extension newsletter articles** in **NY and GA**
- **8,698 views** of **8 Stop the Rot videos** – **53% increase** from 12/20/2022
- **3 new Extension resources** (Frequently Asked Questions on Alliumnet)
- **Alliumnet.com website: 3,780 visits** by **3,421 users** who viewed **24,828 pages of content**, **24%** from the **US** (Jan 1 – Nov 30, 2022)

# Articles in Onion World



Voice of the Industry • OnionWorld.net

July / August 2023

## Rollout of Research Results

**Advertiser Index**

- American Takil ..... 11
- Bejo ..... 14
- Chinook Equipment ..... 15
- Clearwater Supply ..... 21
- Crookham ..... 9
- Gearmore ..... 18
- Germains ..... 17
- Gowan Seed ..... 15
- Kerian ..... 7
- L&M ..... 23
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- NovaSource ..... 22
- Nunhems ..... 19
- Redwood Empire ..... 10
- Rietveld ..... 3
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- SpudEquip.com ..... 13
- Telone ..... 24
- Top Air ..... 20
- Unitec ..... 5
- Vegetables by Bayer ..... 2
- Verbruggen ..... 8

**Thrips Control**

**Harvest Essentials**

**A Message From Michigan**

**Five Minutes with Carlos Bonilla**

## Rollout of Research Results

By Heather MacKay and Lindsey du Toit, Washington State University  
Christy Hoepfing, Cornell Cooperative Extension

- What causes onion rot?
- Do bactericides work?
- Does neck length at harvest affect bacterial bulb rot?

Symptoms of bacterial bulb rot are seen in an onion.

**Managing Bacterial Bulb Rot**

Results on various aspects of managing bacterial diseases of onion, including irrigation, nitrogen fertility, bactericides, cultural practices and postharvest applications of disinfectants, have been published from field trials in multiple states over three seasons in "Plant Disease Management Reports," and there are more reports to come. Check out the reports at [www.alliumnet.com/stop-the-rot-publications-and-resources](http://www.alliumnet.com/stop-the-rot-publications-and-resources).

**National Perspective on Bacterial Diseases of Onion**

A presentation by Lindsey du Toit, project director for Stop the Rot, during the 2023 Southeast Regional Fruit and Vegetable Conference, provides a snapshot of onion bacterial disease research findings from the project to date. Check it out at [www.alliumnet.com/stop-the-rot-publications-and-resources](http://www.alliumnet.com/stop-the-rot-publications-and-resources).

**Copper Tolerance Genes Detected in Onion Bacterial Pathogens**

About 50 percent of the pathogenic strains of *Pantoea agglomerans* that have been sequenced so far carry genes that confer resistance to copper bactericides, similar to those found in other bacterial plant pathogens. In contrast, these genes have not been found in the *Pantoea ananatis* strains isolated in the surveys of onion crops and sequenced to date. This might explain some of the differences in effectiveness of copper bactericide treatments evaluated in field trials in participating states across the U.S. For example, copper bactericides generally have proven effective in Georgia, where *P. ananatis* is prevalent, while bactericides have generally failed in regions where other bacterial pathogens are common. We plan to investigate copper resistance further in *Pantoea* and other genera of bacterial pathogen to onion.

**Answers on Alliumnet.com**

In an effort to make the Alliumnet website, home of the Stop the Rot project, readily searchable for growers to find answers to their bacterial rot questions, we are organizing the homepage with questions that might be commonly asked. Answers to these questions are now at [www.alliumnet.com/frequently-asked-questions](http://www.alliumnet.com/frequently-asked-questions).

Bacterial rot infects a stored bulb grown in a Stop the Rot trial.

Answers to these questions will be added:

- How is bacterial bulb rot different from other bulb rot?
- How do onions get infected with bacterial diseases?
- What are the best strategies to control onion bulb rot?
- Does nitrogen application increase bulb rot?
- How relevant is irrigation to causing bulb rot?
- Are any onion varieties resistant to bacterial rot?
- Does mechanical pulling and harvesting affect onion bacterial bulb rot?
- What is the effect of timing of undercutting on bacterial bulb rot?
- What is the effect of rolling the tops prior to harvest on bacterial bulb rot?
- Does treatment of onion bulbs with ozone control bacterial bulb rot?
- Does heated, forced-air curing after harvest control bacterial bulb rot?

Additionally, researchers will be giving updates on the Stop the Rot project over the next year at various onion educational meetings across the U.S.

Please reach out if you have suggestions for extension resources you need, would like more information on the Stop the Rot project or have recommendations for this project.

**Kerian SPEED SIZER**

"A more gentle way to size your onions quickly and accurately."

Proven for use in:

- Whites, Reds,
- Gold, Browns,
- Spanish, Pearl
- Onions & More

Onion Sizing Video Now Available:

[www.kerian.com](http://www.kerian.com)

GENTLE: Separates without damaging onions

ACCURATE: Precisely grades onions of all shapes and varieties

FAST: Thirteen standard models custom-designed to meet your needs sort from 1000 lb/hr to 80,000 lb/hr

SIMPLE: Effective but simple design provides a rugged, low cost, low maintenance machine at a high value to our customers. It can even be used in the field!

**KERIAN MACHINES INC.**

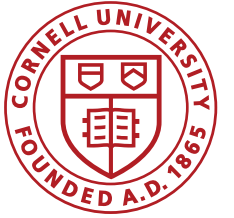
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OnionWorld.net 7

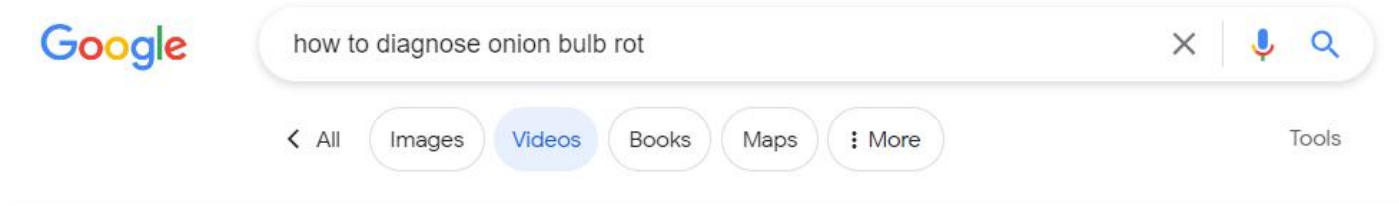
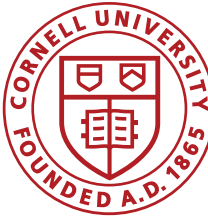
# Stop the Rot Video Views (Feb 24, 2024)



**8,698 views** - 53% increase in views since Dec 20, 2022

- **Combating bacterial diseases of onion: How do we stop the rot?** 14.41 min. **Lindsey du Toit**. Posted Dec 15, 2020 – **6,586 views** (up from 4,242 views 12/20/2022).
  - Posted on *Gartebau Profit* trade magazine website in German.
  - Translated into Serbian and presented at virtual grower meeting in Serbia, Jan. 18, 2020.
- **How to identify bacterial bulb rot.** 4 min. Available in English and Spanish. **Christy Hoepting**. Posted Jun 22, 2020 – **1028 views** (up from 746 views on 12/20/22) in English, **246 views** (up from 165 views on 12/20/22) in Spanish.
- **Combating onion bacterial diseases with pathogenomics tools and enhanced management strategies.** 3 min. **Antoinette Machado and Brandon Sandoval**. Part of virtual field day. Posted Sep 1, 2020 – **181 views** (up from 168 views on 12/20/22).
- **Evaluation of post-harvest treatments of onion bulbs.** 5.29 min. **Tim Waters**. Posted Dec. 18, 2020 – **256 views** (up from 195 views 12/20/22)
- **Onion scale test.** 0:22 min. **Claudia Nischwitz**. Posted January 2021 – **135 views** (up from 65 views on 12/20/22).
- **Stop the Rot bacterial inoculation workshop.** 55:32 min. **Lindsey du Toit and Michael Derie** . Posted July 2022 – **135 views** (up from 60 views on 12/20/22).
- **Stop the Rot Experimental design workshop.** 58:25. **Lindsey du Toit**. Posted July 2022 – **109 views** (up from 60 views on 12/20/22).

# Google search “how to diagnose onion bulb rot:



About 9,670 results (0.25 seconds)

www.youtube.com › watch

## How to Diagnose Onion Bacterial Bulb Rot - YouTube



View the different forms of **bulb rot** caused by bacterial pathogens and how to distinguish bacterial **bulb rot** from other non-bacterial ...

YouTube · CCE Cornell Vegetable Program · Jun 22, 2020



10 key moments in this video

www.youtube.com › watch

## What is Bacterial Streak and Bulb Rot in Onions? - YouTube



It's a bacterial disease dubbed the '**onion** devourer' by UGA researchers. Damon Jones tells us what this discovery means for the industry and ...

YouTube · Farm Monitor · Jan 6, 2022

www.youtube.com › watch

## Combating Bacterial Diseases of Onion - YouTube



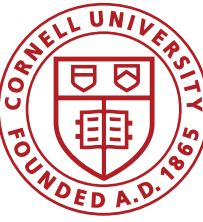
**Diagnosing** Bacterial Diseases in **Onions**. CSUExtension•22K views · 2:33. Go ... What is Bacterial Streak and **Bulb Rot** in **Onions**? Farm Monitor•568 ...

YouTube · WSU CAHNRS · Dec 14, 2020

# Stop the Rot

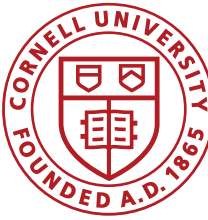
# Stop the Rot

# Alliumnet Analytics (Dec 1, 2022 – Jan 31, 2024)



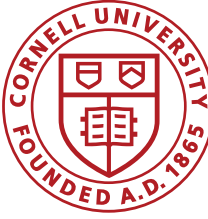
- **3,780 visits** (up from 3369) by **3,421 users** (up from 2489) who viewed **24,828 pages** of content (up from 6166) from U.S. (24%), Netherlands (4%), Japan (4%), India (4%) and Brazil (4%).
- In the US, visitors are mostly from:
  - **WA** (13%)
  - **CA** (8%)
  - **TX** (8%)
  - **NY** (6%)
  - **GA** (6%)
  - **VA** (4%)
  - **NJ** (4%)
  - **WY** (3%)
  - Note: VA & WY were top visitors in 2022 too.

# Alliumnet Analytics (Dec 1, 2022 – Jan 31, 2024)



- Of **4,146 U.S. page views** (4330 last report):
  - **Stop the Rot section: 1044** (up from 884) – **25%**
  - NARC/NOA Meeting: **626** – 15%
  - Home Alliumnet: **543** – 13%
  - **Stop the Rot Publications & Resources: 501** (up from 183) – **12%** (up from 1.2%)
  - **Frequently Asked Questions: 264** – **6%** (new section)
    - **What does onion rot look like?/What causes onion rot?** (these 2 questions were mixed up for awhile) - **44**
    - **Do bactericides work?** – **40**
    - **Does neck length affect bacterial bulb rot?** – **30**
  - About Alliumnet: 251 – 6%
  - Resources Alliumnet & W4008 Alliumnet: each 125 – 3%
  - Events Alliumnet: 84 – 2%
  - **NOBSC: 84** – **2%**

# New Resources: Frequently Asked Questions



From Alliumnet Stop the Rot home page:

## Resources

View [the complete list of Stop the Rot publications and resources](#)

**Grower FAQs about bacterial diseases of onions**



[ABOUT](#) [STOP THE ROT](#) [W4008](#) [NARC](#) [RESOURCES](#) [NOBSC](#) [EVENTS](#)

[FREQUENTLY ASKED QUESTIONS](#)

[HOME](#) > [FREQUENTLY ASKED QUESTIONS](#)

## Frequently Asked Questions

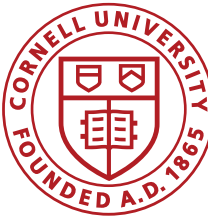
Grower Questions for Alliumnet and Extension Resources

**What does onion rot look like?**

**Do bactericides work?**

**Does neck length at harvest affect bacterial bulb rot?**

# New Resources: Frequently Asked Questions



HOME > FREQUENTLY ASKED QUESTIONS > WHAT DOES ONION ROT LOOK LIKE?

## What Does Onion Rot Look Like?

### What Onion Rot Looks Like in the Bulb and in the Field

In the Onion Bulb In the Field Resources

Onion bulb rot may be caused by bacterial or fungi pathogens.

**Accurate diagnosis of bulb rot (bacterial, fungal, or other) is important to select an effective management strategy.**

For example, fungicides are not effective in controlling bulb rot caused by bacteria.



Bulb rot caused by bacteria



Bulb rot caused by fungus (*Botrytis neck rot*)

Bacterial bulb rot may be caused by dozens of different types of bacteria.

It is generally not possible to determine the type of bacteria that caused the rot based on bulb rot symptoms. Samples would have to be sent to a diagnostic lab.

**To learn how to identify bulb rot caused by bacterial pathogens, and to distinguish it from bulb rot caused by other factors including fungal pathogens and abiotic factors (such as bruising), check out this video:**



English video (4 min)



Spanish video (4 min)

HOME > FREQUENTLY ASKED QUESTIONS > WHAT DOES ONION ROT LOOK LIKE?

## What Does Onion Rot Look Like?

### What Onion Rot Looks Like in the Bulb and in the Field

In the Onion Bulb In the Field Resources

In the field, bacterial diseases cause chlorosis, water-soaking, and collapse of the inner leaves of the plant.



In severe cases, all of the leaves collapse and die.



Not all plants with foliar symptoms of bacterial disease result in bulb rot.

Sometimes bulb rot results from onion plants without foliar symptoms of bacterial disease.

# New Resources: Frequently Asked Questions

HOME > FREQUENTLY ASKED QUESTIONS > DO BACTERICIDES WORK?

## Do bactericides work?

### Do bactericides work?

No!

- **There were no treatments in 9 field trials conducted as part of the Stop the Rot project that significantly reduced bacterial bulb compared to the untreated control.**
- Copper bactericides caused phytotoxicity (leaf necrosis) in some trials.

*EXCEPT in Georgia*

- In 2021 (37.5% bulb rot in untreated control), all treatments except Theia significantly reduced bulb rot compared to the untreated control.
  - **Best performing treatments were: NuCop** (5.5% bulb rot = 85% control), **Lifegard** (7% bulb rot = 81% control), **Mankocide** (7.8% bulb rot = 78% control) and **Howler** (8.6% bulb rot = 77% control).
- In 2020 (74.8% bulb rot in untreated control), **Leap** and **Actigard** **failed to control bacterial bulb rot.**

HOME > FREQUENTLY ASKED QUESTIONS > DO BACTERICIDES WORK?

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- In 2020 (74.8% bulb rot in untreated control), **Leap** and **Actigard** **failed to control bacterial bulb rot.**
  - **Best performing treatments were: Mankocide** (9.1% bulb rot = 88% control), **Mastercop** (12.2% bulb rot = 83% control) and **Nordox** (17.2% bulb rot = 77% control).

#### Products Tested (Stop the Rot trials):

##### Copper Bactericides:

- **Kocide 3000-O** (8 trials in CA, CO, GA, NY & WA)
- **Mankocide** (9 trials in CA, CO, GA, NY & WA)
- **Badge** (5 trials in NY & WA)
- **Mastercop** (6 trials in CA, GA & NY)
- **Nordox** (6 trials in CA, GA & NY)
- **Cuprofix Ultra 40 Dispers** (4 trials in NY & WA)
- **NuCop** (2 trials in GA)
- **Champ** (2 trials in GA)
- **Champion** (1 trial in CA)

##### Plant Defense Activators:

- **Lifegard** (9 trials in CA, CO, GA, NY & WA)
- **Actigard** (6 trials in CA, CO, GA & NY)

##### Sanitizer:

- **Oxidate** (8 trials in CA, CO, GA, NY & WA)

##### Antibiotic:

- **Harbour** (3 trials in NY)

##### Biologicals:

- **Howler** (1 trial in GA)
- **Theia** (1 trial in GA)

##### Other:

- **AgriTitan** (2 trials in GA)
- **Leap** (1 trial in GA)
- **Nano-MgO** (1 trial in WA)
- **Forticept** (1 trial in GA)
- **BlightBan A506** (1 trial in CO)
- **Velum One** (1 trial in CA)

#### Why did bactericides only work in Georgia?

##### Different types of bacterial bulb rot pathogens

- One theory is that it is related to the type of onion bacterial pathogens that are common in the different growing regions across the United States.
- In Georgia, the most common bacterial pathogen appears to be *Pantoea ananatis*, which occurs along the leaves of an onion plant where foliar spray of non-systemic bactericides may directly come in contact with the bacteria and kill it.
- In the other onion-growing regions of the United States, the most common bacterial pathogens (e.g. *Pantoea agglomerans*, *Burkholderia* spp., *Enterobacter* spp., etc.) occur deep in the leaf axils in the neck of the onion plant where they are protected from foliar sprays of non-systemic bactericides.

#### Research Reports:

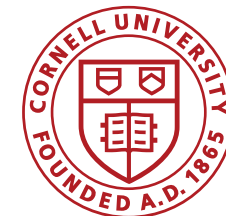
##### California

- CA 2021 PMR – Evaluation of bactericides for management of bacterial leaf blight and bacterial bulb rot in onions, 2021 (California). Plant Disease Management Reports 16/1926.

##### Colorado

- CO 2021 PMR – Evaluation of bactericides to manage slippery skin in onion in Colorado, 2021. Plant Disease Management Reports (PMR), the American Phytopathological Society (APS), V128.

##### Georgia



# New Resources: Frequently Asked Questions



HOME > FREQUENTLY ASKED QUESTIONS > DOES NECK LENGTH AT HARVEST AFFECT BACTERIAL BULB ROT?

## Does neck length at harvest affect bacterial bulb rot?

### Does neck length at harvest affect bacterial bulb rot?

#### Yes!

- If onions are topped when the neck tissue is still moist and green, the potential for internal bulb rot increases if the necks are clipped too short.
- Onions should be topped or clipped to **leave a neck length of at least 2 inches** (to minimize the risk of bacterial bulb rot).

#### Why does leaving a longer neck length reduce risk of internal bacterial bulb rot?

- Bacterial pathogens of onion require moisture to infect and spread. The moister the neck tissue, the greater the risk of infection. Bacterial pathogens do not infect or spread through dried tissue.
- Bacteria that end up on the tip of a freshly cut, 1-inch neck have a shorter distance to travel to the bulb than on the tip of a freshly cut 4-inch-long neck.
- Longer necks are more likely to dry fully and halt the spread of bacterial infection before the bacteria enter the bulb.

#### What can I do to reduce the risk of internal bacterial bulb rot?

- Top/clip onion necks to at least 2 inches long (preferably 3-4 inches).
- Consider field curing for longer before topping bulbs, if the neck tissue is still moist.

HOME > FREQUENTLY ASKED QUESTIONS > DOES NECK LENGTH AT HARVEST AFFECT BACTERIAL BULB ROT?

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#### What can I do to reduce the risk of internal bacterial bulb rot?

- Top/clip onion necks to at least 2 inches long (preferably 3-4 inches).
- Consider field curing for longer before topping bulbs, if the neck tissue is still moist.

#### When harvesting manually:

- Avoid transferring bacteria from the roots to the neck: clip the necks before the roots or sterilize the blades between clipping the roots and necks.
- Do not clip roots too close to the basal plate, to avoid damage to the bulb that might enable bacteria to enter the bulb.

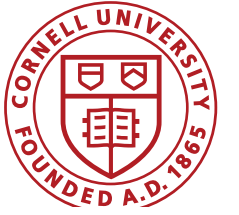
#### Summary of field trial results in Georgia: 2021, 2022

- Topping onion necks to a length of 1 inch resulted in 4 to 5 times more internal bulb rot (19%) than onions that were clipped to a 3-inch or 5-inch neck length (4.0-4.5% bulb rot incidence).
- Topping onion bulbs very close to the shoulder or leaving a short neck (1 inch long) resulted in significantly more bulb rot (18.0-18.5% bulb rot incidence) than topping necks to a 2-inch or 3-inch length (10.0-11.5% bulb rot).

#### Trial Reports:

- Dutta, B., and Tyson, C. 2022. Evaluation of neck-clipping length on post-harvest incidence of external and internal bacterial bulb rot in onion, Georgia, 2021. PDMR 16:V107.
- Dutta, B., Greene, R. and Tyson, C. 2023. Evaluation of neck-clipping length on post-harvest incidence of external and internal bacterial bulb rot in onion, Georgia, 2022. (Accepted for publication, we'll add the pdf to Allumnet as soon as it's ready.)
- du Toit, L.J., Derie, M.L., Gundersen, B., Waters, T.D., and Darmer, J. 2022. Effects of late-season cultural practices on bacterial leaf blight and bulb rot in an onion crop, Pasco, WA, 2021-22. Plant Disease Management Reports 16:V149.

# Alliumnet Homepage



## **Stop the Rot**

Combating Onion Bacterial Diseases with Pathogenomics Tools and Enhanced Management Strategies  
**2019-2024**

*Include a picture of a rotten onion bulb near the top of this [page](#)*



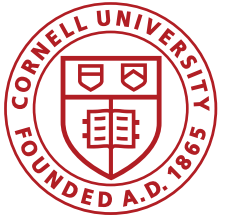
This work is supported by Specialty Crops Research Initiative Award 2019-51181-30013 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

**Introduction to the “Stop the Rot Project” video** *(click to watch the year 1 video)*

**“Stop the Rot Project” Highlights video** *(click to watch year 5 video(s))*

**Frequently Asked Questions** *(click to take you to FAQ page)*

# Alliumnet Homepage



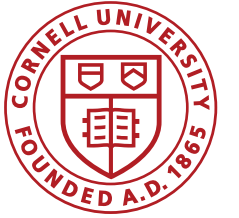
**Resources** *(click to take you to an exhaustive list of resources generated by this project)*

**Project Topics:** *(click on individual topic to take you to Summary & Research Highlights + relevant resources page)*

- **National survey of onion bacterial diseases**
- **Bactericide/pesticide efficacy**
- Effect of **irrigation** practices on onion bulb rot
- Effect of **nitrogen** on onion bulb rot
- Effect of **harvest practices** on onion bulb rot
- Effect of **post-harvest** practices on onion bulb rot
- Onion bacterial disease **detection tools**
- **Risk modeling** of onion bacterial disease
- Screening for **varietal resistance** to onion bacterial diseases
- Onion bacterial disease **pathogenomics**
- **Microbiome studies** of onion bacterial diseases
- **Economics** of onion bacterial diseases

- Executive Summary
- Topic reports
- Publications

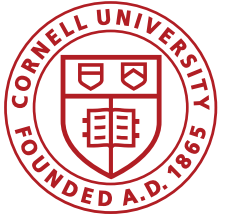
**Look a little  
or dig deep!**



# Alliumnet Stop the Rot Frequently Asked Questions

The Stop the Rot project addresses bacterial diseases of onion. Include caveat that answers reflect research results generated from the Stop the Rot project 2019 to 2024.

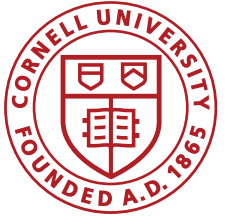
- **What does onion bacterial bulb rot look like?**
  - Bulb rot
  - Foliar symptoms of bacterial disease of onion
- **What causes onion rot?**
  - Short answer
  - Click on interactive map/database
- **How do onions get infected with bacterial disease?**
- **Can onion bacterial diseases be seedborne?**



# Alliumnet Stop the Rot Frequently Asked Questions

## **Strategies to control onion bacterial bulb rot:**

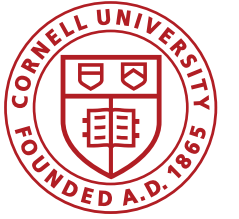
- Do bactericides work to reduce onion bacterial bulb rot?
- Is copper an effective management strategy to control onion bacterial diseases?
- Does nitrogen rate affect onion bacterial bulb rot?
- Does timing of nitrogen application affect onion bacterial bulb rot?
- Does irrigation affect onion bacterial bulb rot?
- Do onion varieties differ in their susceptibility to onion bulb rot?
- Is there a laboratory bioassay that can be used to screen onion varieties for their sensitivity to onion bacterial diseases?



# Alliumnet Stop the Rot Frequently Asked Questions

## **Strategies to control onion bacterial bulb rot:**

- Does the topped neck length affect onion bulb rot?
- Does the undercutting/pulling early affect onion bacterial bulb rot?
- Is there a difference between undercutting/pulling/lifting onions with a chain digger and straight-bar undercutter?
- How does topping onions affect bacterial bulb rot?
- Does rolling onions affect onion bacterial bulb rot?
- How does curing affect onion bacterial bulb rot?
- Do disinfectants applied in storage work?
- Does crop rotation affect onion bacterial bulb rot?



# Planned Extension Publications

- Onion World article(s)
- Local Extension newsletter articles.
- State-centric Bulletins, Fact Sheets, etc.
- Bulb rot video to be converted into a poster for onion stores
- Foliar symptom diagnostic video converted into a 5" x 7" pocket guide for the field

*Lindsey du Toit*

*and the*

*Stop the Rotters*



*Winning the rot race!*