DISEASES OF SUNFLOWERS IN MANITOBA IN 1962

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During the 1962 season 36 fields of sunflowers including 25 fields of Mennonite and 11 of Admiral or Advent were examined for disease in the Red River Valley of Manitoba. The precipitation during the growing season was above average and the temperature below average. In May, 8.40 inches of rain were recorded at Morden compared with the 44-year average of 2.28 inches, In the three months, June to August, total precipitation was 9.29 inches as compared with the 44-year average of 8.27 inches. As a result, seeding of many fields was delayed and some failed to mature before frost occurred.

It is a principle in plant pathology that reduction in yield may vary markedly with the disease and environmental factors concerned. With an early systemic infection of downy mildew a diseased sunflower plant is a complete loss and environment of little importance once the plant is infected, The same is true of Sclerotinia attacking before the plant is in bloom. In the case of rust especially, and to a lesser degree in the case of leaf mottle, reduction in yield due to disease is largely dependent on intensity of initial attack and subsequent speed and severity of disease development, Here environment is of relatively greater importance in determining the reduction in yield. The above should be fully realized in assessing the effect of different diseases on sunflower yield in 1962 as outlined below.

Rust (Puccinia helianthi) occurred on 100% of the plants in all 25 fields of Mennonite. In 11 fields, pustule density was low (5-20%); in seven fields, medium (20-60%); and in seven fields high (50-100%). Except in three fields, there was no appreciable damage due to rust. In the 11 fields containing Admiral or Advent, rust occurred in traces only. Though rust was widespread, the damage in general was only slight because initial infection was very weak.

Leaf mottle (Verticillium albo-atrum) was widespread, Disease severity was slight, (trace-10% of infected plants) in 23 fields; moderate, (15-40%) in three fields; and severe, (SO-100%) in ten fields. Among the ten fields with severe infection it is estimated that nearly complete loss occurred in two fields, 50% loss in five fields and 10-15% loss in three fields.

Downy mildew (Plasmopora halstedii) was in general more prevalent than usual. In two fields 20-25% of the plants were infected; in two fields 5-10% were diseased, and a trace-2% occurred in eight fields. In 24 fields the disease was absent or scarce.

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Sclerotinia wilt (Sclerotinia sclerotiorum) affected 40% of the plants in one field; 20-25% in two fields; 10% in two fields, and 5% in five fields. In 26 fields the disease was absent or occurred in traces only.

Septoria leaf spot (Septoria helianthi) was conspicuous. Of 26 fields where symptoms could be recognized, four fields showed slight, (trace-10%) infection; two fields showed moderate, (30-40%) infection; and in four fields infection was severe (80-100%). Damage was slight in general. Field observations on 107 lines suggest that lines differ in degree of susceptibility. Lines representative of the range observed are being examined under controlled conditions. Sackston (1) reports that the disease was very prevalent in 1947. Since then Sackston found it only once in 1955 and again, but in trace amounts only, in 1959 (1). The prevalence of the disease in 1962 is no doubt due to the very wet growing season. Considering the large amounts of inoculum presently available, it is felt that a prolonged period of wet weather early in the growing season of 1963 could result in serious losses from this disease.

In spite of the severity and extent of disease occurrence in 1962, the average yield per acre was about 800 lbs. This is well above the 17-year average yield of 580 lbs. per acre. The above-normal precipitation may have compensated for disease losses by promoting more vigorous plant growth than is usual.

Mr. Peter Bergen of Co-op. Vegetable Oils Ltd., Altona, participated in part of the survey. Mr. Bergen also estimated the average yield for 1962.

Literature Cited

1. SACKSTON, W.E. 1959. Sunflower Diseases in Manitoba in 1959. 39th Ann. Rep. Can. Plant Dis. Survey 1959: 34-36.