ASTER YELLOWS IN PRINCE EDWARD ISLAND IN 1964

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Aster yellows in head lettuce was not as severe in Wince Edward Island in 1964 as in the previous year, whereas losses in carrots in some districts were slightly greater. Losses in untreated head lettuce ranged from 40-60 per cent and in carrots from 20-46 per cent.

Populations of the aster yellows vector, Macrosteles fascifrons (Stål), the six-spotted leafhopper, were not as high as in 1963, but tests showed the proportion of viruliferous leafhoppers in field populations to be as high as 11 per cent in late July. If conditions during July and August had been more favourable for vector multiplication, losses in lettuce and carrots could have been much greater. A sudden increase in tho adult population observed during the first week of July indicated the possibility of a migration of adults into the province. Weather conditions were favourable for such a movement just prior to and during this period.

In 1964, a field plot experiment was conducted near Charlottetown to determine the efficacy of 5 different insecticides for the control of the six-spotted leafhopper and the prevention of aster yellows in head lettuce. Tho results of these tests along with other pertinent data are shown in Table 1. The insecticides tested were malathion, phorate, carbaryl, Di-Syston® (O,O-diethyl S-2-(ethylthio)ethyl phosphorodithioate, and Bayer 25141 (O,O-diethyl O-p-(methylsulfinyl)phenyl phosphorothioate.

Time-mortality studies were also conducted in 1964 using the six-spotted leafhopper and lettuce plants from the field plots. These studies were made to determine approximately how long the systemic insecticides, phorate, Di-Syston and Bayer 25141 in the lettuce plants remained effective in controlling tha vector, and to compare further the effectiveness of the various treatments under more closely controlled conditions. The results are presented in Table 2.

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Table 1- Performance of insecticides and methods of application for lettuce yellows prevention through control of the six-spotted leafhopper - 1964.

Insecticide	Method of Application	Toxicant Per Acre (lbs.)	Mean[4] Percentage Yellows
Check	-	-	40.5 a
Di-Syston	Granules	1.5	29.8 ab
Di-Syston + Carbaryl[1]	Granules	1.5	26.0 bc
Malathion	Spray	1.5	21.2 bcd
Bayer 25141	Granules	1.0	20.5 bcd
Bayer 25141 + Carbaryl[1]	Granules	1.0	19.3 bcd
Phorate	Granules	1.5	359 cd
Phorate + Carbaryl[1]	Granules	1.5	15.8 cd
Malathion[3]	Spray	1.5	15.7 cd
Carbaryl[2]	Spray	1.5	10.6 d
Carbaryl[3]	Spray	1.5	10.5 d

[1]Weekly carbaryl spray beginning August 10, 1964.
[2]Approximately once weekly; [3]approximately twice weekly.
[4]Means followed by the same letter are not significantly different at the 5% level.

Table 2. Effect of insecticides as determined by mortality of leafhoppers 72 hours after they were caged on plants brought in from field plots approximately 5, 6 and 8 weeks following treatment with granular systemic insecticides. 1964.

Insecticide	Mean per cent mortality 5 weeks	6 weeks	8 weeks
Check	3.75	0.00	7.50
Phorate	97.50	100.00	100.00
Bayer 25141	100.00	98.75	88.75
Di-Syston	100.00	88.75	98.75
Phorate + Carbaryl[1]	100.00	88.75	100.00
Bayer 25141 + Carbaryl[1]	100.00	80.00	81.25
Di-Syston + Carbaryl[1]	100.00	90.00	92.50
Malathion	43,752	100.00[3]	20.00[4]
Malathion	100.00[3]	98.753	91.25[5]
Carbaryl	100,00[2]	100.00[3]	98.754
Carbaryl	100.00[3]	100.00[3]	98.75[5]

[1]Carbaryl sprays not applied till 8 weeks following planting.
[2]Insects placed on plants 5 days following a spray application; [3]/1-day; [4]/6-days; [5]/2 days.

Where control of aster yellows in head lettuce was significant it was assumed that leafhopper control was adequate. Granular phorate and Bayer 25141 applications at planting time were as effective as malathion and carbnryl spray treatments. Late sprayings of the granular systemic–treated plots proved of no value. It is doubtful if spraying these plots before August 10 would have been practical as time-mortality studies showed the 3 systemics to be effective against the vector up to this date. Twice–weekly sprays with carbaryl were no more effective than weekly sprays. The difference in per cent yellows resulting from twice-weekly and weekly sprays with malathion was not significant at the 5% level; however, time-mortality studies indicated that malathion gave little control of the vector 3–4 days after application, Malathion applications should, therefore, be made twice a week, or at least every 5 days for the most effective control of the vector.

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