

IMPORTANCE OF ASTER YELLOWS VIRUS IN FIELD CROPS IN MANITOBA

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Aster yellows virus (AYV) is known to cause severe losses in many vegetable crops in Manitoba and in most years is the limiting factor in lettuce production (4). It is difficult to determine accurately losses due to AYV in field crops and, consequently, little direct evidence of loss is available. However, indirect evidence indicates that AYV may be of considerable importance in field crops in some years.

An epidemic of AYV was reported in the Great Plains area of North America in 1957 (2, 3). The epidemic was attributed to an abnormally large population of the insect vector, the six-spotted leafhopper, *Macrostelus fascifrons* (Stål), and a high incidence of viruliferous individuals within the population.

A comparison of long term mean yields with yields for 1957, for a number of field crops, are shown in Table 1 prepared from the Yearbook of Manitoba Agriculture - 1965 (1). The striking fea-

ture of the table is that all crops which are susceptible to AYV had a moderate to marked yield reduction relative to the 30-year mean, whereas, with the exception of field peas, all crops which are highly resistant or immune to AYV yielded crops near or above the 30-year mean. Flax, sunflowers and barley showed the greatest yield reductions.

Although the evidence is purely circumstantial and based on average yields for the province, it seems more than a coincidence that of such a variety of crops only those susceptible to AYV should yield less than the 30-year mean and suggests that the yield reduction may have been due to AYV. If this is assumed, then the monetary loss due to AYV in 1957 was approximately 19.5 million dollars or 11.7% of the total value of field crops produced.

There is probably some crop loss due to AYV in most years. However, on the basis of data such as those compiled for the Yearbook of Manitoba Agriculture only large differences in yield would be evident.

Table 1. Comparison of field crop yields in Manitoba in 1957 with the 30-year means

Crop	30-year mean yield per acre (1936-65)	1957		Estimated loss (\$)
		Yield per acre	Yield as per cent of mean	
Flax	8.8	4.0	45.4*	10,439,000
Sunflowers (23 yr. av.)	604.1	400.0	66.2*	245,000
Barley	25.6	19.4	75.8*	8,323,000
Buckwheat	15.0	13.0	86.7*	52,000
Potatoes	131.2	115.0	87.6*	424,000
Rapeseed (18 yr. av.)	711.3	625.0	87.9*	71,000
Wheat	20.8	22.3	107.2	
Oats	33.2	32.2	97.0	
Rye	17.0	16.5	97.1	
Mixed Grains	29.0	27.7	95.5	
Grain Corn (29 yr. av.)	25.2	25.0	99.2	
Field Peas	18.1	15.0	82.9	
Mustard Seed (14 yr. av.)	696.4	750.0	107.7	
Tame Hay	1.8	1.8	100.0	
Silage Corn	4.7	5.0	106.4	
Sugar Beets (26 yr. av.)	9.0	10.2	113.3	
Total estimated losses				\$19,554,000
Total value of above field crops in Manitoba in 1957				\$167,650,000
Estimated loss as % of total value				11.7

*Crops followed by an asterisk are susceptible to AYV, others highly resistant or immune.

Literature cited

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