Diaporthe phaseolorum ,in Soybean Seed

V. R. Wallen

Diaporthe phaseolorum, the cause of stem canker and pod-and-stem blight of soybeans was found to occur in high percentages of the soybean seed grown in the Ontario counties of Essex, Kent, Lambton, Middlesex and Elgin in 1959, A survey of elite, registered and commercial seed from those areas revealed that D. paseolorum was present in 139 of 150 seed samples examined, Infections ranged from one to 85 per cent with an average infection of 29 per cent.

In greenhouse trials the average emergence of seed was 77 per cent. Among the emerged seedlings, 10.5 per cent showed above-ground symptoms of the disease, The average emergence of healthy seed samples was 92 per cent. It is apparent, from the results obtained, that the fungus is causing a reduction in germination and subsequent emergence in addition to building up the supply of inoculum in the soil.

It is thought that the extremely hot, humid weather that prevailed during the latter part of the growing season induced early maturity of the soybean crop, In normal years the fungus attacks the crop late in the season and does not have sufficient time to establish itself within the seed.

SUNFLOWER

Sunflower Diseases in Manitoba in 1959

W. E. Sackston

Sunflowers were sown on 25,000 acres in Manitoba in 1959, Although the area devoted to this crop was reduced sharply from the 1958 seeding of 45,000 acres, preliminary estimates indicated that yields would be about 800 pounds of seed per acre,, the highest average since 1955,

Forty fields were examined in mid-September; 33 of them in the central area, and 7 in outlying areas. Mr. John Hildebrand, Cooperative Vegetable Oils, Ltd., Altona, assisted in locating fields and took part in the survey for 1 day,

Rust (Puccinia helianthi) was found in 36 of the 40 fields. Although inoculum was plentiful in the fall of 1958 the rust outbreak, that might have occurred if conditions had been favorable in 1959, did not develop. Infections were generally lighter than in 1958. There were traces of rust in 18 fields; from 2 to 10 per cent rust on the middle leaves in 14 fields, and from 15 to 35 per cent rust in 4 fields. Only 1 field of Beacon showed more than a trace of rust (10 per cent), The other fields with appreciable amounts of rust were of Mennonite and some of Advance in the central area, and 1 of Advance in the outlying area near Carberry.

Leaf Mottle (Verticillium albo-atrum). No leaf mottle was found in 18 fields, including all those in the outlying areas. It would have been difficult or impossible to distinguish leaf symptoms in the outlying fields, as all had suffered some frost damage before they were examined. There were traces of the disease in 8 fields; from 1 to 10 per cent of the plants were affected in 7 fields; 15 to 30 per cent in 4 fields; 75 per cent in 1 field; and 90 per cent in 2 fields. One of the fields with 90 per cent infection was a field in which leaf mottle was conspicuous in 1949 and severe in 1954, Although the disease has been most conspicuous in an area with relatively light soils, the pathogen has become well established in an inoculated nursery on heavy clay soil at the Winnipeg laboratory.

Stalk Rot (various causes). Plants with variously discolored stems were observed in a number of fields, There were traces of dark brown to black stem discoloration, in most cases on plants with internal stalk rot, in 4 fields: 1 per cent in 6 fields; 5 per cent in 2 fields; and 10 per cent in 1 field. This condition, as in previous years, was associated with Verticillium leaf mottle. V. albo-atrum pseudosclerotia were seen in some stems in the field, and the fungus was isolated from samples of stem tissue. The fields with 5 and 10 per cent of stalk rot were those with 30, 75, and 90 per cent of leaf mottle.

Plants with the elongate, pale brown stem lesions described for the first time in 1958, **(C.P.D.S. 38:41.)** were found in 7 fields. As in $958, plants of the variety S37-388 were much more severely affected than'those of Sunrise; Beacon also appeared to be susceptible, There were traces of the disease in 6 fields; 10 per cent in 1 field; and 75 per cent in 1 field (a crossing block.) In the field with 75 per cent of the plapts affected, symptoms were severe on about 25 per cent, and about 5 per cent of the plants were broken over at a lesion, the break usually occurring along the lower half of the stem.

New symptoms were observed, in addition to the apparently superfacial, elongate, pale brown lesions spreading from 2 to 4 inches up and down from the base of dead petioles, and extending from 3/4 to 1 inch around the stem, Many darker lesions were found in 1959, Apparently they darken with age, The lesions extended from 1 to 5 inches along the stem; most were from 3/4 to 1 1/2 inches wide but many completely encircled the stems, The lesions were invariably associated with petiole traces. Severe wilting of the leaves was associated with the stem lesions. Leaves above the lesioned part of the stem also wilted; the wilting apparently progessing apically. Wilted leaves died and turned brown. The leaf necrosis differs from Verticillium leaf mottle as it involves the whole leaf, not primarily the intepveinal areas. There was pronounced vascular discoloration in severely lesioned stems, and slight discoloration in only lightly lesioned stems. The root systems of affected plants were slightly to severely reduced in size and vigor. There was some external and internal discoloration of the roots, Plants which were apparently affected early were! prematurely ripe, shorter than healthy plants, the heads were small, and the seeds were light.

Three fields had a trace of the plants affected by miscellaneous stalk discolorations.

Downy Mildew (Plasmopara halstedii), Downy mildew was heavier in 1959 than in 1958, possibly because of plentiful early season moisture in the central sunflower area. There were traces of the disease in 7 fields; 1 per cent in 2 fields; 5 per cent in 7 fields; and 20 per cent and 30 per cent in 1 field each. In addition to the fields seen during the survey, systemic infection of 5 per cent of the plants were seen in 1 field, and 10 per cent in another, early in July. Two fields were reported to have been plowed down in June because of very heavy mildew attack, In both cases, sunflowers happened to follow sugar beets, another important crop in the sunflower area. As in previous years, no evidence of secondary leaf infections was seen.

Leaf Spot (Septoria helianthi) was found in the fall survey for the first time since 1947. The disease was found in trace amounts in 5 fields. It is difficult to explain the failure to find Septoria leaf spot in the fall surveys for the past 11 years. It was extremely prevalent in the autumn of 1947, but has been identified positively only once since then, causing lesions on the cotyledons of volunteer seedlings in a disease nursery at the Winnipeg laboratory in the spring of 1955,

An unidentified leaf necrosis affected almost 50 per cent of the lower leaves of Rust Resistant S37-388 in a crossing block. Spots about 5 to 10 mm. in diameter apparently enlarge, coalesce, and involve the whole leaf.

Wilt and Root Rot (Sclerotinia sclerotiorum) was present in trace amounts in 16 fields, and affected 1 per cent of the plants in 6 fields, Head Rot (Sclerotinia, Rhizopus, etc.) affected one or a few heads in 6 fields, Head Drop (Cause unknown; possibly snout beetles in some cases) was found on 1 or a few plants in 15 fields, and on 1 per cent in 1 field. Yellows (Aster yellows virus) was present in trace amounts in 19 fields, and on 1 per cent of the plants in 1 field.

Powdery Mildew (Erysiphe cichoracearum) was present on a few plants in 4 fields, and on 75 per cent of the plants in 2 fields.

Other Observations

ROOT ROT (Rhiaoctonia solani) was 2-tr.-sl. 1-sl.-mod./7 fields surveyed in s. Alta. (E'J. Hawn).

ROOT ROT (Sclerotinia sclerotiorum) was 1-tr.-sl. 1-sev./7 fields examined in s, Alta. (E. J. H.).