



University of Idaho  
Extension

# WHITE ROT IN GARLIC & ONIONS

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# WHITE ROT OUTBREAK

## AFFECTS ALL ALLIUM CROPS

- Garlic and onions are an important cash crop for many small farms in North Idaho, as well as a popular home garden crop.
- In 2018, we discovered white rot in a garlic plot at the Boundary County community garden.
- In 2019, white rot was reported in Boundary and Bonner County home gardens as well as a commercial organic farm in Boundary County.



- White rot affects onions, garlic, shallots and other *Allium* species.
- White rot is highly contagious and destructive, making ground unusable for *Allium* production for up to 20 years.
- White rot is spread by tiny black sclerotia, about the size of a poppy seed, which are a pathogen structure similar to a seed that forms on decayed plant tissue.





- Cool moist conditions between 50 and 75°F are most conducive for spread of the disease.
- There are no effective remedies for the home garden.
- There are no resistant varieties of either garlic or onions.





# WHITE ROT SIGNS & SYMPTOMS

- Leaves of affected plants begin to die, exhibiting yellowing and wilting
- Leaf decay begins at the base, with older leaves dying first
- A fluffy white growth appears around the base of the bulb
- Small black sclerotia will start to form, about the size of a poppy seed.
- Roots begin to rot, and the plant can be easily pulled from the ground





# WHITE ROT OUTBREAK IN NORTH IDAHO

- Extension Educators Jensen and Painter had a number of white rot infestations in their counties.
- UI Plant Pathologist Woodhall has developed a DNA soil test for this organism.
- Dr. Woodhall did field inspections and gathered sample at various sites with outbreaks.
- A workshop was held in Boundary County on how to identify and manage white rot in alliums.







# WHITE ROT DECLINE TRIAL IN BOUNDARY COUNTY

We created a randomized complete block design with 5 replications in twenty 4 by 5 meter plots on a Boundary County certified organic farm that had a severe outbreak in 2019. Two types of cover crops were planted (mustard and clover). In the mustard cover crop plots, 2 rates of onion powder were applied, high and low. Soil samples were collected and a DNA soil test for the white rot organism were conducted in fall of 2019 and spring 2020 (twice). Samples were collected in fall of 2020 as well.





### at a glance

- White rot affects onions, garlic, shallots, and other *Allium* species.
- White rot is highly contagious and destructive, making soil unusable for *Allium* production for up to 20 years.
- White rot is spread by tiny black sclerotia, about the size of a poppy seed, which have a pathogen structure similar to a seed and form on decayed plant tissue.
- Cool, moist conditions between 50°F and 75°F are most conducive for the spread of the disease.

## Beware Signs of White Rot in Garlic and Other *Allium* Crops

### Introduction

White rot is a very serious disease of garlic and onion (*Allium* species) due to its highly aggressive nature: it can survive for a lengthy period of time in the soil between crops and spreads easily. The disease is caused by the fungus *Stromatinia cepivora* (Berk). Its dormant stage is a sclerotium (plural: sclerotia) that allows the disease to survive between plantings of susceptible crops and over the winter. Just one individual sclerotium for every two pounds of soil is enough to initiate acute infection. Its transmission can happen more easily than you might realize: cool, wet conditions favor the disease, so garden tools and shoes that have come into contact with infested soil very effectively spread the pathogen. Once infected, plants may yellow, wither, and die, or their bulbs may rot later in storage.

White rot affects all *Allium* species including onions, shallots, and garlic, although onions and garlic are the most susceptible. The

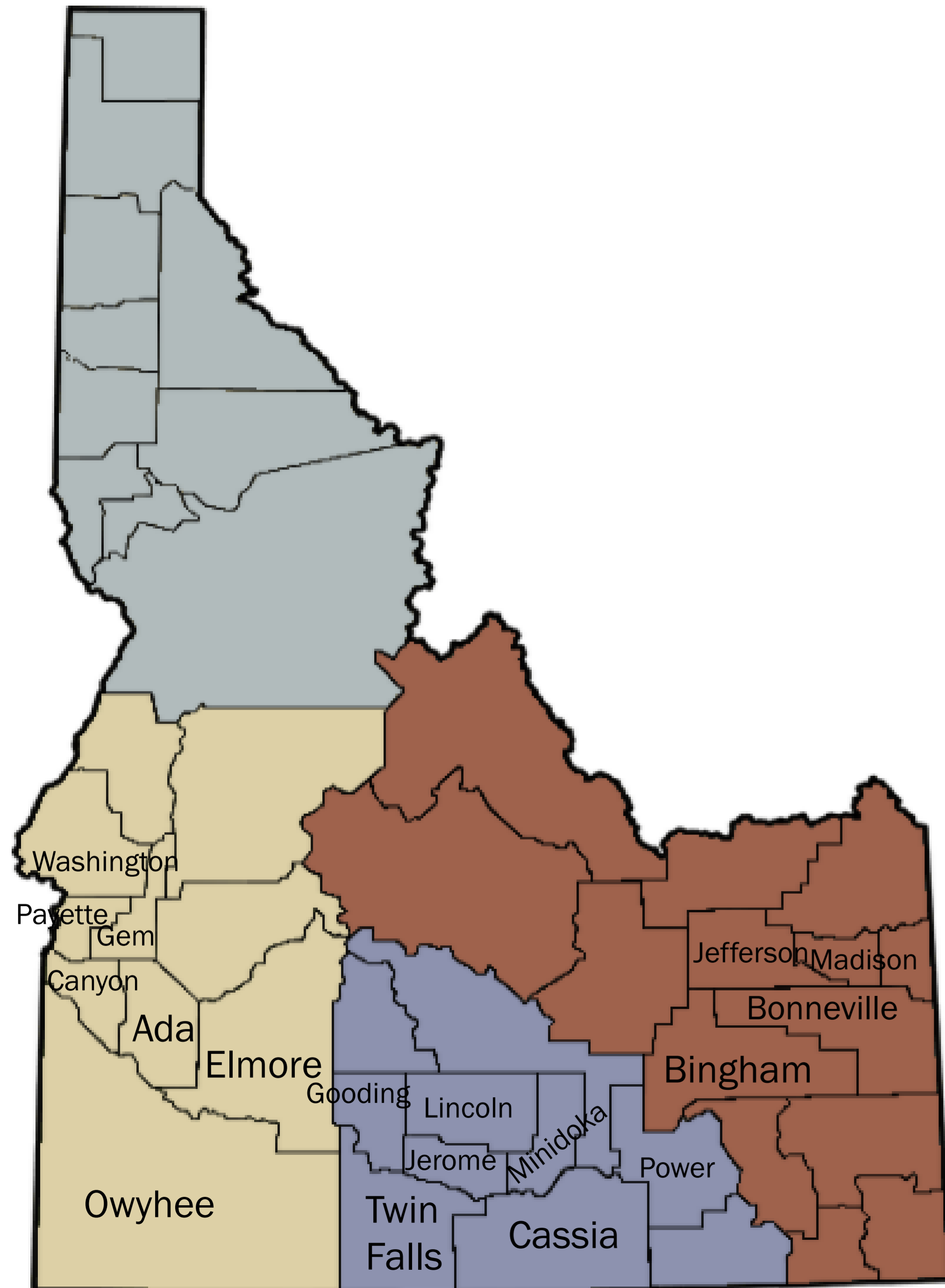




# QUARANTINE RULES FOR ALLIUM FAMILY

IDAHO ADMINISTRATIVE CODE  
02.06.05 SUBCHAPTER B

- White Rot Control Area Counties
  - Ada, Bingham, Blaine, Boise, Bonneville, Canyon, Cassia, Elmore, Gem, Gooding, Jefferson, Jerome, Lincoln, Madison, Minidoka, Owyhee, Payette, Power, Twin Falls, and Washington Counties, state of Idaho





# QUARANTINE RULES FOR ALLIUM FAMILY

## IDAHO ADMINISTRATIVE CODE 02.06.05 SUBCHAPTER B

- Permits importing seed, but not bulbs, cloves, sets or transplants of Alliums.
- Allium production within the designated counties shall be limited to production from seed, or from vegetative propagative material produced from seed within the designated counties.





# QUARANTINE RULES FOR ALLIUM FAMILY

## IDAHO ADMINISTRATIVE CODE 02.06.05 SUBCHAPTER B

- The Director may inspect any regulated product or regulated product planting areas within the designated counties during any time of the year to determine if the disease organism is present therein.
- ISDA has a list of approved Allium growers. The stock they sell is certified by ISDA for freedom from Onion White Rot.







# **QUARANTINE RULES FOR ALLIUM FAMILY**

**IDAHO ADMINISTRATIVE CODE  
02.06.05 SUBCHAPTER B**

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