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BLIGHT OF PEPPERS

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Blight of peppers was first found in Colorado in 1931 near Rocky Ford and Pueblo. Later, in 1932, it was found in the Canon City district.

The disease is caused by a fungus, or mold, known as *Phytophthora capsici*. This organism thrives best in heavy wet soil, and under favorable conditions of moisture and temperature has repeatedly caused heavy losses. Because of the newness of the disease it is the purpose of this bulletin to describe the symptoms and means of spread of the blight of peppers and to suggest measures for control.

Symptoms of the Disease

Diseased pepper plants show infection on stems, branches, fruit and leaves. Infected stems are girdled at the soil line, which results in sudden wilting and death of the plant. (Figure 1.) The diseased areas are dark green and water-soaked in appearance, later turning brown when dry and extending slightly below the soil line. Roots, however, are seldom infected. One hundred plants pulled in a heavily infected field in 1932 showed only a slight infection of a few roots, the majority being normal.

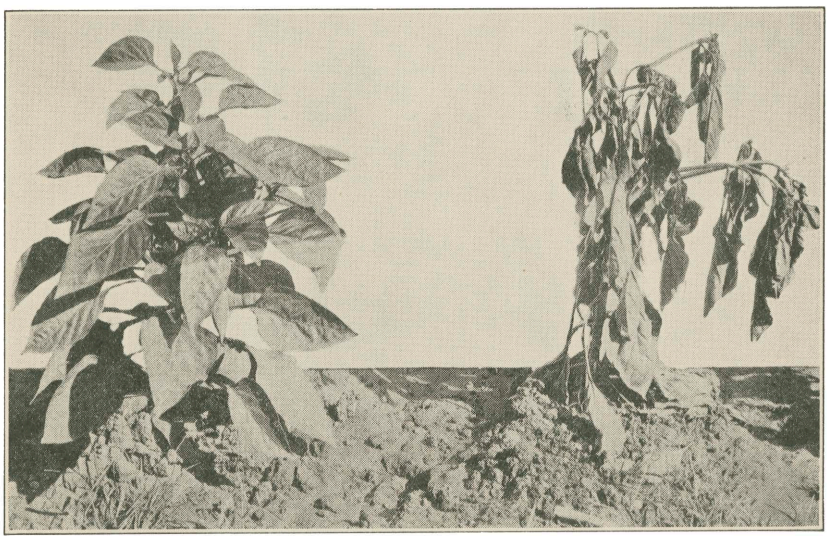

Figure 1.—Healthy and diseased pepper plants. The diseased plant was girdled at the soil line and rapidly wilted and died.

On the leaves, (Figure 2) the spots are at first small and dark green. These may be circular or irregular in shape and when enlarged appear as sun-scalded areas, becoming dried and bleached.

The branches display the same symptoms as found on the stems. Infection from this part of the plant may extend to the petioles, leaves, blossoms, or fruit itself. The fungus may gain entrance where a leaf or a stem branches from the main stem and migrate through the tissues into the leaf stem or fruit pod. The diseased parts display a dark green, water-soaked appearance in contrast to the light green color of healthy tissues. (Figure 3.) The pods, after several days, become entirely diseased and are covered with a white mold growth, which bears quantities of the fungus spores. Following this stage the pods rapidly dry out and remain attached to the plant in a mummied form. The seeds in the pods are also affected—some appear normal, others dark and shriveled. (Figure 4.) Pepper pods which have turned red show a marked resistance to the disease.

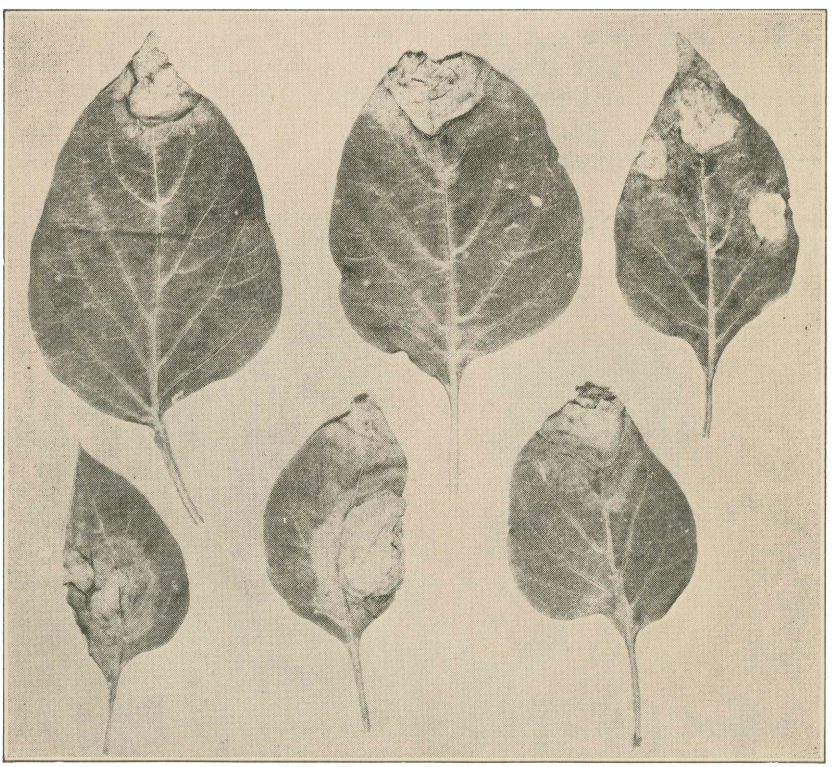

Figure 2.—Leaves showing large irregular areas of infection.

Spread of Pepper Blight

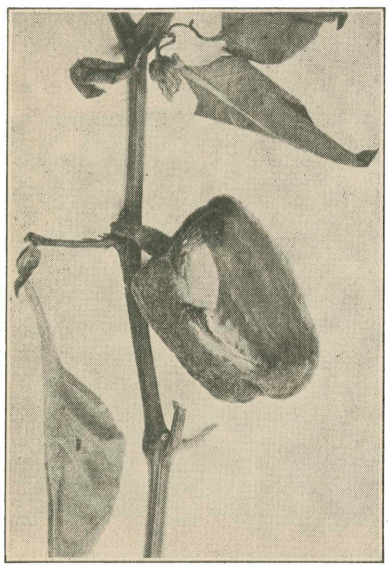

Figure 3.—Diseased pepper pod in which the fungus has migrated to the pod from the infected stem. Later the pod became dry and remained attached to the plant in mummied form.

Phytophthora capsici is a soil-borne fungus and thrives in the soil vegetatively by mycelium or by spores. The organism in the summer produces small spores which are motile and swim about in water. These spores may be splashed to the leaves, branches and fruit during a rain storm, or may be carried to the stems of the plants during irrigation, and cause infection. Figure 5 shows a field where the blight has been spread by irrigation.

Seeds from the infected pods may also carry the disease. It has been found, as stated above, that seeds in the diseased pods may be in various stages of infection. Normal appearing seeds, when planted on a nutrient medium, germinate but also give rise to the fungus. The

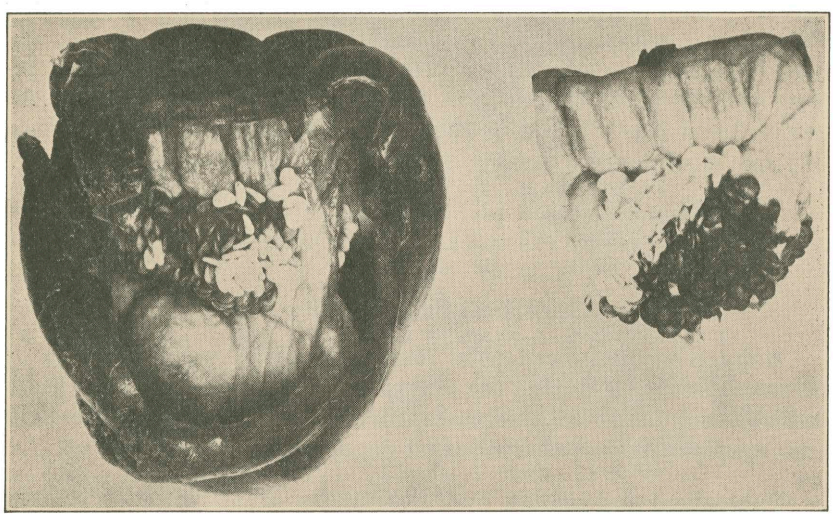

Figure 4.—The inside of a diseased pod showing the effect upon the seeds. Some appear normal, others black and shriveled.

Figure 5.—Pepper field showing the entire lower half killed by the disease. The blight spread from a few plants by irrigation water.

young plants from such seed soon are destroyed by the fungus. Diseased pods should be discarded and not used for seed. This source of spread may be evident in the seedbeds where the fungus rapidly increases and damping-off of seedlings occurs. During setting, plants taken from diseased beds may be slightly infected or carry infected soil to the field, where, under favorable conditions, the disease reappears later in the season. The fungus may live in the soil of cold frames for at least 2 years as shown by experiment, and it may possibly live much longer.

When found, diseased plants should be removed from the field as this will help reduce the spread of the disease and loss of stand.

Varietal Susceptibility

Ruby King and California Wonder varieties were found to be the most susceptible during the season of 1931. Eggplant and tomato seedlings and fruits are also susceptible to the disease. In the field large eggplants grown near diseased peppers became infected.

Subsequent greenhouse and field trials of 61 varieties showed all of them to be susceptible. So far no resistant varieties have been found.

The following is a list of varieties tested:

1. Foreign Plant Introduction No. 10278
2. No. 102707
3. No. 102882
4. No. 102709
5. No. 97819
6. No. 102771
7. No. 102881
8. No. 102883
9. No. 103048 (large persimmon)
10. No. 102710
11. California Wonder
12. Mikado
13. Sunnybrook
14. Harris Early Giant
15. Spanish
16. Italian Bell
17. Sweet 625, M. H. Sweet Giant
18. Harris Improved Squash
19. Wonder Bell
20. Livingston's Prolific Yellow
21. Red Japan Cluster (hot)
22. Sweet Golden Queen
23. Coral Gem Boquet (hot)
24. Birdseye or Creole (hot)
25. Early Red Squash or Tomato
26. Ruby Giant
27. Beckert's Wonder
28. Golden Dawn
29. Perfection Pimento
30. Oshosk
31. Sweet Meat Glory
32. Sweet Spanish
33. World Beater
34. Snoderegger's New Royal
35. Neopolitan
36. Sweet Upright
37. Red Squash
38. Simon's Jersey (sweet)
39. Harris' Earliest
40. Red Chili
41. Tobasco (hot)
42. Livingston's Ohio Crimson
43. Mile High Sweet Giant
44. Sweet Hungarian Yellow
45. Magnum Dulce
46. Celestial (Sweet)
47. Woodruff' Colossal
48. Pimento (sweet)
49. Sunburst
50. Royal King
51. Giant Crimson
52. Livingston's Extra Early Red Prolific
53. Ruby King
54. Pepper Pimento
55. Early Mt. 619
56. Chinese Giant
57. Large Sweet Spanish
58. Sunburst
59. Bell or Bull Nose
60. Special Thick Walled Chinese Giant
61. Long Red Cayenne

Control

1.—When first found, diseased plants should be pulled and destroyed.

2.—Use clean stock. If plants are bought they should be examined for stem infection. If home grown use sterilized or disease-free soil in cold frames.

3.—Diseased pods should be discarded as seed from such pods may carry the disease.

4.—During wet weather, spores of the fungus are splashed to the leaves, branches, and to the fruit on the lower branches, causing infection. A careful spraying schedule with a fungicide such as bordeaux mixture, should give excellent results in protecting the plants and preventing spread of the disease.