

# Bean Rust

IAIN C. MACSWAN  
*Extension Plant Pathology Specialist, Oregon State University*

Rust, caused by the fungus *Uromyces phaseoli*, has been of minor importance for several years but it has again become severe in some pole bean plantings. The bean variety FM-1 which replaced the variety FM-65 in the early 1950's has been resistant to the rust fungus which attacked FM-65. The recent increase of rust in FM-1 is due to the formation of a new strain of rust fungus.

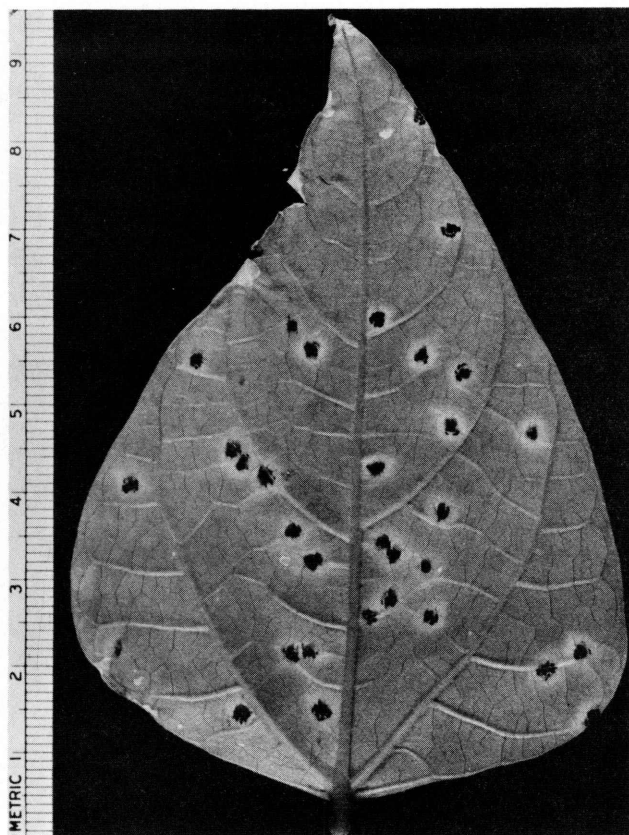
## Symptoms

**Early symptoms (June):** Small white specks or flecks develop on the upper side of the leaf in early June. Small white blisters soon develop in the fleck areas, and in 2 to 3 weeks the lower side of the blisters produces a white "powder"—the spores.

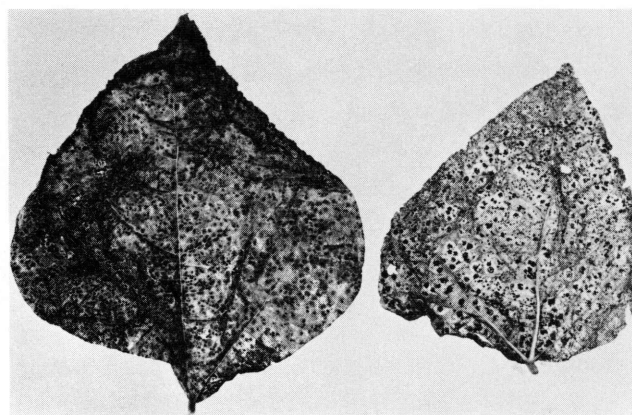
**Summer (July):** Brown-red powdery pustules occur on both upper and lower leaf surfaces and petioles. If the pustules are numerous, the leaf turns yellow, shrivels, dries up, and falls from the plant. When infection is severe, defoliation and subsequent reduced production is common.

The brown-red spores (summer spores) will cause infection as soon as they are mature, and under favorable conditions they will produce another generation of the same kind of spores in 10 to 15 days. Several generations of the spores may occur during the summer.

**Late summer (August-September):** Some or all of the previously brown-red pustules on both upper and lower leaf surfaces turn black from the black spores (winter spores) produced in the pustules. Leaf chlorosis, shriveling, and defoliation occur frequently in August and September.



Pustules of red-brown summer spores on the underside of a bean leaf.



Pustules of black (overwintering) spores on old bean leaves.



This is one of a series of *Fact Sheets* reporting Cooperative Extension work in agriculture and home economics, F. E. Price, director. Printed and distributed in furtherance of Acts of Congress of May 8 and June 30, 1914. Oregon State University, Oregon counties, and U. S. Department of Agriculture cooperating.

## Source and spread of the fungus

The black spores produced in the leaf and stem pustules in late summer have thick walls and are the principal overwintering stage of the fungus. Black spores may overwinter on affected plant parts, stakes, poles, and to a lesser extent wires, and be blown by wind to infect new plants the following season. Wind is also the principal agent of spread of the brown summer spores. Bean rust is not seed borne.

## Control

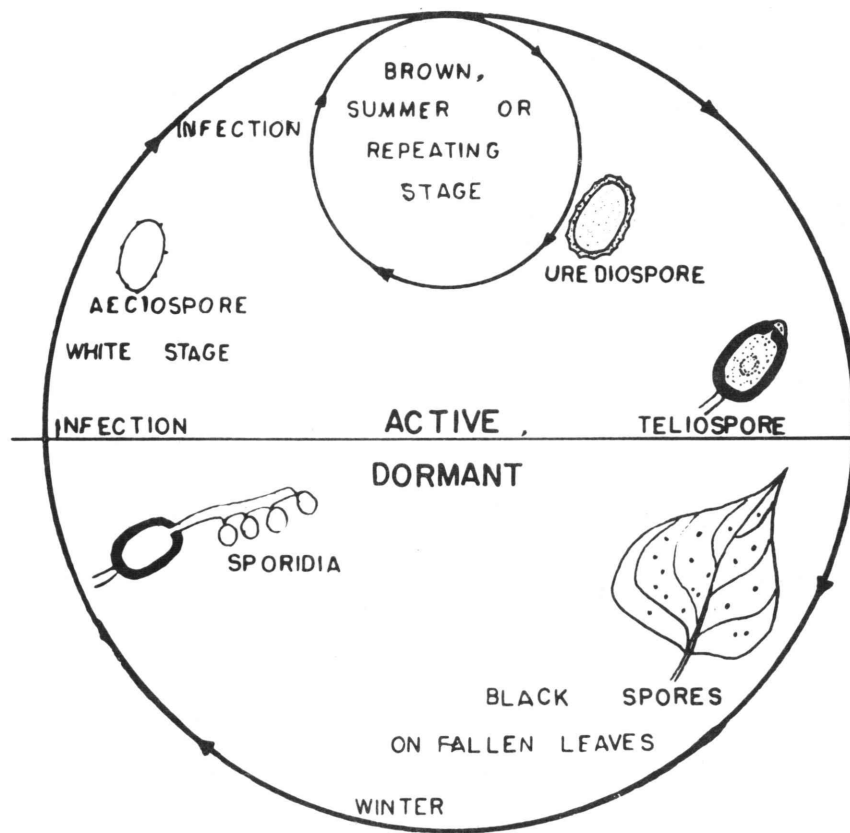
- Rotate crops. Beans should not be planted on the same land the following year. Beans planted on land that produced a crop heavily infected with rust the preceding year may become infected earlier in the season and sustain more damage than those grown under a crop-rotation program.

- Plow under or burn the bean plant debris after harvest.

- Use wire instead of stakes to support bean plants.

- Use new stakes and posts. If this is not practical, treat posts (spray or dip) with lime-sulfur 1 part in 10 parts of water before setting them in the field.

- Dust plants with finely divided sulfur (325 mesh or finer) containing at least 80% sulfur. Make the first application as soon as the first spots appear. Growers with fields having a history of rust should apply the first dust *before* rust appears. Continue dusting at 7-day intervals until blossom time. Apply the dust at the rate of 20 to 40 pounds per acre, depending on the size of plants at the time of application. Early applications of dust are especially important. Control of rust by dusting is difficult if the disease becomes established in a planting.



Bean rust life cycle.