

# Bacterial Ring Rot of Potato

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Bacterial ring rot of potato, caused by the bacterium *Clavibacter michiganensis* subsp. *sepedonicus*, is a serious issue for seed potato production. The presence of the disease is one of the main reasons for rejection of seed potatoes from certification programs. This disease, if left unchecked, can spread quickly through an operation leading to severe losses.

## Symptoms

Ring rot symptoms may not be noticed until later in the growing season. Affected plants stems and leaves will wilt, start yellowing, and die. Ordinarily the lower leaves will be affected first with rolled margins and a pale yellow color appearing between the leaf veins. However, the most diagnostic characteristic appears in the tubers. The disease gets its name from the characteristic breakdown of the vascular tissue ring in the tuber. Splitting tubers in half toward the stem end reveals a yellow to brown discoloration of the vascular tissue, located approximately ¼ inch below the surface of the tuber. The discolored area often has a cheesy appearance and when squeezed a milky ooze leaks from the discolored area.

Not all tubers will show outward symptoms; however, some will have slightly sunken, dry surface cracks. The surface cracks allow the entry of other bacteria, which cause soft rots and impart the foul odor to the rotting potato. Under some conditions the potatoes may remain show no symptoms externally, especially under cool, wet

growing conditions. The disease may recur during storage of infected tubers and can cause extensive losses.

Symptoms are sometimes more subtle than those described above. Splitting the tuber in half may reveal only a broken, sporadically appearing dark line or a continuous, yellowish discoloration inside the tuber. If there is any doubt, laboratory tests can be performed to confirm diagnosis of ring rot.

## Disease Cycle

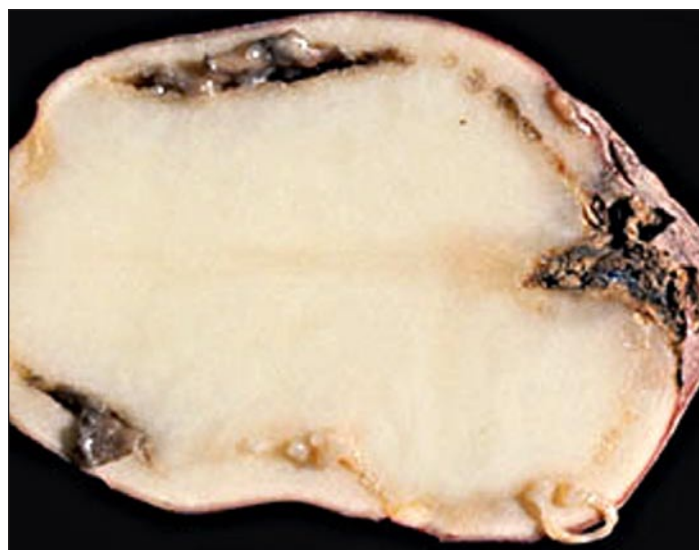
The bacterium, *Clavibacter michiganensis* subsp. *sepedonicus*, survives mainly in infected tubers but can also survive up to 5 years in dried slime on machinery, sacks, and other equipment even if exposed to temperatures below freezing. The ring rot bacterium does not overwinter in fields from unless infected volunteer tubers survive.

The bacterium enters tubers through wounds. This is important when cutting seed pieces since a contaminated knife can result in the inoculation of a large number of potatoes. Disease development is favored by temperatures ranging from 64 degrees to 72 degrees Fahrenheit.

For more information contact Megan Kennelly, Extension Plant Pathologist, Kansas State University, at [kennelly@ksu.edu](mailto:kennelly@ksu.edu)



**Figure 1.** Symptoms of Bacterial Ring Rot on a potato plant: advanced stage of infection, showing wilt, rolling of leaf margins, mottling and necrotic tissue. Courtesy of J.D. Janse, Plant Protection Service, [www.insectimages.org](http://www.insectimages.org).



**Figure 2.** Tuber symptoms of Bacterial Ring Rot. Courtesy of: Dr. Otto Schultz (deceased), Cornell University, Department of Plant Pathology, Ithaca, NY. 14853.

## Control

| Management Options          | Comments   |
|-----------------------------|--|
| <b>Resistant Varieties</b>  | Currently there are no resistant varieties for managing bacterial ring rot.  |
| <b>Crop Rotation</b>        | Crop rotation is not a viable option for control of bacterial ring rot.  |
| <b>Sanitation</b>           | While cutting tuber seed pieces, frequently disinfect cutting tools in a 10 percent solution of bleach or some other disinfectant.<br>Disinfect all other equipment on a regular basis including planters, harvesters, grading machinery, etc.<br>Destroy all culled tubers. Do not leave these tubers in the field. |
| <b>Planting precautions</b> | Infected seed tubers are the most important source of inoculum. Plant only certified tuber seed.<br>If ring rot was a problem in a previous year, do not replant into same ground.   |
| <b>Chemical Treatment</b>   | No pesticides are currently recommended to manage bacterial ring rot.  |

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