

SUNFLOWER DISEASES IN MANITOBA IN 1963by J.A. Hoes and E.D. Putt¹

Sunflowers were planted on 33,000 acres in Manitoba in 1963, mainly in the Red River Valley. This was the highest acreage since 1958. The weather was normal in the spring, followed by above-normal precipitation until July 25 and below-normal precipitation for the remainder of the growing season. Temperatures were well above-normal during July and August and into late October, allowing the crop to mature well. Yields were high, being 890 pounds per acre for the hybrid varieties Admiral and Advent, 850 for Mennonite and 1,000 for Peredovik, a recently-imported Russian variety which is promising because of high yield and high oil content.

Fourteen fields of hybrid varieties, 19 fields of Mennonite and 15 fields of Peredovik were examined for disease on August 27 and September 17. Mr. Peter Bergen, Co-op Vegetable Oils, Ltd., Altona, Manitoba, assisted in the survey.

Leaf mottle (Verticillium albo-atrum) was widespread, though in general yield reductions due to this disease were only small. This was in contrast to 1962 when severe losses were suffered due to Verticillium wilt. Disease severity in 1963 was slight (trace - 10% infected plants) in 36 fields of all varieties including all fields of Peredovik. It was moderate (15-40%) in one field of Admiral and four fields of Mennonite, and severe (50-75%) in four fields of hybrid varieties and one field of Mennonite. In one severely-infected field of Admiral the disease caused an appreciable loss of 25% in yield. The limited damage by Verticillium in 1963 was possibly due to the above-average or high precipitation along with average temperatures up till mid-June, a condition that resulted in vigorous plant growth.

Rust (Puccinia helianthi) occurred in varying degrees of pustule density (trace - 60%) on 80-100% of the plants in all fields of Mennonite and Peredovik. Some rust was found in one of the 14 fields of hybrid material. The prolonged hot weather in July and August seemed to arrest rust development.

Downy mildew (Plasmopora halstedii) occurred sporadically. It affected 1% or less of the plants in 14 fields and was absent in 32 fields of all varieties. In two fields, one each of Mennonite and Peredovik 30% of the plants were prematurely killed and yield loss was considerable.

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Sclerotinia wilt. (*S. sclerotiorum*) affected a trace to 2% of the plants in 17 fields of all varieties. In two fields 5% of the plants suffered from this disease.

Septoria leafspot (*S. helianthi*) and aster yellows affected up to 1% of the plants in, respectively, five and seven fields of all varieties.

A serious disorder, which at first was of doubtful etiology, was observed in a small field of a Russian variety near Morden. On July 18, when the condition was first observed, the plants were about six feet tall and near flowering. The condition was limited to an area of about 25 x 30 feet and all plants within it were affected, the plants at the centre of the area being the most seriously damaged. Their stems were brown, somewhat desiccated and bent double at the centre so that the head rested on the ground. The pith was at first discolored and water-soaked. Sometimes the pith was lacking and the stem hollow. The midrib and adjacent interveinal tissue of the leaves was necrotic. The leaves did not die as rapidly as might have been expected considering the gross symptoms of the stem, suggesting that the vascular system had not been seriously affected. Towards the periphery of the area only the upper portions of the plants were affected; the stems were flattened, wrinkled, brown, twisted and weakened, allowing the heads to hang down but most of the leaves were healthy. The disease did not spread and plants at the edge of the area usually recovered. Sackston (1) has described a disorder of sunflower with similar symptoms. Young (2) described ribbon stem of tomato with symptoms similar to those outlined above. Ribbon stem was attributed to lightning injury. Dr. M. L. Kinman of Texas A. and M. College, College Station, Texas, when visiting the area on September 4, thought the symptoms were typical of lightning injury as observed by him in other crops. The occurrence of a severe electrical storm in the neighborhood of the affected field just prior to discovery of the disease supports the conclusion that the disorder in sunflowers here described was caused by lightning.

Literature Cited

1. SACKSTON, W.E. 1954 In 33rd. Ann. Rep. Can. Plant Survey 1953, pp. 45-48.
2. YOUNG, A. 1963. Ribon stem of tomato and watermelon due to lightning. Plant Disease Repr. 47: 904-905.

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