ASTER YELLOWS AND LEAFHOPPER DAMAGE IN MANITOBA IN 1963

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Aster yellows was more severe in Manitoba in 1963 than it has been in any year since the severe outbreak in 1957. There was nearly 100 per cent loss in untreated lettuce, about 33 per cent loss in celery and carrots and about 5 per cent loss in onions. Many other vegetables and ornamentals were infected to varying degrees. Field crops, however, were not as severely infected. The disease was present in all fields of barley and flax examined and infection ranged from a trace to 5 per cent. A trace of infection occurred in buckwheat, sunflowers and rape.

In 1963, the six-spotted leafhopper arrived earlier, in larger numbers and with a higher proportion of viruliferous leafhoppers than in any year since 1957. By mid-May it was possible to predict that there would be severe damage from aster yellows.

Following the initial migration on April 27, conditions in the spring and in the early summer were favorable for rapid multiplication of the insect and of the virus. The leafhopper population reached a peak in early July (3000 to 4000 per 100 sweeps) and aster yellows symptoms were common on susceptible crops and weeds. These extremely high populations were comparable to those reported in 1957 but in 1963 the percentage of viruliferous leafhoppers was considerably lower.

Actual destruction of plants in the field by the feeding of leafhoppers was recorded for the first time in 1963. Vast numbers of leafhoppers, driven out of late summer fallow by cultivation, destroyed the margin of an adjoining field of oats.

Experiments were conducted at Portage la Prairie and Winnipeg to determine the efficacy of 8 different insecticides for the control of the six-spotted leafhopper and aster yellows on flax and barley in field plots. Bayer 39007 (o-isopropoxyphenyl methylcarbamate), a systemic carbamate, applied in a granular formulation at the time of seeding reduced aster yellows infection in flax from 14.8 per cent to 2.6 per cent and in barley from 11.0 per cent to 1.3 per cent.

In order of effectiveness, on barley, the remaining chemicals, malathion emulsion concentrate, Bayer 39007 emulsion concentrate, Thimet granular (O, O-diethyl S [(ethylthio) methyl] phosphorodithioate), E.I. 47-470 granular (2-(diethoxyphosphinylimino) -4-methyl-1, 3-dithiolane), Delnav

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emulsion concentrate (2, 3- p - dioxanedithiol S, S - bis (O, O-diethyl phosphorodithioate), E.I. - 031 granular (2-(diethyoxyphosphinylimino)-1, 3-dithiolane), and Thiodan emulsion concentrate (6, 7, 8, 9, 10, 10-hexachloro-1, 5, 5a, 6, 9, 9a-hexahydro-6, 9 methano - 2, 4, 3-benzodioxathiepin 3-oxide also significantly (5% level) reduced aster yellows infection. In barley the reduction in infection, with Bayer granular, was accompanied by a 35.0 per cent increase in seed yield. This suggests that some late infection by aster yellows, which may have reduced seed yield, was undetected or that pests other than leafhoppers and diseases other than aster yellows were controlled. The latter part of this speculation, in particular, warrants further investigation.