Diseases of Soybeans in Ontario in 1958

A.A. Hildebrand

In 1958, in southern Ontario, there was no flooding of fields or waterlogging of soils such as occurred during the first half of the growing seasons of 1956 and 1957. In fact, for a considerable period of the summer of 1958, soils tended to be too dry rather than too wet in several areas where soybeans are grown intensively. In consequence, less was heard and seen of parasitic diseases than those of a physiological nature.

Manganese Deficiency was more intensive in its effects and widespread in its occurrence this past season than heretofore observed in some 17 years of close observation of soybeans. Due probably to prolonged periods without rain, the disorder was observed in parts of Kent County where it had never been seen before. For the same reason its effects were more severe in areas in Essex County where it has occurred for years. If, as reported, average bushel-per-acre yield is going to show a reduction this year, an important contributing factor undoubtedly has been manganese deficiency.

Phytophthora Root and Stalk Rot (Phytophthora sp.). This disease, although still causing considerable concern in 1958 was less important economically than in the three preceding years.

Pythium Stalk Rot (Pythium sp.). Late in June and early in July attention was attracted by the upward curling of the upper leaves and the general unthrifty appearance of soybean plants in the laboratory experimental plots and in a number of commercial plantings. Closer examination of affected plants showed the presence of grayish-brown lesions which extended down their stems from the first-node. Concurrently, varieties of dry (field) and snap (garden) beans (Phaseolus vulgaris L.) over a wide area were showing comparable symptoms. Pythium isolates which appeared to be the same were obtained from several different varieties of the two hosts. Greenhouse inoculation experiments have shown that the respective isolates are reciprocally pathogenic. The Pythium involved seems to affect only the stalks of soybeans and in this respect is apparently different from Pythium ultimum Trow which was reported by Hildebrand and Koch in 1952 (Sci. Agr. 32: 574-580) as attacking the roots as well as the stems. The disease, which was more economically important on field and garden beans than on soybeans, is being investigated.

Miscellaneous diseases of minor importance encountered this year include: Stem Canker (Diaporthe phaseolorum var. caulivora), a few years ago the most serious threat to the production of soybeans in Ontario, is now relatively unimportant, the reason being that susceptible varieties have been almost wholly replaced by Harosoy, an escape variety. Brown Stem Rot (Cephalosporium gregatum) is a disease which possibly should not be included

among those of minor importance. It is widespread in its occurrence every year and its effect is to induce premature maturity. Downy Mildew (Peronospora manshurica) showed its usual specificity this year by attacking highly susceptible varieties like Blackhawk and Harley but only lightly infecting Lincoln, Chippewa, and Monroe. Mosaic (Soja virus 1); Bud Blight (virus of tobacco ringspot group); Brown Spot Septoria glycines; Bacterial Blight (Pseudomonas glycinea); and Leaf Spot (Phyllosticta soyaecola) were of sporadic occurrence.

Corn-seed Maggot Injury, although of more or less common occurrence in the district in past years, was noted for the first time this year in the laboratory plots. The injury is mentioned here because of the possibility of mistaking it for a root rot. The maggots penetrate the lower hypocotyl and feed on the internal tissues of the young plants. While the maggots are in situ, the trouble can be accurately diagnosed; but after they leave the plant, diagnosis is more difficult. The injured hypocotyl tissues collapse and die, and the root soon dies also. This is the stage at which an incorrect diagnosis may easily be made for the symptoms resemble those of a root rot.

SUNFLOWER

Sunflower Diseases in Manitoba in 1958

W.E. Sackston and J.W. Martens

Sunflowers were sown on 45,000 acres in Manitoba in 1958. Drought, wind-erosion, and severe frosts in June caused growers to abandon 19,000 acres. Adverse conditions early in the season delayed maturity markedly, but favorable weather in the fall allowed even late fields to mature and produce good seed yields. Average yields on the 26,000 acres harvested were estimated to be 650 pounds or more per acre, for both the oilseed varieties (on 13,000 acres) and large-seeded varieties for confectionery use (13,000 acres).

Sixty-seven fields were examined in the main survey, made 8-11 September in both the central and outlying areas. Mr. John Hildebrand, Co-operative Vegetable Oils, Altona, assisted in locating fields in the central area and took part for two days of the survey, and Dr. E.D. Putt, Morden Experimental Farm, assisted for two days in the outlying areas.

Frost Damage. Sunflower seedlings damaged by frosts in late June were submitted by growers and others in late June and early July. Damage was severe and widespread. The lower leaves were not affected in most cases. Leaves higher along the stem showed scattered necrotic spots. Upper leaves were rugose, chlorotic, distorted, in some samples, and in others with the apical portion killed. The growing point was killed in many plants, which later in the season could be recognized by having from two or three up to five or more stems, arising from basal adventitious buds. The central pith near the growing point was necrotic or collapsed in many plants,