SUNFLOWER

Sunflower diseases in Manitoba in 1957

W. E. Sackston

Estimates of sunflower acreage in Man. in 1957 varied from 18,000 to 28,000 acres grown for oilseed, and about 7,000 to 8,000 acres of large-seeded varieties, mostly Mennonite, grown for the confectionery trade. The hot dry weather of July and part of August induced rapid growth. Yields for the province averaged about 500 lbs. seed per acre.

Observations on diseases were made in 46 fields in the central and outlying sunflower areas September 8 to 12. Mr. John Hildebrand, of Cooperative Vegetable Oils, Altona, Man., assisted for two days during the survey.

Aster yellows was the most conspicuous and apparently the most destructive disease on sunflowers in 1957. It was found in more fields than was rust, which is usually the most widespread sunflower disease in Man. Although it attacked celery and other crops not susceptible to the eastern strain, it did not attack zinnias, which are susceptible to the California strain.

Aster yellows (Callistephus virus 1), possibly a variant of the California strain). Symptoms of aster yellows were found in 38/46 sunflower fields examined. There were traces in 12 fields, 1 to 5% in 11, about 10% in 8, 15% in 5, 25 to 0% in 2. Beacon was apparently more susceptible than Advance, and Advance was more susceptible than Mennonite. The disease was found in both the central and outlying areas. Differences in severity of infection on Advance and Beacon, in fields sown on different dates, were conspicuous southeast of Carberry. More aster yellows was found in fields of Beacon than in Advance, sown on the same date. Aster yellows infection was higher in a field of Beacon sown 7 May than in a field sown 1 May. Striking differences in varietal reaction were observed in plots at Winnipeg and Morden. Some selections were apparently free of the disease, although other selections in adjacent rows were severely attacked.

Rust (Puccinia helianthi). 1957 was not a "rust year", possibly because of the hot dry weather in July. Rust developed fairly well in inoculated plots at Winnipeg and Morden, but infections did not compare with those obtained in other years. Rust was found in 30 of the fields examined. There were traces of infection in 16 fields, 2 to 5% in 8, 10% in 2, 15% in 2, and 25% in 2 fields. Rust was absent or scarce in fields of Beacon.

Leaf Mottle (Verticillium albo-atrum) was extremely destructive on sunflowers in a nursery on heavily infested soil southwest of Winkler. It was not particularly conspicuous in farm plantings, although it was found in 28 fields. There were traces of the disease in 13 fields, 1 to 5% in 5, 10% in 3, 20% in 2, 50% in 1, and 90 to 95% in 4. The disease was not observed outside the main sunflower area. The heaviest infections were found in the Morden-Winkler area. Infection may have occurred late in the season in some fields; although symptoms were present on a high proportion of the plants, they were not particularly severe.

Stalk Rot (Various causes). Marked discoloration of sunflower stems was noted in 21 fields. Traces of the condition were found in 16 fields, 3 to 5% of the plants were affected in 3 fields, and 10% in 2 fields. In both fields with 10% of the plants attacked, and in some of the other fields, the stems of affected plants were black, the heads were small and flaccid, and the seeds were light. The internal tissues of the stem were green to black, and soft. The roots were black, small, and rotted. This "black jelly rot", described in 1951, but seen earlier, may be the final stage of a root rot. It is often associated with Verticillium leaf mottle. Similar symptoms were observed on sowthistle in one field.

Wilt and Root Rot (Sclerotinia sclerotiorum). Traces of wilt and root rot were found in 15 fields, 1 to 2% in 3 fields, and 10% in 1 field. Although Sclerotinia wilt was relatively light in farm fields, the disease developed very rapidly in plots at Winnipeg inoculated in August.

Downy Mildew (Plasmopara halstedii). Very little downy mildew was observed in 1957. There were traces of the disease in 3 fields, and 3% of the plants were attacked in 1 field. The disease was not seen in the outlying sunflower fields. Infections were very heavy in some of the plots at Morden.

Miscellaneous. Head Rot (Sclerotinia sclerotiorum) affected a few plants in 22 fields. Head drop was observed in 8 fields. Powdery mildew (Erysiphe cichoracearum) was present in plots at Portage la Prairie. Leaf spots of various sizes and shapes were present in most fields. Hail completely defoliated plants in several fields near Brandon.

Other Observations

BASAL STEM ROT (Sclerotinia sclerotiorum) was slight to moderate in Saskatoon plots. However, it was rarely found in rape, sweet clover and alfalfa during field surveys in Sask. (T. C. Vanterpool).

C. ROOT CROPS

SUGAR BEET

DAMPING OFF (Rhizoctonia solani). Seedlings had been killed and a large bare patch was left in a field at Fort Garry, Man. Some surviving, but poorly developed plants were used for isolations. Mycelium and sclerotia of R. solani were obtained from surface sterilized roots. As this patch was the only one of its type known to be present in Man. it was recommended that brome grass be seeded and left for several years (W. A. F. Hagborg). Moderate damage occurred in 1 field at St. Thomas d'Aquin. Several nearby fields were slightly affected. Slight infection was noted at St. Hyacinthe and St. Hilaire, Que. (R. Crete).

BLACK ROOT (various fungi) affected 54% of seedlings from 42 Alta. field samples. Ten % of the seedlings were severely lesioned or dead. Rhizoctonia solani was found in 31% of the fields, Pythium sp. in 45%, Phoma betae in 52% and Aphanomyces cochlicides in 5% (F. R. Harper).

BLACK HEART (Boron deficiency). One sample was received from Glengarry Co., Ont. (H. N. Racicot).

MANGEL

BLACK HEART (Boron deficiency). One sample was received from Glengarry Co., Ont. (H. N. Racicot). A 3/4-acre field of Frontenac had a few affected plants in Queens Co., P. E. I. (R. R. Hurst).

D. MISCELLANEOUS CROPS

BUCKWHEAT

ASTER YELLOWS (Callistephus virus 1) affected 5% of a crop at Winkler, Man. Damage became more severe later in the season (W. E. Sackston).

CANADA THISTLE

BASAL STEM ROT (Sclerotinia sclerotiorum) produced several sickly, stunted plants in a field at Saskatoon, Sask. Sclerotia were present within the base of the stem. It emphasizes the importance of weed control for crops like rape, sweet clover and sunflower (see above) (T. C. Vanterpool).

FIELD CORN

ROOT AND STALK ROT (Gibberella zeae). In October, 1957, a survey was made in the corn belt of s. Ont. to determine the extent of root

and stalk rot of hybrid field corn. Widely separated fields were surveyed in the following counties: Essex (6 fields), Kent (5 fields), Lambton (2 fields), Middlesex (3 fields), Elgin (3 fields). Root and stalk rot was present in all fields examined and ranged from 1 to 20%. The average for all counties was 5.5%. The disease was more common in Kent and Essex than in the other counties, especially Lambton, where the corn was later. Damage was sev. in a few fields in the Harrow district of Essex Co. but only sl. in other counties. Gibberella zeae was isolated consistently from the stalks of diseased plants from all five counties (N. J. Whitney).

MUSTARD

WHITE RUST (Albugo candida) damaged one stand slightly at Taber, Alta. (F.R. Harper). It affected 10/18 s. Alta. fields surveyed: 9-tr. 1-mod. (E. J. H.).

ROOT ROT (Rhizoctonia solani). Trace amounts were found in 13/18 s. Alta. fields (E. J. H.).

ASTER YELLOWS (Callistephus virus 1). A trace infection was found at Enterprise, Man. (W. E. Sackston).

PEPPERMINT

RUST (Puccinia menthae) caused heavy defoliation of all plants in a row at Kentville, N.S. in the middle of Aug. (K. A. Harrison).

TOBACCO

Tobacco Diseases

Z. A. Patrick and L. W. Koch

Seedbed Diseases

Blue Mold or Downy Mildew (Peronospora tabacina) was not observed in Ont. or Que. Growers are advised to continue the recommended program for blue mold control (P. D. S. 34: 95. 1954).

Damping-off or Bed Rot (Pythium spp. and Rhizoctonia solani) was the most common disorder in seedbeds. It occurred in a few small patches in the beds and did not cause much damage.

Yellow Patch (excessive nutrients) was the next most common seedbed trouble, especially in the burley tobacco area. This condition arises in most instances as a result of over-fertilization or from seeding too soon after steaming the soil.