Barley stripe mosaic in Manitoba in 1978[1]

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In 1978, barley stripe mosaic was detected in 36.9% and 4.0%. respectively, of the fields of two-row barley ***(Hordeurn distichurn)*** and six-row barley ***(H. vulgare)*** surveyed in southern Manitoba. The incidence of affected plants in these fields varied from a trace to 35%. In fields of two-row barley, the disease occurred almost as frequently in southwestern Manitoba as it did in southeastern Manitoba, a situation not previously recognized. In these respective regions, it was estimated that barley stripe mosaic virus infection reduced the total seed yield of two-row barley by 0.4% and 0.7%.

Can. Plant Dis. Surv. 60:1, 11-12, 1980.

En 1978, la mosaïque de la striure de l'orge a ete constatee dans, respectivement, 36.9 et 4% des champs d'orge a deux rangs ***(Hordeurn distichurn)*** et a six rangs ***(Hordeurn vulgare)*** inspectes dans le sud du Manitoba. La proportion de plants attaques variait selon les champs de presque nulle a 35%. Sur l'orge a deux rangs, fait nouveau, la maladie a été observee presque aussi frequemment dans le sud-ouest que dans le sud-est de la province, et les pertes de rendement resultantes ont ete estimées respectivement a 0.4 et 0,7% dans les deux parties.

In 1975, barley stripe mosaic (BSM) was detected in 25% and none of the fields of two-row barley ***(Hordeurn distichum*** L. emend. Lam.) examined in southeastern and southwestern Manitoba, respectively (2). However, while a considerable number of fields of this crop were examined in southeastern Manitoba, only a few fields were examined in southwestern Manitoba. The accuracy of the survey conducted in southwestern Manitoba was thus subject to considerable doubt. Consequently, in 1978 an intensive survey for BSM was conducted in both southwestern and southeastern Manitoba.

Crop Reporting Districts (CRDs) in Manitoba were revised in 1977. However, to conform to area designations used in previous surveys (2), the CRDs referred to in this report are those which existed in 1976 (4) and in previous years. The 1978 survey for BSM was conducted from June 22 to July 7. Fields of two-row barley and six-row barley (H. ***vulgare*** L. emend. Lam.) in the late tillering to soft dough stage were examined at intervals of about 8 and 24 km, respectively, along preselected routes passing through CRDs 3, 4, 5 and 12 in southeastern Manitoba and CRDs 2, 7, 8, 9, 10, 11, 13 and 14 in southwestern Manitoba. In each field where BSM was detected, leaf samples were collected from affected plants and the presence of barley stripe mosaic virus (BSMV) was confirmed by infectivity and serological assays (1).

Results of the 1978 survey for BSM in Manitoba are summarized in Table 1. As in previous years (1, 2), the disease was encountered much more frequently in fields of two-row barley than in fields of six-row barley. In fields of two-row barley, BSM occurred almost as frequently in southwestern Manitoba as it did in southeastern Manitoba and was detected in all but three CRDs in this province (Fig. 1). No fields of two-row barley were examined in two of these districts and only one field was examined in the other. It thus seems likely that in 1978 BSM was distributed throughout the range of two-row barley grown in Manitoba. The survey conducted in southwestern Manitoba in 1975 (2) was probably not indicative of the occurrence of BSM in two-row barley because of the small number of fields examined.

Losses due to BSMV infection in two-row barley in Manitoba were determined as described previously for

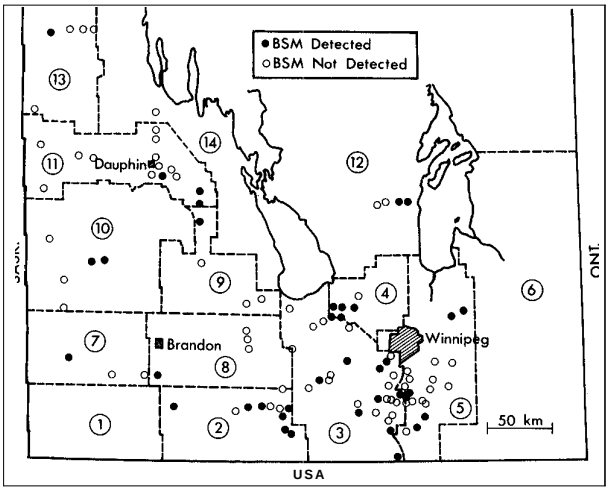

Fig. 1. Distribution of barley stripe mosaic in fields of two-row barley in southern Manitoba in 1978. Numerals designate Crop Reporting Districts in existence in 1976 (4) and in previous years.

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Accepted for publication September 24, 1979

southeastern Manitoba (3). In 1978, it was estimated that the virus reduced the total seed yield of this crop in southwestern and southeastern Manitoba by 0.4% and 0.7%, respectively. Since BSMV occurred only sporadically in six-row barley, the virus probably had little, if any, effect on the total yield of this type of barley.

Table 1. Occurrence of barley stripe mosaic in fields of two- and six-row barley in Manitoba in 1978.

Region surveyed	Type of barley	Fields			No. fields in each infection category (% plants with BSM)				
		No. examined	No. with BSM*	% with BSM	Tr	1-5	6-10	11-20	35
Southeastern Manitoba	Two-row	56	22	39.3	14	3	3	2	
	Six-row	52	3	5.8	3				
Soutwestern Manitoba	Two-row	47	16	34.0	9	6			1
	Six-row	47	1	2.1		1			

*BSMV transmitted to Black Hulless barley and reacted with BSMV antiserum.

Literature cited

1. Chiko, A.W. 1971. Barley stripe mosaic virus in Manitoba in 1971. Can. Plant Dis. Surv. 51: 159-160.
2. Chiko. A.W. 1976. Barley stripe mosaic in the Canadian prairies, 1974-75. Can. Plant Dis. Surv. 56: 53-55.
3. Chiko, A.W., and R.J. Baker. 1978. Economic significance of barley stripe mosaic virus in the Canadian prairies. Can. J. Plant Sci. 58: 331-340.
4. Manitoba Department of Agriculture. 1976 yearbook Manitoba agriculture. 116 pp.