ASTER YELLOWS (Callistephus virus 1). A trace occurred at Morden, Man. at the end of July. Later the disease became severe there and elsewhere in Man. (W. E. Sackston).

BLACK ROT (Xanthomonas campestris) was found on winter rape in plots at Winnipeg, Man. (W. C. McD.).

SAFFLOWER

ROOT ROT. Fusarium sp. and Pythium sp. were isolated from lesions on seedlings grown in the field at Lethbridge, Alta. (F. R. Harper).

SOYBEAN

Diseases of Soybeans in Ontario in 1957

A. A. Hildebrand

Again in 1957, as in 1956, a discussion of the diseases occurring on soybeans in s.-w. Ont., necessitates a consideration of the weather that prevailed in the area especially during the first half of the growing season. In the accompanying table a comparison is made between the average precipitation for April, May, June, July, and Aug., 1956 and 1957, and that for the same months during the 38-year period, 1917-1955.

Table 7. Average Monthly Precipitation (in.)

Period	Apr.	May	June	3-month period	July	Aug.	5-month total
1957	6.09	2.24	3.76	12.09	7.74	3.25	23.08
1956	3.30	4.54	4.13	11.97	1.74	5.67	19.38
1917-1955	2.65	2.40	2.95	8.00	2.10	2.30	12.40

From Table 7 it may be noted that in April, May, and June, of both 1956 and 1957, about 12 inches of rain fell in the Harrow area. Precipitation was equally high in most parts of Essex County. As a result much of the soybean acreage was subjected to water-logging and flooding for varying periods of time during the earlier part of the growing season. In 1957, July was an extremely wet month. On the 7th and 8th, 4.18 in. of rain fell, and from the 7th until the 12th the precipitation totalled 6.35 in. This meant further flooding, with plants standing in water in many fields for as long as three or four days. The condition described prevailed also on Pelee Island and in parts of Kent, Huron, Middlesex and Elgin counties.

Phytophthora Root and Stalk Rot (Phytophthora sp.). This disease was more widely prevalent this year than in any since 1954 when it was first observed. Whereas in 1956 the disease had greatly subsided by Aug. 1st,

this year it was indicated by survey on 13 Aug., to be still serious in many fields. The reasons for this are at least two-fold. In the first place an appreciably higher acreage of the extremely susceptible variety Harosoy was grown in 1957 (189,000 ac.) than in 1956 (173,700 ac.). In the second place the water-logging of the soil and the flooding of the fields, following the unusually heavy rains in the second week of July, must have been especially favourable for a phycomycetous pathogen.

Several observations not previously recorded were made on the Phytophthora disease this year. One of these was that the new variety Chippewa is susceptible to the disease. Plants of that variety growing in low spots were attacked and killed but the disease did not seem to spread so widely from such loci of infection as in corresponding situations in which the variety Harosoy was involved. It was also observed in a number of instances that when Harosoy and Harman happened to be growing contiguously in fields that had been flooded, the incidence of the disease was definitely lower in Harman than in Harosoy. A number of growers were so impressed by this apparent greater tolerance of Harman to "water damage" that next year they are going to grow only that variety. A third observation was that plants can be debilitated by the disease. In some areas in a number of fields that had been flooded by the early July rains, plants lacked vigor. They showed no other external symptoms of disease but were found upon removal from the soil to have depleted and necrotic roots. Also when the epidermal tissues were peeled from the stalk just above the ground level, the exposed cortical tissues showed streaks of brownish discoloration. From this discolored tissue and from lesioned roots, Phytophthora sp. was readily isolated.

It is difficult to estimate the loss in yield resulting from this disease. It becomes apparent from the surveys however, that the disease must in the aggregate be modifying yield appreciably. On Aug. 10th and 13th, 43 fields of soybeans were surveyed in some detail. Thirty of them lay across the southern part of Essex county, the other 13 being located on Pelee Island. Selected at random, the fields were composed according to variety as follows: Harosoy 36 (83.7%), Harman 4 (9.3%), Lincoln 2 (4.6%), and Hawkeye 1 (2.3%). In 21 (58.3%) of the 36 Harosoy fields the presence of the disease was evidenced by the dying of plants or by their debilitated condition. In 5 (23.8%) of the 21 affected fields, the disease was serious. In four of these seriously affected fields most of the killing was in patches, some of the devastated areas being up to one or two acres in extent. In these fields it was impossible to make counts but it was estimated that loss of yield might reach 25%. In the fifth seriously affected field, the disease occurred uniformly, and it was possible to make accurate counts of diseased and healthy plants at various locations in the stand. Dead plants averaged 18%. Enquiry disclosed that the yield for this field averaged close to 30 bu. per ac. It seems reasonable to assume that if the stand had not been depleted, the yield would have been increased by about 18% to 35.4 bu. per ac.

Calls from growers who were concerned about the presence of the disease in their fields continued from Jul. 4th until Sept. 9th. During the same period many diseased specimens were received at the laboratory for diagnosis.

Brown Stem Rot (Cephalosporium gregatum). As the 1957 season advanced this disease was observed in an increasing number of fields regardless of variety. The disease causes plants to become prematurely mature, and because of its widespread occurrence it must be a factor contributing appreciably to loss of yield.

Manganese Deficiency. This deficiency, more correctly a non-availability, of manganese was as prevalent as usual, and along with the Phytophthora disease and Brown Stem Rot, is believed to be of significance economically in modifying the yield potential of the soybean, especially in Essex county.

Minor Diseases encountered incidentally this year included: Stem Canker (Diaporthe phaseolorum var. caulivora); Brown Spot (Septoria glycines); Soybean Mosaic (Soja virus 1) and Bud Blight (virus of tobacco ring-spot group;)a bacterial leaf spot either Blight or Pustule); Root and Stem Rot (Pythium ultimum).

Of academic interest was the discovery this year for the second time of Charcoal Rot (Macrophomina phaseoli (Maubl.) Ashby) on soybeans in Ontario. The minute sclerotia of the fungus were found sub-epidermally in the lower stalk region of several unthrifty plants in one field on 9 Aug. For an account of the discovery of this disease see "Some studies on Macrophomina phaseoli (Maubl.) Ashby in Ontario", Hildebrand et al, Sci. Agr. 25:690-706. 1945.

Other Observations

BROWN STEM (? Cephalosporium sp.). The interveinal necrosis on leaves resembled frost damage but there was no internal necrosis of the stem (W. E. Sackston).

BACTERIAL BLIGHT (Pseudomonas glycinea) infection was light but uniform in 1 field at Portage la Prairie, Man. (W. A. F. Hagborg).

YELLOW MOSAIC (virus) was present in trace amounts in plots at Fort Garry, Man. (W. E. S.). Soybean varieties grown at C. E. Farm, Ottawa, Ont. were free of leaf spots but some plants had a rugose disorder of the upper leaves (R. J. Baylis).

BUD BLIGHT (? virus). Trace amounts were observed in plots at Fort Garry, Man. (W. E. S.).