

# ONION WHITE ROT

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A fungus disease of onions, called white rot, has spread to several areas of the Pacific Northwest in the past six years. So far there are no effective control measures and the only solution to infested fields is to grow other crops for a lengthy, but undetermined period.

## **What is onion white rot?**

It is a disease caused by a fungus, *Sclerotium cepivorum*. The fungus forms sclerotia, a hard, black, resting form of the fungus which can live at least 10 years in the soil.

## **What are the symptoms of onion white rot?**

The most noticeable top symptoms of the disease are wilt and death of the onion. The outside leaves usually die first. When bulbs are lifted, outer scales are rotted and the whole lower portion of the onion bulb is covered with white fungal strands. The white strands later become covered with black sclerotia. These resting bodies are round and about 1/50th of an inch in diameter. (See Figure 1.) Most infected onions die before becoming marketable.

## **Where is onion white rot a problem?**

Australia, Canada, British Isles, Western Europe, South Africa, Brazil, Argentina, India, and Cyprus are among countries that have white rot problems. In the United States, Virginia, Kentucky, New Jersey, California, Louisiana, Washington, and Oregon all have infested areas. The fungus is spreading to new areas, and since 1970 has been found in more fields in Oregon and Nevada.

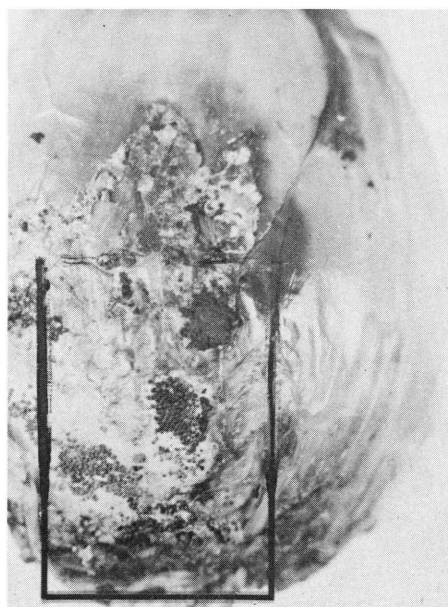


Figure 1. Affected onion bulb, showing hard, black sclerotia on the surface of the bulb. Outlined area in Figure 2.

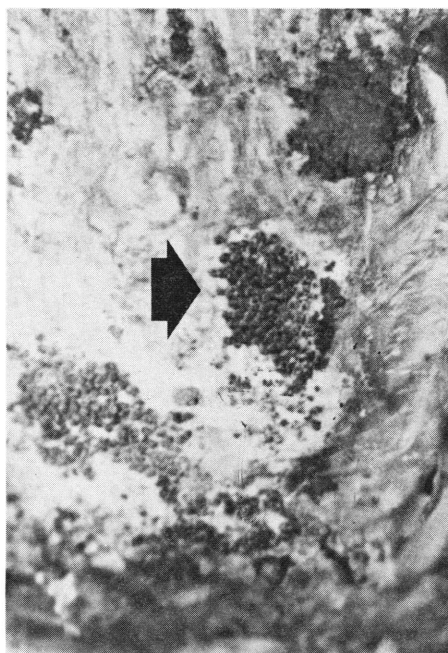


Figure 2. Enlargement of a portion of Figure 1 showing a cluster of hard black sclerotium. (Arrow) The actual diameter of the individual sclerotium is about 1/50th of an inch.

## **What plants does onion white rot attack?**

White rot can occur on all members of the onion family; including onion, shallot, garlic, leek, and chive. There is little resistance to white rot in this group, so resistant varieties are unavailable. Onion white rot does not attack any plants outside the onion family.

## **How is onion white rot spread?**

The hard, black, resting body (sclerotium) is the chief means of spread. It is moved by water, wind, farm machinery, onion sacks, pallets, trucks, etc. The disease can also be spread by infected culls, sets, or transplants.

## **How long can the resting spores of this fungus survive?**

No one knows for sure, but in one experiment they were still surviving after 10 years when the experiment was terminated.

## **What controls are effective against onion white rot?**

No control measures have been successful against this disease once it is established in a field. Long rotation and some soil-applied chemicals have given limited control. Usually, onion production becomes impossible within a short time after a field becomes infested.

## **Can direct-seeded onions be protected from onion white rot by chemical means?**

There is no chemical available that will allow the production of onions from seed on white-rot-infested ground.



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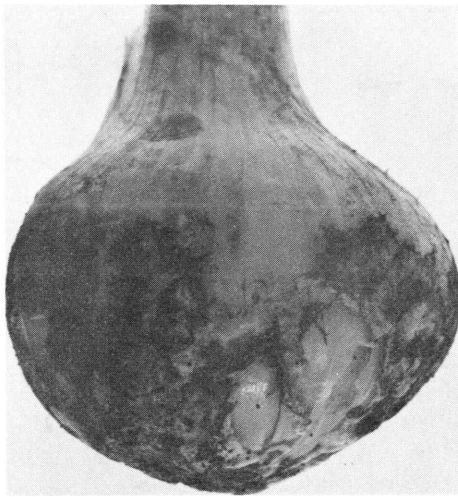


Figure 3. White rot affected bulb showing soft rot of outer scales.

***Can onion transplants be protected from onion white rot by chemicals?***

A few chemicals are effective in protecting transplanted onions, but most of these have no federal clearance for use on onions. Botran has a federal clearance, but has given erratic results in the Walla Walla area of Washington where it has been widely used.



Figure 4. White rot effect—onions showing wilt of older leaves.

***Without control measures, how long can onion production continue on infected ground?***

Onion production becomes impossible on infected ground within a few years. If the irrigation water in a producing area is carrying the fungus, rotation back into onions even after years of nonsusceptible crop production will not reduce the disease.

***What can be done for onion white rot control?***

The only successful method of control is to keep the causal organism out. If it is in a field, everything possible must be done to prevent soil movement from the infected field into clean fields.

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