

Halo Blight of Beans

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Halo blight, caused by the bacterium *Pseudomonas phaseolicola*, appeared in 1964 in many bush bean planting in the Willamette Valley. The disease was found in fields of all the commercial bush bean varieties—Tendercrop, Tendergreen, and Gallatin 50. Although FM-1, Oregon's principal variety of pole bean, is susceptible to the disease, it has not become naturally infected when field-grown.

Symptoms

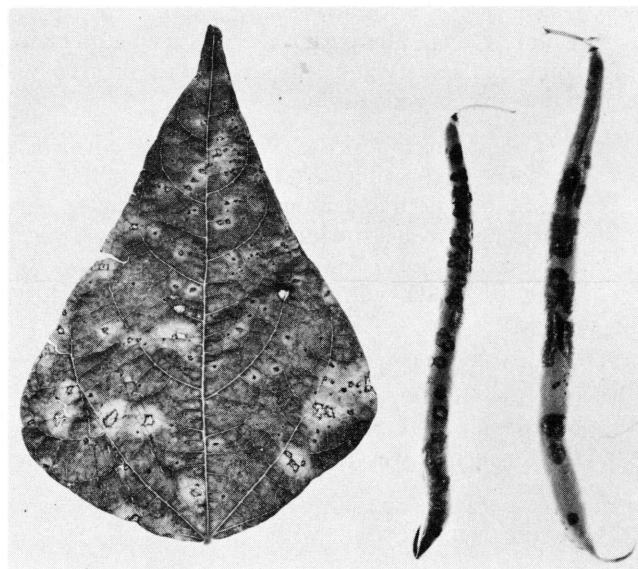
Leaves: Small, irregular water-soaked spots occur on the underside of the leaf. Later the spots turn red-brown, develop through to the upper surface of the leaf, and often have an encircling halo of greenish-yellow tissue. A light cream colored bacterial exudate (ooze) is frequently present over the surface of the spots. Diseased plants growing under high temperatures (85° to 95° F.) may not produce as many halos as those grown under cooler temperatures. Leaves on systemically infected plants may show yellowing (chlorosis) and malformation without the appearance of much external infection. Systemically infected plants are often stunted.

Pods: Sunken water-soaked spots, often numerous with a bacterial exudate on the surface, may occur anywhere on the pod.

Stems: Reddish cankers with a surface bacterial exudate develop. Reddish streaks may occur longitudinally on the stem. These symptoms have not been common in Oregon bush bean plantings.

Joint rot, a girdling of the stem and collapse of the plant above the rot, may be found in plants grown from diseased seed.

Seeds: The seed may shrivel, discolor, or rot. Sometimes only the hilum is discolored. Discoloration of the hilum is difficult to detect in dark-seeded varieties.



Bush bean leaf and pod showing typical halo blight lesions. Bacterial exudate is present on most of the pod lesions.

Infection

Infection occurs through stomata and wounds. Severe infection may occur after a hailstorm accompanied by wind.

Source and spread of bacterium

Infected seed is the principal source of the causal bacterium. Plants grown from infected seed may produce spots, with a surface bacterial exudate, on cotyledons, stems, or leaves.

The halo blight bacterium may survive for long periods in undecayed bean leaves, stems, pods, and seeds.

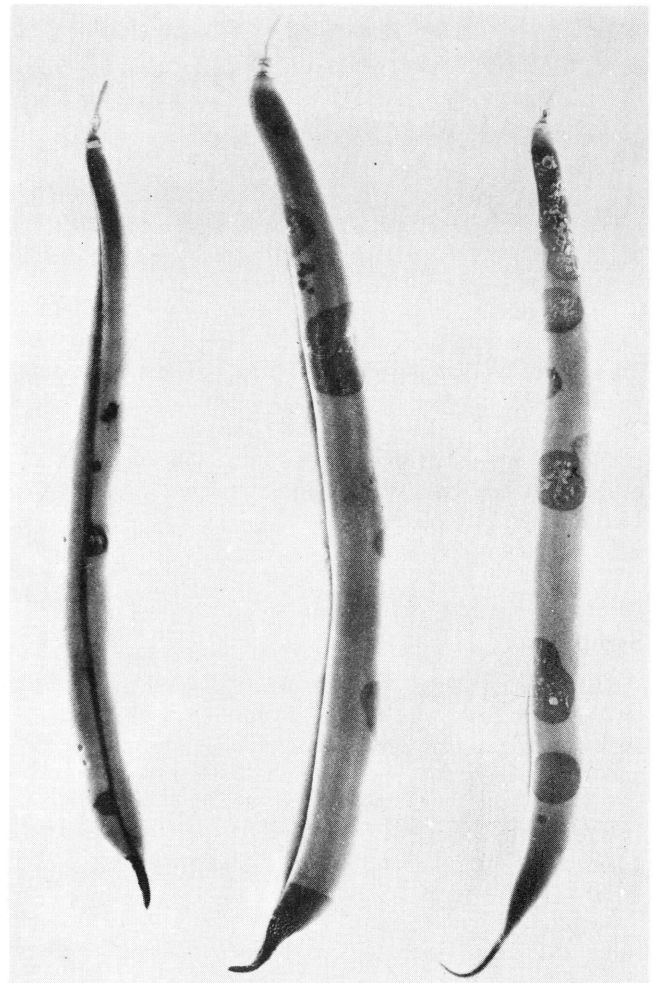


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The bacteria in the exudate on the surface of the halo blight spots may be spread to other plants by wind-blown rain, overhead irrigation water, farm tools and equipment, and man.

Control

- Plant disease-free seed. Most outbreaks of halo blight arise from the planting of infected seed.
- Rotate crops. The bacteria may survive in undecomposed bean plant debris. A two-year crop rotation is recommended.
- Aid plant decomposition. Plow under plant debris as soon as possible after harvest to allow for maximum decomposition. Plowing under the debris and then growing a cover crop is a good practice. Careful flaming along fence rows or edges of fields will aid decomposition of debris in those areas.
- Delay planting. Late plantings to allow most of the bean plant growth to occur during the drier months of July and August, instead of during the frequently wet June, will aid in reducing halo blight.
- Avoid over-irrigation with sprinklers.
- Do not work in infested fields when wet with rain, irrigation water, or heavy dew.
- Application of bactericides in sprays or dusts has not given practical disease control and is not recommended. There is no known effective seed treatment.



Tendercrop pods showing lesions and bacterial exudate caused by halo blight.